VILLAGE OF CROSS PLAINS

DANE COUNTY WISCONSIN

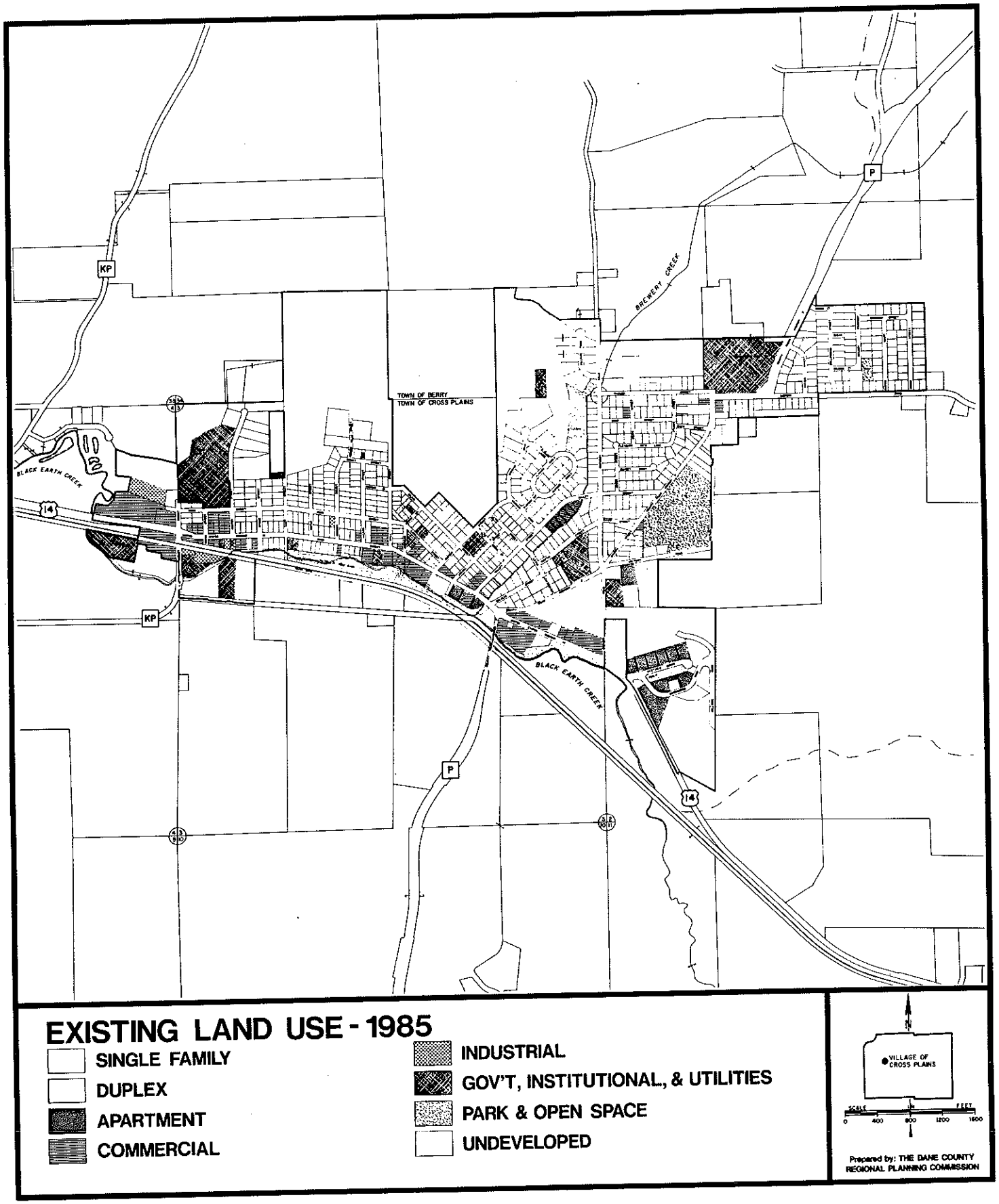


FIGURE 5

VILLAGE OF CROSS PLAINS

DANE COUNTY WISCONSIN

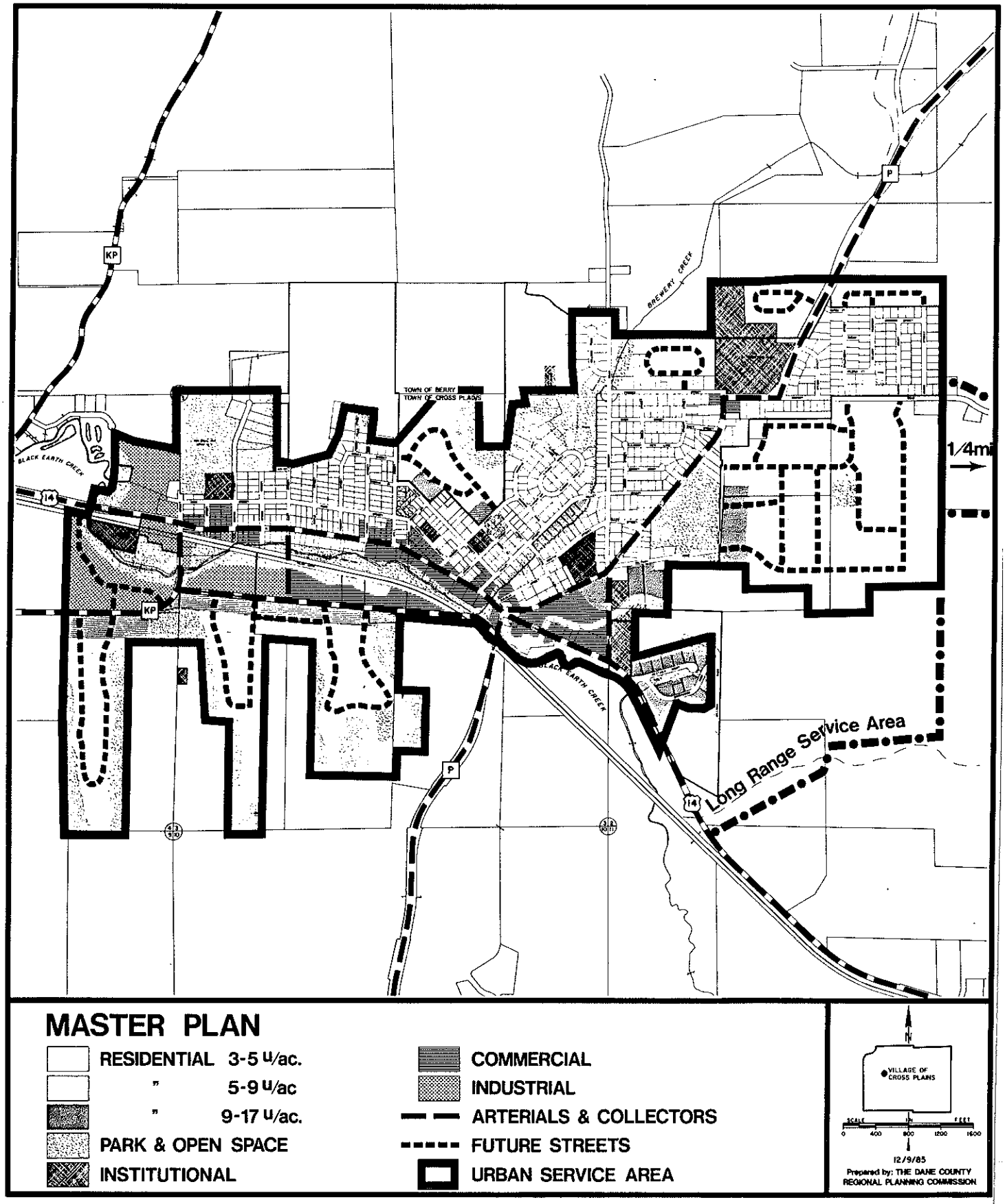
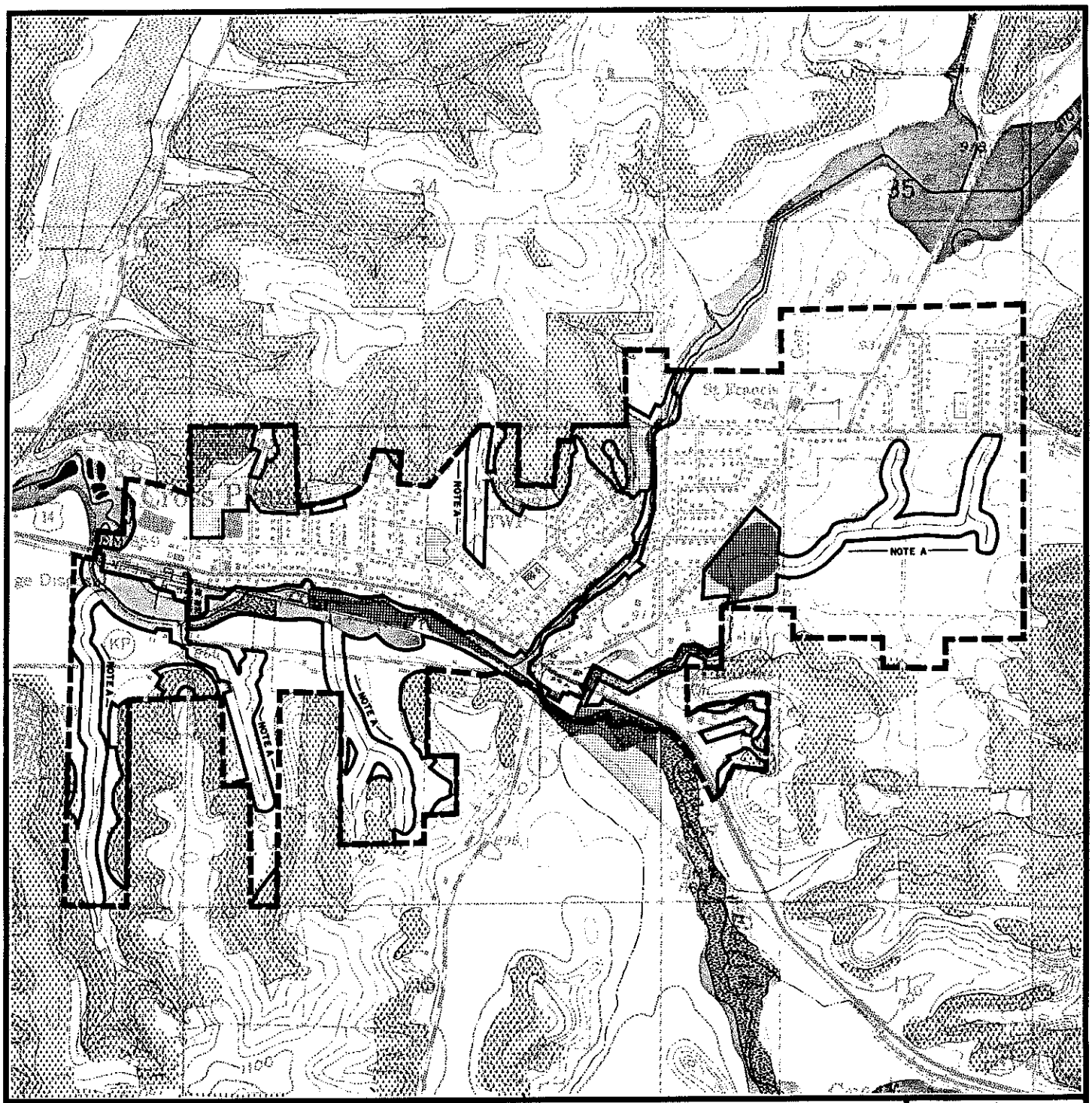


FIGURE 6

VILLAGE OF CROSS PLAINS

DANE COUNTY WISCONSIN



ENVIRONMENTAL CORRIDORS

- ENVIRONMENTAL CORRIDORS
- URBAN SERVICE AREA
- ISOLATED RESOURCE FEATURE
- EXISTING PARKS, GREENWAYS, AND CONSERVANCY AREAS
- PROPOSED PARKS, GREENWAYS, AND CONSERVANCY AREAS
- PUBLIC LANDS, NO ACCESS
- PERENNIAL STREAMS
- INTERMITTENT STREAMS
- OPEN CHANNEL DRAINAGE-WAYS
- LAKES AND OTHER WATER BODIES
- WETLANDS
- 100-YEAR FLOODPLAIN
- WOODLANDS
- STEEP SLOPE (12% TO 20%)
- STEEP SLOPE (>20%)
- LINKAGES

NOTE A: THE PURPOSE OF THESE ENVIRONMENTAL CORRIDOR SEGMENTS IS TO RESERVE ADEQUATE LAND AREA FOR A STABLE DRAINAGEWAY CAPABLE OF SAFELY TRANSPORTING STORMWATER FLOWS. LOCATION OF THE CORRIDOR IS SUBJECT TO REVISION AT THE TIME OF DEVELOPMENT.

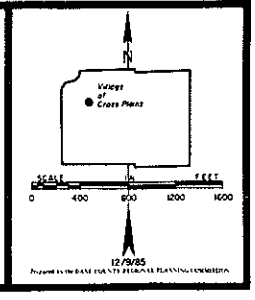


FIGURE 7

TABLE 4. Cropland Soil Erosion in Brewery Creek Subwatershed.

Erosion Rate		Tons/year	%
> 10	tons/acre/yr.	31,652	82
7-to-10	tons/acre/yr.	2,660	7
4-to-7	tons/acre/yr.	1,464	4
< 4	tons/acre/yr.	2,987	8
totals		38,763	100

Erosion Rate		Acres	%
> 10	tons/acre/yr.	972	31
7-to-10	tons/acre/yr.	237	8
4-to-7	tons/acre/yr.	195	6
< 4	tons/acre/yr.	1,721	55
totals		3,126	100

Animal Lots (oxygen demand and nutrients). Manure from animal lots and winter spread fields are the most probable source of oxygen demanding substances. Table 5 shows the number of animal lots and pollutant loads by range of phosphorus load. Their locations are shown on Figure 4.

Winter Spread Manure (oxygen demand and nutrients). Winter spread manure was not analyzed. However, based on the erodibility of the soils and the steepness of slopes, it is likely that some of the 19 livestock operations in this subwatershed are sources of manure to the stream from winter spread sites.

Construction Sites (sediment and nutrients). Construction in this subwatershed during 1986, 1987 and 1988 consisted primarily of new homes in the village of Cross Plains. About 5-to-6 years

ago, development of a subdivision within the village near Brewery Creek caused substantial amounts of sediment to reach Black Earth Creek. On an average, about 5 acres per year are developed in the Village of Cross Plains within this subwatershed. Given an average rate of sediment delivery of 28 tons per disturbed area, between 5 and 10% of the sediment reaching Brewery Creek is from construction sites.

TABLE 5. Animal Lot Pollutant Loads for Brewery Creek Subwatershed.

Phosphorus Load Range	Operations	Lbs. *	%
> 20 lbs. phosphorus **	1	62	43
15-to-20 lbs. phosphorus	0	0	0
10-to-15 lbs. phosphorus	1	11	8
5-to-10 lbs. phosphorus	5	39	27
< 5 lbs. phosphorus	12	32	22
Total	19	144	100

* Pounds for a 10-year, 24-hour storm

** Phosphorus is used as an indicator of the amount of manure reaching streams. The amount of BOD or COD is proportional to the amount of phosphorus.

Urban Lands (sediment and nutrients). Most of the Village of Cross Plains within this subwatershed is in medium density residential development. The amount of nutrients carried in runoff from these medium density residential lands is probably not significant to the water quality of Brewery Creek or Black Earth Creek if the streets are swept regularly.

Nonpoint Source Control Needs to meet the Water Resources Objectives

To achieve the water resources objectives identified for Brewery Creek the nonpoint sources identified below must be controlled. Each type of source and its control need is briefly described and discussed.

1. Cropland Management Needs:

   Erosion needs to be controlled on an estimated 1209 acres of cropland.

The cropland analysis estimated about 80-to-90% of the tons of soil erosion occurs on fields with very high or high erosion rates (greater than 10-to-15 tons/acre/year and 7-to-10 tons/acre/year). These very high/high erosion rates occur on about 1209 acres.

2. Stream Bank Management Needs:

   None.

No eroding sites were identified.

3. Animal Lot Management Needs:

   The amount of manure from animal lot runoff needs to be reduced on 7 of the 19 operations.

Based on the simulation of runoff controls, it is estimated that a 75% reduction can be achieved by reducing the amount of phosphorus on the 7 of 19 operations with estimated amounts of 5 or more pounds.

4. Manure Spreading Management Needs:

   Manure spreading management plans need to be prepared for the 19 livestock operations to minimize the amount of manure entering the stream.

Although the amount of manure from this source and significant sites could not be quantified, the existence of the very high oxygen demand levels during trout hatch periods warrants control of this type of nonpoint source.

5. Construction Site Management Needs:

   Sediment and other pollutants from construction sites need to be controlled.

The Village of Cross Plains is expanding in this subwatershed. Much of the growth will likely occur in the Enchanted Valley area. Runoff from new developments will likely exceed the capacity of the depressions and drainageways of the area. With the very high rates of sediment delivery to the stream, construction on these sites will continue to be a significant source of pollutants. Construction site erosion control will fall within the jurisdictions of the Village of Cross Plains and Dane County.

6. Urban Lands Management Needs:

   New urban lands need to be developed in a manner to control pollutants and manage runoff.

As stated above, the development of the Enchanted Valley area will likely cause significant changes in runoff volumes and rates. The capacity of internally drained areas will be exceeded unless controls are used to manage the runoff.

Fishery Management and Other Resource Needs

1. Habitat Improvement Needs:

   Fish managers intends to evaluate the potential to construct a sediment trap in the bed of Brewery Creek to control the amount of sediment reaching Black Earth Creek.

Sediment traps are used in other states to control the amount of larger sediment particles moving downstream. Fish managers have identified the lower stretches of Brewery Creek as the site where such a control may be needed - particularly if cropland and construction site controls are insufficient.

BLACK EARTH CREEK BREWERY CREEK TO GARFOOT SUBWATERSHED - BG

Subwatershed Description

The Black Earth Creek - Brewery Creek to Garfoot Creek Subwatershed covers a 7.6 square mile drainage area. The main water resource of concern in this subwatershed is the mainstem of Black Earth Creek. It includes much of the village of Cross Plains. An unnamed tributary (master waterbody ID # - 1250100) drains most of this subwatershed. It is about three miles in length, flows in a southwesterly direction and joins Black Earth Creek about 0.5 miles east of the mouth of Garfoot Creek. Not much information about this tributary is known. Most of the water resources and fisheries management focus in this subwatershed has been on the Black Earth Creek mainstem.

The land use in the subwatershed is primarily rural. A portion of the Village of Cross Plains lies in the upstream end of this subwatershed. Overall the land use is:

agriculture	54%
woodlands	32%
wetlands	3%
incorporated (urban)	5%
other	6%

Water Resources Conditions

As shown on Figure 8, the Black Earth Creek mainstem from the mouth of Brewery Creek downstream to the mouth of Garfoot Creek is classified as a cold water sports fishery with full reproduction (FALT (A) Class I). This stream segment along with the spring area just upstream are considered the heart of the trout water in Black Earth Creek. Fisheries management staff have studied trout populations in this stream stretch for many years. This stream stretch produces a large number of fish; in 1986 fish population estimates ran between 1081 and 1827 trout per acre of water.(5) While water quality and habitat are sufficient to support a FALT(A) classification and an apparently thriving trout population, nonpoint sources of pollution and habitat limitations concern water resources and fisheries managers about the future health of the aquatic community. Within this stream segment, three distinct management areas have emerged: one, the mouth of Brewery Creek to CTH KP; two, CTH KP through the "Horseshoe"; and three, the end of the "Horseshoe"