

## 5.0 Water Quality

### **5.1 Guiding Principles**

The following “guiding principles” are to be applied in issues of water quality.

- The Edwards Aquifer is the primary source of water for a growing region. Protection of water quality is a fundamental requirement of meeting our current and future needs.
- Water quality protection measures based on sound science and technical data should be proactively developed and implemented not only in Bexar County, but also throughout the region.
- A watershed protection and management approach will effectively protect drinking water supplies as well as maintain environmental viability.
- Water quality should be commensurate with the intended water use (e.g., recycled water for non-drinking uses).
- New sources of water will meet or exceed drinking water standards prior to introduction to the SAWS distribution system.

### **5.2 Protection of the Edwards Aquifer**

The City of San Antonio and the San Antonio Water System have some of the most aggressive water quality regulations in the state. These rules regulate everything from construction activity on the Edwards Aquifer Recharge Zone to protection of watersheds within San Antonio’s extraterritorial jurisdiction. The avenues for enforcing these rules and protecting water quality are the City’s Water Quality Ordinance, recharge zone property acquisition, watershed management plans, and the TNRCC’s Chapter 213 Rules. Each of these is described in more detail in the section below.

### 5.2.1 Water Quality Ordinance

San Antonio Ordinance # 81491, passed January 12, 1995, regulates development over the Edwards Aquifer Recharge Zone. The ordinance imposes limits on impervious cover and requires buffer zones to protect floodplains and significant recharge features.

### 5.2.2 Recharge Zone Property Acquisition

This program is to identify, acquire and protect those areas on the recharge zone that are the most sensitive in relation to available recharge. It provides funds to acquire land in order to protect recharge water quality.

The main objectives of the program are to protect water quality and to reduce the detrimental impact of certain land uses by achieving a balance between economic growth and environmental protection.

SAWS anticipates multi-agency cooperation and encourages funding contributions from other entities. SAWS has programmed \$3.25 million for land acquisition for the next five years.

Sites will be considered in this program under the following criteria:

- **Primary Criteria:** the presence of faulting, stream or river channels, or other recharge features; maximum thickness of Edwards limestone; category 1 (grandfathered) status under the Water Quality Ordinance.
- **Secondary Criteria:** watershed area, slope, stream gradient, surrounding land use, estimated annual recharge to watershed.

### 5.2.3 Watershed Management Plan

One of the San Antonio Water System's objectives is the protection of all watersheds in Bexar County and the region. While SAWS has jurisdiction within only a limited area of the city and the extraterritorial jurisdiction, a watershed approach to managing water resources is used throughout this plan. With this in mind, SAWS has developed a watershed protection master plan to assist in achieving this goal.

The following is a brief overview of the Watershed Master Plan for protecting water quality in San Antonio and Bexar County. By implementing the Watershed Master Plan, San Antonio takes a leadership role in promoting actions that will protect water quality and enhance the amount of recharge taking place in the recharge zone.

The Watershed Master Plan, together with the City of San Antonio's Master Plan goals, provide a mechanism for education and the preservation of watersheds to balance economic growth and environmental requirements. Some of the components of the plan are described in the following section.

SAWS will carry out the policy of non-degradation of the Edwards Aquifer and ensure the protection of the water quality of watersheds crossing Bexar County and discharging to the waterways of the United States.

This will be accomplished by utilizing the 33 Mandates, ordinances and direction provided by City Council, and putting into service state regulations, federal regulations and the City of San Antonio NPDES permit, and other mechanisms and agents to extend protection to:

- The drainage area which channels runoff that flows into streams;
- The Recharge Zone which is a conduit for direct entry of water to the aquifer;
- The transition zone which is geologically fractured and faulted;
- The storm sewer system and discharges to tributaries, creeks and watersheds; and
- Water supply wells used for potable water.

The goal of this effort is to comprehensively manage the watershed as a whole and to protect the water supply from any potential contamination through a balance of economic development and environmental considerations. To accomplish this, SAWS will:

- Have a highly regarded water quality education program which increases awareness of water quality issues including stormwater, aquifer protection, wellhead protection, potable water standards and the sensitivity and significance of environmental areas. This will be done by pro-actively outreaching to contractors, developers, neighborhood associations, schools, customers and other public and private entities to share and receive information and ideas.
- Explore and apply appropriate technologies in establishing data collection activities and provide for accurate interpretation as a tool in the decision making process. SAWS will perform or participate in studies to provide the technical information and data required to protect the Edwards Aquifer and Bexar County watersheds.
- Establish a superior GIS database for the Edwards Aquifer and each watershed throughout Bexar County. This will include data related to testing, chemical analyses, land use and other factors,

which will aid staff, the SAWS Board, City Council, or the general public in the planning process for protection of water quality and our drinking water supply.

- Establish a network of sampling stations in every watershed, which can provide water quality data at any location in Bexar County. SAWS will comprehensively manage and monitor regional watersheds to ensure water quality for human and environmental needs. SAWS will provide proper review and oversight of development and construction activities on the Recharge Zone and throughout Bexar County so that the non-degradation policy is implemented and permit requirements are met to protect the pristine quality of our drinking water supply.
- Continually review and recommend regulations, ordinances and statutes to meet water quality protection based on sound science and technical data.
- First, try to educate and bring into compliance, and then if necessary, bring enforcement actions against any person who may be acting as a potential source of contamination of the water quality in the Edwards Aquifer, other potable water sources, or the watersheds of Bexar County.
- Provide courteous, responsive and helpful response to citizen complaints concerning water.
- Continue to develop and upgrade staff so that they are recognized as experts on water quality in the region.

#### 5.2.4 Chapter 213 Rules

As a response to Texas' concerns regarding the preservation and protection of the excellent quality of water available from the Edwards Aquifer, the Texas Natural Resource Conservation Commission (TNRCC) enacted regulations under authority of the Texas Water Code. These Edwards Rules are contained in 30 Texas Administrative Code (TAC) Sections 213.1-213.14, better known as the Chapter 213 Edwards Rules. These rules are strictly geared to regulating activities on the Edwards

Aquifer Recharge Zone and Edwards Aquifer Transition Zone. One avenue the TNRCC uses to regulate this activity is with the application process. This process identifies potential sources of contamination to the Edwards Aquifer. All development over the recharge zone must comply with the Edwards Aquifer Protection Plan (EAPP). The EAPP consists of the following items: Water Pollution Abatement Plan, Organized Sewage Collection System, Static Hydrocarbon and Hazardous substance storage in underground and above ground storage tanks. All of these items are mechanisms used to regulate development on the Edwards Aquifer Recharge Zone.

### **5.3 Treatment and Integration of Additional Supplies**

Unless specifically designated for non-drinking water uses, all additional supplies of water developed and delivered to the city will meet all state and federal drinking water standards. The same benchmarking and decision making process that was used to adopt this Water Resource Plan will determine how to best deliver all additional sources of water.

Issues that will be decided by this process would include the following:

- Treating additional drinking water supplies to the same excellent quality that the City currently enjoys from the Edwards aquifer;
- Delivery areas of new supplies; and
- Timing of use of the various new supplies.

The benchmarking and decision making process will balance the competing goals of maximum efficiency, cost of water and the community's desire to have equal access to Edwards water.

However, any decision made will probably necessitate greater variability with respect to the sources of water that will be available to SAWS customers at their tap in the course of a year.

SAWS' existing delivery system consists of over 4,000 miles of pipes reaching more than 275,000 connections. The system is a collection of "hubs" wherein water is pumped from the Edwards Aquifer at pump stations into large diameter pipes. As the water moves away from these pumping stations the pipes get smaller and smaller. Thus imported water will need to be distributed through these pumping stations, which exist all over SAWS service area in the artesian zone of the Edwards Aquifer.

Further the system is also divided into service levels established by planes of pressure within the distribution mains. The elevation of the ground influences the boundaries of these service levels. From an engineering perspective it is more efficient to have water flow within the service levels, rather than between them. However, it is possible to interconnect the service levels. The costs of interconnection have not yet been determined.

As various sources of water recommended by this plan are developed, an analysis will be required to determine the best location to deliver these supplies. Supplies could be delivered to various pumping stations, or to growth areas, or to a particular least cost area, or supplies could be recharged into the Edwards Aquifer and then pumped and delivered as we do now. This decision has not been made and will undergo the same decision making process and benchmarking analysis as other water resource issues.

## **5.4 Recommendations**

- SAWS should maintain an aggressive water quality protection program based on sound science and technical data.
- SAWS should seek to improve state rules and enforcement regarding water quality protection.
- SAWS should continue the property acquisition program to ensure protection of the most sensitive properties. Partners such as the Bexar Land Trust and the Texas Parks and Wildlife Department as well as other governmental and non-profit agencies should be sought to maximize the effectiveness of this program.
- SAWS should implement the Watershed Management Plan and coordinate with other city functions such as drainage regulation and maintenance, land use planning and site design requirements.
- SAWS should develop a contingency plan in the event of aquifer contamination.
- SAWS should continue to develop the expertise to design and maintain drinking water treatment facilities in anticipation of additional supplies being integrated into the system.