Bois d'Arc Lake WPP Chapter 1: Introduction to Watershed Management

Texas Water Resources Institute
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NORTH TEXAS MUNICIPAL WATER DISTRICT

Chapter 1: Introduction to Watershed Management

A watershed is the land area surrounding a water body that drains to a common waterway such as a stream, river, or lake. All the land surfaces that contribute runoff to a water body are considered part of the watershed. Watersheds can vary greatly in size. Some watersheds can be very small and drain only a few square miles. Conversely, larger watersheds can encompass many smaller watersheds and drain large portions of states or regions of the country. The Bois d'Arc Lake watershed is approximately 326 square miles and is composed of smaller watersheds that include Bois d'Arc Creek, Lake Bonham and Honey Grove Creek.

Watersheds and Water Quality

Natural processes and human activities can influence water quality and quantity within a watershed. For example, rain falling on the land area within a watershed might generate runoff that then flows across agricultural fields, lawns, roadways, industrial sites, grasslands or forests.

Point source pollution is categorized as being discharged from a defined point or location, such as a pipe or a drain, and can be traced back to a single point of origin. This type of pollution is typically discharged directly into a water body and subsequently contributes to the water body's flow. Point sources of pollution are permitted to discharge their effluent within specific pollutant limits must hold a permit through the Texas Pollutant Discharge Elimination Systems (TPDES).

Pollution that comes from a source that does not have a single point of origin is defined as nonpoint source (NPS) pollution. This type of pollution is generally composed of pollutants that are picked up and carried by runoff in stormwater during rain events. Runoff that travels across land can pick up natural and anthropogenic pollutants impacting water quality. The concentrations and types of pollutants in stormwater also determine suitability of water uses such as irrigation, drinking or recreational contact. To effectively identify and address water quality issues in a watershed, this watershed protection plan (WPP) addresses potential contaminants from both point sources and NPS.

The Watershed Approach

The watershed approach is widely accepted by state and federal water resource management agencies to facilitate water quality management. The U.S. Environmental Protection Agency (EPA) describes the watershed approach as "a flexible framework for managing water resource quality and quantity within a specified drainage area or watershed" (EPA, 2008). The watershed approach requires engaging stakeholders to

make management decisions backed by sound science (EPA, 2008). One critical aspect of the watershed approach is that it focuses on hydrologic boundaries rather than political boundaries to address potential water quality impacts to all potential stakeholders.

A stakeholder is anyone who lives, works, has interest within the watershed or may be affected by efforts to address water quality issues. Stakeholders may include individuals, groups, organizations or agencies. The continuous involvement of stakeholders throughout watershed protection planning and implementation is critical for effectively selecting, designing and implementing management measures that address water quality throughout the watershed.

Watershed Protection Plan

WPPs are locally driven mechanisms for voluntarily addressing complex water quality problems that cross political boundaries. A WPP serves as a framework to better leverage and coordinate resources of local, state and federal agencies, in addition to non-governmental organizations.

The Bois d'Arc Lake WPP follows the EPA's nine key elements, which are designed to provide guidance for the development of an effective WPP (EPA, 2008). WPPs will vary in methodology, content and strategy based on local priorities and needs. However, common fundamental elements are included in successful plans and include (see Appendix * – Elements of Successful Watershed Protection Plans):

A. Identification of causes and sources of impairment

B. Expected load reductions from management strategies

C. Proposed management measures

D. Technical and financial assistance needed to implement management measures

E. Information, education and public participation needed to support implementation

F. Schedule for implementing management measures

G. Milestones for progress of WPP implementation

H. Criteria for determining successes of WPP implementation

I. Water quality monitoring

Adaptive Management

Adaptive management consists of developing a natural resource management strategy to facilitate decision-making based on an ongoing science-based process. Such an approach includes results of continual testing, monitoring, evaluating applied strategies and revising management approaches to incorporate new information, science and societal needs (EPA, 2000).

As management measures recommended in a WPP are put into action, water quality and other measures of success will be monitored to make adjustments as needed to the implementation strategy. The use of an adaptive management process will help to focus effort, implement strategies and maximize impact on pollutant loadings throughout the watershed over time.

Education and Outreach

The development and implementation of a WPP depends on effective education, outreach and engagement efforts to inform stakeholders, landowners and residents of the activities and practices associated with the WPP. Education and outreach events provide the platform for the delivery of new and/or improved information to stakeholders through the WPP implementation process. Education and outreach efforts are integrated into many of the management measures that are detailed in this WPP.

References

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