Water resource problems include streambank erosion, lack of instream fish cover, sedimentation of riffles and pools, and extreme flooding. Gravel riffle areas in the stream are highly embedded. Land use in the stream corridor is primarily wooded and open meadow.

Creek 22-8 (Hay Valley Creek, township of Whitestown, Vernon Co.) flows westerly 1.8 miles to the Kickapoo River. The stream is comprised of a forage fishery and has sand as the dominant substrate.

Water Resource Objectives

The following water resource management objectives are proposed for the Hay Valley subwatershed:

1. Maintain the forage fish community in Indian Creek.

Pollutants from Non-Point Sources

Eroding Uplands (sediment and nutrients)

About 50% (or 2,018 tons of sediment per year) of the sediment reaching water courses in the Hay Valley subwatershed results from upland erosion, chiefly from eroding crop fields. Grazed woodlots are a minor problem in this subwatershed.

Eroding and Trampled Streambanks (sediment and direct habitat impairment)

Streambank erosion appears to be a minor problem in this subwatershed, primarily because the streams are very small and are not pastured heavily. The banks for the most part are well vegetated and as a result, only 2% (or 84 tons of sediment per year) of the subwatershed's sedimentation is from streambank erosion.

Eroding Gullies (sediment and nutrients)

Gullies contribute approximately 48% (or 1,971 tons of sediment per year) of the sediment load in this subwatershed. The majority of gullies occur in 5 acre or smaller drainage areas. For the most part they are located at the edge of upland crop field just as they begin to drain into the steep hillsides.

Animal Lots (oxygen demand and nutrients)

Manure from animal lots and winter spread fields are the most probable source of oxygen demanding substances reaching the streams. Fourteen animal lots contribute 653 lbs. of phosphorus to the streams in the Hay Valley subwatershed.

Winter Spread Manure (oxygen demand and nutrients)

Approximately 74 critical acres currently are being spread with manure where there is high potential for that manure to runoff into nearby streams during spring rains and snowmelt events.

Jug Creek Subwatershed (JU)

Subwatershed Description

Jug Creek has a drainage area of 5.2 square miles. South Jug Creek is the only tributary, but the main water resource of concern is Jug Creek itself. Jug Creek flows in a westerly direction and spills into the Kickapoo River inside the Army Corps of Engineer land just south of the village of Rockton.

This subwatershed is rural with land use divided as follows:

agricultural	27%
woodland	62%
other*	11%

* grassland, roads, quarries, and wetland

Water Resources Conditions

Jug Creek flows northwest 3.6 miles to the Kickapoo River. Minnows and other species dominate the fish community in Jug Creek. The 1990 fish survey found 14 species of minnow and other forage species. Gravel and sand are the dominant substrate types. A portion of the lower stream reach was previously ditched. The stream HBI (Hilsenhoff Biotic Index) was 4.28, indicating slight organic pollution, and the Habitat Rating was "good".

Water resource problems include severe flooding, streambank erosion, lack of instream fish cover and sedimentation of riffles and pools. Primary land use in the stream corridor is open meadow, cultivated fields and woodland.

Water Resource Objectives

The following water resource management objectives are recommended for the Jug Creek subwatershed:

1. Establish a trout fishery in Jug Creek by introducing wild trout to the stream.

2. Improve fish habitat by reducing sediment and organic loading to the subwatershed streams.

Pollutants from Nonpoint Sources

Eroding Uplands (sediment and nutrients)

Upland erosion accounts for 58% of the sediment reaching Jug Creek. The primary source of sedimentation is from eroding crop fields.

Eroding and Trampled Streambanks (sediment and direct habitat impairment)

Streambank erosion is very minor in the Jug Creek subwatershed, accounting for only 7% of the sedimentation. The majority of the bottomland near the stream is well vegetated, and only small sections of the creek are pastured.

Eroding Gullies (sediment and nutrients)

Gully erosion accounts for the remaining 35% of sediment reaching Jug Creek. Again, most of the gullies occur in small drainage areas at the breaks of the ridges before the terrain turns to steep wooded hillsides.

Animal Lots (oxygen demand and nutrients)

Animal lots are few and far between in this subwatershed. In fact, only one animal lot was inventoried as a part of this project. There are a few scattered small heifer operations that were not inventoried because they were classified as pasturing operations as opposed to animal lot operations.

Winter Spread Manure (oxygen demand and nutrients)

Only 1 livestock operation was inventoried in this subwatershed. It was estimated that 6 critical acres were being used for winter spreading of manure.

Otter Creek Subwatershed (OT)

Subwatershed Description

The Otter Creek subwatershed drains 19.8 square miles before it dumps into the Kickapoo River near La Farge. Otter Creek is about 7 miles in length, and flows in a southwesterly direction along State Highway 82. There are several small tributaries including Green Hollow, Plum Run, and Dry Run. Plum Run flows directly into the Kickapoo River just north of LaFarge.

This subwatershed is primarily rural with land use divided as follows:

agricultural	32%
woodland	52%
grassland	13%
other*	3%

* wetlands, quarries, and residences

Water Quality Conditions

Otter Creek is managed as a Class II brown trout fishery and was stocked in spring 1990 with 900 9-inch brown trout. The 1990 fish survey found 13 minnow and forage species, but no trout. The stream HBI (Hilsenhoff Biotic Index) was 5.26, indicating some organic loading, and the Habitat Rating was "fair". Coarse gravel and silt are the primary substrate types. Gravel in the riffle areas is highly embedded.

Water resource problems include severe flooding, lack of instream cover for trout, streambank erosion, and elevated stream temperatures. A considerable portion of the streambank is overgrazed, resulting in bank erosion and destruction of cover for adult fish. Land use in the stream corridor is primarily pasture, open meadow and wooded.

Plum Run is a high gradient stream flowing 0.8 miles to the Kickapoo River near LaFarge. Minnows and other forage species comprise the fish community. Stream substrate is primarily sand with some gravel, silt and rubble.

Creek 24-7 (Dry Hollow, township of Webster, Vernon Co.) is a high gradient 1.0 mile tributary of Otter Creek. Minnows and other forage species comprise the fish community. The dominant stream substrate is gravel, with lesser amounts of sand, silt and rubble.