

BIG HAYNES CREEK RIPARIAN BUFFER STUDY

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Abstract. The objective of this project is to identify and rank riparian buffers in the ten-mile corridor between Rockdale County's drinking water intake and the Black Shoals water supply reservoir. Rockdale County is considering several methods for protection including acquisition. The method used to rank the riparian buffer zone include surveying the buffer zone for ecological value and development risk, creating a database of landowners, and creating a GIS of survey results and property parcels. A list of the highest priority buffer segments was developed for Rockdale County to consider. An educational brochure outlining the importance of protecting natural buffers was also produced.

INTRODUCTION

Situated in one of Georgia's fastest growing regions, Rockdale County addressed growing water supply demands by building a reservoir on Big Haynes Creek in the late 1990's. A raw water intake was completed in 2002. The ten-mile riparian corridor currently has no protection other than the minimum 25 foot state required set back. In order to protect water quality upstream from the intake, the County undertook a study to address water quality through riparian protection. Improved water quality will lower raw water treatment costs as well as provide benefits for aquatic life.

Riparian buffers are beneficial to water quality because they filter and absorb sediment, nutrients, and associated pollutants from upstream areas. Rockdale County also has a number of riparian wetlands. Wetland areas also will hold excess stormwater during high flow events, preventing in-stream erosion that is common in developed areas.

Establishing and maintaining biological filtering systems, such as riparian zones and wetlands, is especially important in rapidly developing areas due to the increased sediment, nutrient, pesticide, and herbicide loadings to the water column associated with these areas. Maintaining a healthy riparian zone will help minimize the effects development has on water quality. Several studies have indicated that preserving naturally vegetated corridors along streams can help protect water quality (Vellidis, 1999, Wenger and Folwer, 1999, Wenger, 1999, and Allen, 1995).

METHODOLOGY

Stream surveys were conducted along Big Haynes Creek from Jack Turner Dam to the Rockdale County drinking water intake and on Little Haynes Creek from the confluence of Big Haynes Creek to the Walton

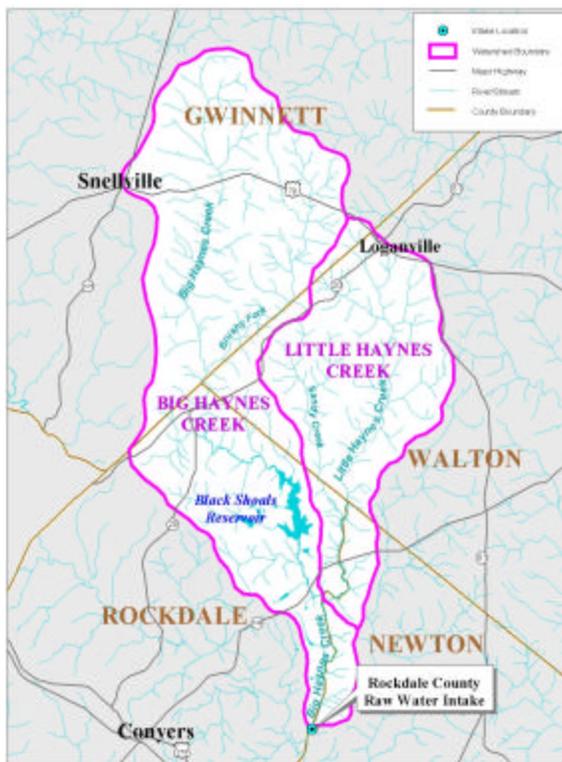


Figure 1. Watershed upstream from Rockdale County's Raw Water Intake.

County line. A photolog was created documenting sites along the streams. Sites were given two scores, one based on ecological value for water quality protection and the other based on the risk factor for future degradation due to human impact. The ecological score ranged from 1 to 6 with 6 representing the highest ecological value. The risk ranking score ranged from 1 to 5 with 5 representing a great risk for future degradation (see Table 1). The overall rank was calculated by summing these scores. Differences in possible ranking scores gave the ecological score slightly more weight in the overall score.

In addition, an abbreviated EPA habitat survey was conducted and potential stream restoration sites were identified. Each site was given a unique site number and the location was documented using a Geographic Position System (GPS) unit.

Maps were created using Geographic Information Systems (GIS) to illustrate layers of information including the location of ecologically sensitive areas and features that may potentially impact water quality.

The overall scores were then linked to a database of landowners for all of the properties that lie within the 100-foot buffer zone along lower Big Haynes Creek and Little Haynes Creek. The study area included portions of both Rockdale and Newton Counties.

Parcels that contained more than one site score were assigned the highest score from their reach. Recommendations for acquisition were based on the parcel scores.

RESULTS

Seventy-six sites were ranked during the study. The average overall score for the streams was 7.1 with 21% of the sites having a sub-optimal ecological score, 45 % having a marginal score, and 34% have an optional score. Over 64% of the sites had either a high or medium risk associated with potential development that may impact the ecology of the area.

There were seven sites that had an overall score of 11, which was the highest overall score (see Figure 2). These seven sites may be broken into three main areas. The first area was located immediately downstream of Jack Turner Dam, the second was located upstream of the Rockdale County drinking water intake and third was an area sprinkled with ecologically important wetlands near the confluence of Little Haynes Creek and Big Haynes Creek. In addition, there were areas on Big Haynes Creek south of the confluence that ranked high for ecological value. The high marks for this area were influenced by the healthy riparian zone along Big Haynes Creek especially along the Rockdale County side of the stream where there has been little development. Another area that had high ecological value was in the northern portion of Little Haynes Creek. There was a healthy riparian zone with smaller wetlands located to the east.

Sites that may be good candidates for restoration projects were predominately found in Little Haynes Creek with the exception of one site found in Big Haynes Creek. The restoration sites were not prioritized at this time.

Overall, the stream walks revealed that the riparian zone was in fairly good health with some minimal impacts around bridge crossings and residential developments. Most of the banks were fairly stable with some areas of severe erosion on Little Haynes Creek. Several wetlands were observed in both Little and Big Haynes Creek.

During the stream survey, construction activities and survey stakes were frequently observed indicating that this area is experiencing a changing land-use. In general, the riparian buffer on the Newton County side

Table 1. Riparian Rankings

Ecological Ranking	Definition
1-2	Sub-optimal ecological conditions. Impaired riparian zone and/or significant bank erosion.
3-4	Marginal ecological conditions. Riparian zone partially intact, marginal habitat.
5-6	Optimal ecological conditions. Presence of wetlands and/or a healthy riparian zone.
Risk Rankings	Definition
1-2	Low risk of degradation due to development
3-4	Medium risk of degradation due to development
5	High risk of degradation due to development

of the Big Haynes Creek especially near the intake appears to be more developed than the Rockdale County side. As the stream corridor continues to develop, the threat to water quality will increase as the buffer is reduced and/or eliminated.

DISCUSSION

Protecting existing natural buffers will help mitigate current and future impacts on streams and the quality of the drinking water supply. Protection of stream buffers is an effective means to maintain good water quality in Big Haynes Creek.

Three main areas ranked highest for buffer area protection: Little Haynes Creek north of Highway 138, in Big Haynes Creek approximately two miles north of Rockdale's intake, and in Big Haynes Creek just north of Highway 138 and downstream of Jack Turner Dam (See Figure 2). Protecting the riparian buffer in a timely fashion will be important as the land use changes from rural to low and medium density residential and commercial.

Now that an evaluation of this critical riparian corridor is complete, Rockdale County can now consider the options for riparian buffer protection such as education, easements, and acquisition.

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