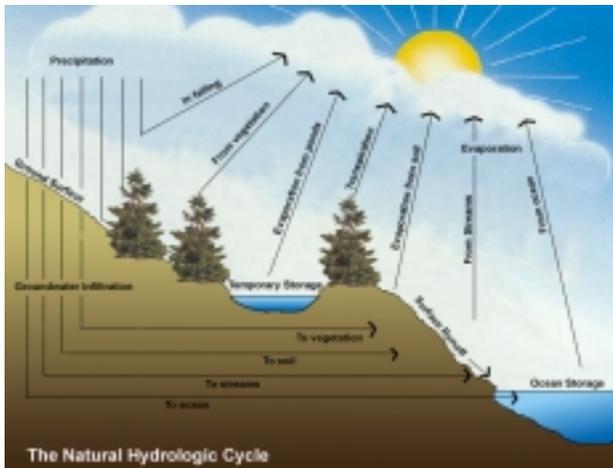


## **SURFACE WATER SYSTEMS**

Surface water systems distribute and circulate water above the earth's surface. Essentially, water remains in a closed system in various forms as illustrated in the hydrologic cycle.

Watersheds drain surface water naturally into lakes, wetlands and streams by way of floodplains. The land adjacent to waterbodies that are susceptible to inundation by floodwaters from any source are floodplains. Floodplains make up approximately 13% of Lancaster County, or 110 square miles (See Map 4, County Floodplain and Floodway).

Floodplains and wetlands filter sediments, reduce flood velocities and provide storage areas for water during storm events. When development encroaches on these areas, the water storage capacity and surface runoff permeability is reduced which leads to higher flood crests, greater downstream flooding and loss of unique habitats. Government regulations limit activities in floodplains and wetlands through permitting processes to protect some of their necessary functions and values.

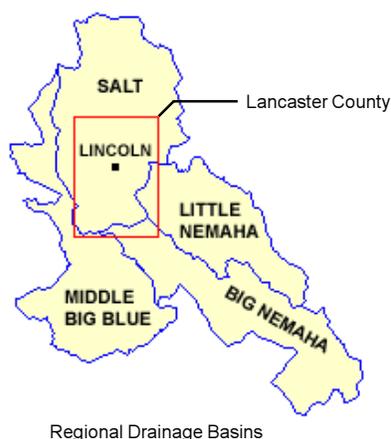


### **Data Sources**

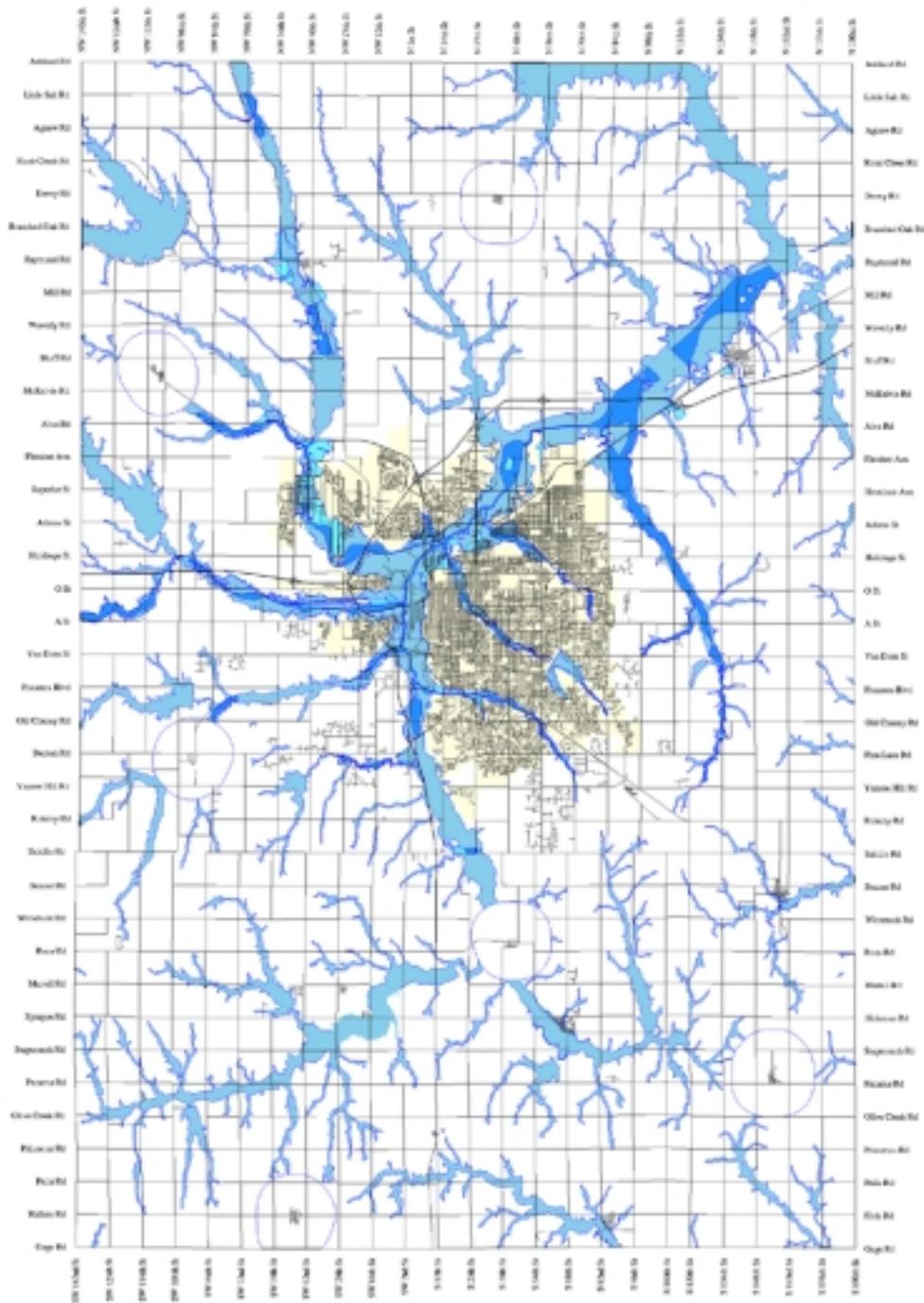
Information regarding surface water systems was compiled from the United States Geological Survey relative to water resources, the Nebraska Department of Environmental Quality relative to surface water quality, and the Federal Emergency Management Agency relative to floodplains and surface hydrology in the County.

### **County Level Patterns and Perspectives**

Lancaster County, like Nebraska, is carved into natural watershed basins. Lancaster County crosses parts of four watersheds, but the largest watershed encompassing most of the county is Salt watershed. The Salt Watershed is 1,627 square miles in area, only a portion of which is located in Lancaster County. Other watersheds in the county include the Middle Big Blue Watershed in southwest Lancaster County, the Big Nemaha Watershed in southeast Lancaster County and the Little Nemaha Watershed near the town of Bennet in eastern Lancaster County. Within each of these water-



shed exists smaller watersheds (subwatersheds) that drain into a series of streams and flood control structures, or lakes (See Map 5, Basin and Streams in County).



## County Floodplain and Floodway

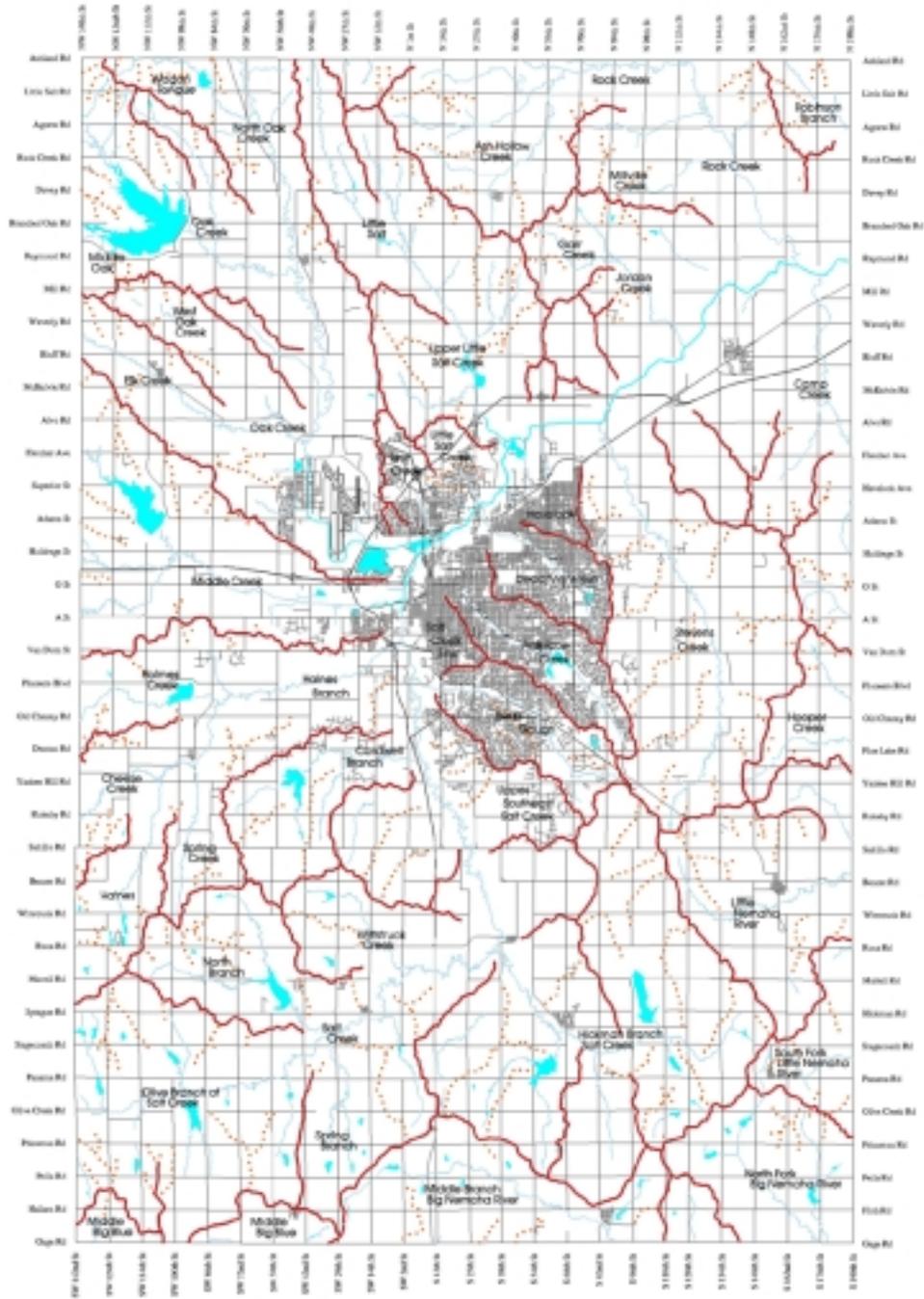
- Floodway
- 100 Year Flood Zone
- 500 Year Flood Zone



Image by: Lincoln-Lancaster County Planning Department

**Natural Resources - Geographic Information Systems**  
Interpretive Summary Report

**Map 4**



## Major Basins and Streams in County

-  Major Ridgeline
-  Minor Ridgeline
-  Streams



There are 16 primary lakes in Lancaster County, ranging in size from 20 to 1,800 acres of surface water. The US Army Corps of Engineers built the ten largest lakes in the 1960's for flood control and recreation. Each lake has a series of contributing streams that drain water within each watershed. In general, drainage runs north and east toward the Platte River through Salt Creek.

Surface waters are susceptible to non-point source pollution in the form of sedimentation and contamination from surface-water runoff. Nutrient enrichment plus sedimentation are the most common water quality problems identified in the County's streams and lakes. Water pollution into these waterbodies is a result of point (pollution that can be linked to a specific source, such as a pipe discharge) and non-point (pollution that can not be linked to a specific source, such as runoff) source pollution. Pollution comes from a variety of sources, including agriculture, construction, and urban runoff.

The Nebraska Department of Environmental Quality's Non-Point Source Pollution program concentrates on protecting ground and surface water resources by performing watershed assessments and promoting implementation projects.

Additionally, 100% of saline wetlands in the County are located within floodplains. Therefore, the conservation of saline wetlands is also a floodplain issue.



Photos: NEBRASKAland Magazine / Nebraska Game and Parks Commission

## Environmental Imperatives and Planning Implications

As the floodplains and areas of hydrologic sensitivity in Lancaster County become urbanized, floodplain and surface hydrology issues change. Urbanization leads to an increase in impervious surfaces, such as roads, driveways and parking lots. This causes accelerated drainage of water through road drains and City sewer systems, which heightens the magnitude of urban flood events. In turn, this alters the rates of infiltration, evaporation, and transpiration that would otherwise take place in a natural setting.

Additionally, as urbanization encroaches on floodplains there is a decrease in storage area for water during storm events. The result of this can be damaging both to the development that occurs within the floodplain as well as to the land downstream. Infrastructure within floodplains are susceptible to flooding during storm events.

Lastly, the recharge of aquifers does not occur or occurs at a slower rate in an urbanized setting. Together, if not adequately addressed, these effects determine the amount of water in the system and can cause negative consequences for watersheds, lake-levels, aquifers, and the environment as a whole.

An analysis of watershed characteristics can guide the growth and development within the County. This process can point to areas more suitable for urban development. Defining areas suitable for development should include a comprehensive analysis of watershed dynamics and natural landscape features.

#### **Additional Research Needs**

In addition to the variety of information already compiled on surface water systems, a source water assessment, watershed development analysis and long-term cost benefit analysis for developing floodplains will help to further understand the County level surface water systems.



Photo: NEBRASKAland Magazine / Nebraska Game and Parks Commission



Photo: NEBRASKAland Magazine / Nebraska Game and Parks Commission