

# CHAPTER I

## INTRODUCTION

### A. HISTORY AND PRESENT SITUATION

The history of bulletins dealing with policies governing the design of PWSSs in Kansas was reviewed in 1984 (Metzler, 1984). The previous version of this bulletin was published by KDHE in 1995. Earlier versions were published in 1953, 1957, 1967 and 1984.

Under the authority of the 1986 Amendments to the Safe Drinking Water Act, the USEPA promulgated regulations that placed a new set of constraints on both KDHE and design engineers. KDHE decided to revise the 1984 bulletin to address these new constraints, to incorporate design considerations relevant to new technologies, and to update obsolescent portions of its design criteria. To that end, KDHE published a revised bulletin entitled "Policies, General Considerations and Design Requirements for Public Water Supply Systems in Kansas" in 1995.

Since 1995, additional regulations have been promulgated by USEPA, based in part on the 1996 Amendments to the Safe Drinking Water Act. KDHE decided to revise the 1995 bulletin to address these recent regulatory changes, to address recent technological developments, and to update obsolescent design criteria.

### B. STATUTORY AUTHORITY AND CHARGE

KSA 65-171h authorizes and empowers the Secretary of KDHE "to develop, assemble, compile, approve and publish minimum standards of design, construction, and maintenance of sanitary water and sewage systems" and further states that the Secretary shall "publish and make available such approved minimum standards to municipalities, communities and citizens of this state." KSA 65-162a(b) defines a public water supply system as "a system for the provision to the public of piped water for human consumption, if such system has at least ten (10) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days out of the year. Such term includes any source, treatment, storage, or distribution facilities."

Public water systems can be publicly or privately owned and are subdivided for regulatory purposes into two major categories: community water supply systems and non-community water supply systems. KAR 28-15a-2 defines a non-community water supply system as one that is not a community water supply system or one that serves water to non-residential populations. Non-community water supply systems are further divided into non-transient non-community water supply systems (that serve the same non-residential populations over time such as those at schools and factories) and transient non-community water supply

systems (that serve different non-residential populations from day to day such as those visiting highway rest stops, restaurants, and motels). KAR 28-15a-2 defines a non-transient non-community water supply system as one that is not a community water supply system and that regularly serves at least 25 of the same persons over six months per year.

### **C. PURPOSE AND INTENT**

The purpose of this bulletin is to document KDHE's policies and design requirements for PWSSs in Kansas and to also describe general considerations, guidelines and criteria applicable to the design of PWSSs in Kansas by water supply professionals. It is KDHE's intent that the bulletin will allow designers maximum freedom consistent with modern water supply practices. The standards of design are derived from state statutes and regulations that reflect KDHE's responsibilities to users of water produced by Kansas PWSSs.

The design criteria stated herein consist mainly of principles and requirements that have been in use over a long period of time in water supplies found in the State of Kansas. Their purpose is to provide guidelines and standards to those engaged in the design of new facilities and the upgrading of existing public water supply systems. Many of the principles and requirements outlined in certain sections of this bulletin were drawn, in some cases verbatim, from *Recommended Standards for Water Works: Policies for the Review and Approval of Plans and Specifications for Public Water Supplies, A Report of the Water Supply Committee of the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers*, commonly referred to as the "Recommended Standards" (Recommended Standards, 2003) or from earlier versions of these standards. Also, there are references to specific standards developed by the American Water Works Association, and all such references are to the most current version.

It is intended that designers using the criteria in this bulletin retain a maximum degree of design freedom since it is recognized that each water supply system is a unique entity and that certain changes to these criteria may be necessary to meet local conditions and unusual circumstances. Terms such as "should" or "recommended" indicate desirable guidelines with deviations subject to site-specific considerations. On the other hand, the terms "shall" and "must" are used where practice is standardized to permit specific delineation of requirements or where safeguarding of the public health justifies definite action. Even the terms "shall" and "must" are not absolutes in that KDHE may grant exceptions to these requirements under certain circumstances and with adequate justification provided by a licensed professional engineer. Also, it is not always possible to include design criteria for recently developed processes, methods, chemicals, and equipment although these developments may be acceptable to KDHE.

### **D. ORGANIZATION AND USE**

This bulletin covers administrative procedures and general design considerations along with a review of specific design guidelines and standards. Any changes made subsequent to this edition of the bulletin will be posted to KDHE's web address: <http://www.kdheks.gov/pws/>.

Chapters I and II include an introduction to the design bulletin, Kansas statutes, regulations, procedures, required reports, and plans and specifications for PWSS projects. This portion of the bulletin is intended to assist project managers and engineers with having an awareness and an understanding of the administrative aspects of a PWSS project. Chapters IV through VIII include the recommended and required design criteria for each aspect of a PWSS: source development, treatment, storage, pumping, and distribution. General facility design considerations (Chapter III) are included in the bulletin as a prelude to the design chapters. And lastly, Chapter IX addresses chemical storage, handling, and application requirements. Selected subjects are addressed in the appendices to this bulletin.

The administrative procedures and design criteria contained herein will be most effective when implemented by a licensed professional engineer experienced in water works design. Further, subject to certain limited exceptions, KSA 74-7001 et seq. requires the use of licensed professional engineers for services or work constituting the practice of engineering. Therefore, KDHE strongly recommends that a water supplier contract with a licensed professional engineer to assist in preparing plans and specifications for any anticipated project. Any attempt to avoid using the services of a licensed professional engineer may compromise the technical requirements of the PWSS design and may result in less than adequate facilities.

#### **E. LAWS AND REGULATIONS**

Links to on-line versions of selected Kansas statutes and regulations pertaining to PWSSs are provided in Appendix A. Regulations are identified under their specific governing statute. Copies of current Kansas statutes and regulations pertaining to PWSSs may also be obtained from KDHE.

#### **F. OTHER RESOURCES**

This bulletin references certain resources available from other state agencies. It should be recognized that most of these agencies have compiled lists of publications which can be obtained and used to identify additional sources of information about cities, policies, reviews, strategies, surveys, water resources, etc. For example, Kansas Geological Survey has published numerous water-related reports and provides other resources such as maps, data bases, and computer programs. In addition, AWWA makes available a catalogue of publications covering numerous aspects of the design of water treatment and distribution systems. Also, two major references are available on water treatment plant design (AWWA and ASCE, 2005; and AWWA, 1999a).

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