

Executive Summary

Introduction

The City of Lincoln (City) and the Lower Platte South Natural Resources District (NRD) are in the process of developing a Comprehensive Watershed Management Plan for the City of Lincoln and its future growth areas. This comprehensive watershed plan is being developed basin by basin, through the completion of watershed master plans for individual basins. Watershed master plans are used as planning tools to be referenced in conjunction with proposed development and as a guide in the preparation of future capital improvement projects (CIPs).

The City and NRD have previously adopted watershed master plans for the Antelope Creek, Beal Slough, Cardwell Branch, Deadmans Run, Little Salt Creek, Southeast Upper Salt Creek (SEUSC) and Stevens Creek basins. Master plans for Haines Branch, Middle Creek, and South Salt Creek basins are currently being prepared. Figure ES-1 shows the completed basins in the Comprehensive Watershed Master Plan highlighted in green and the basin plans under way highlighted in purple.

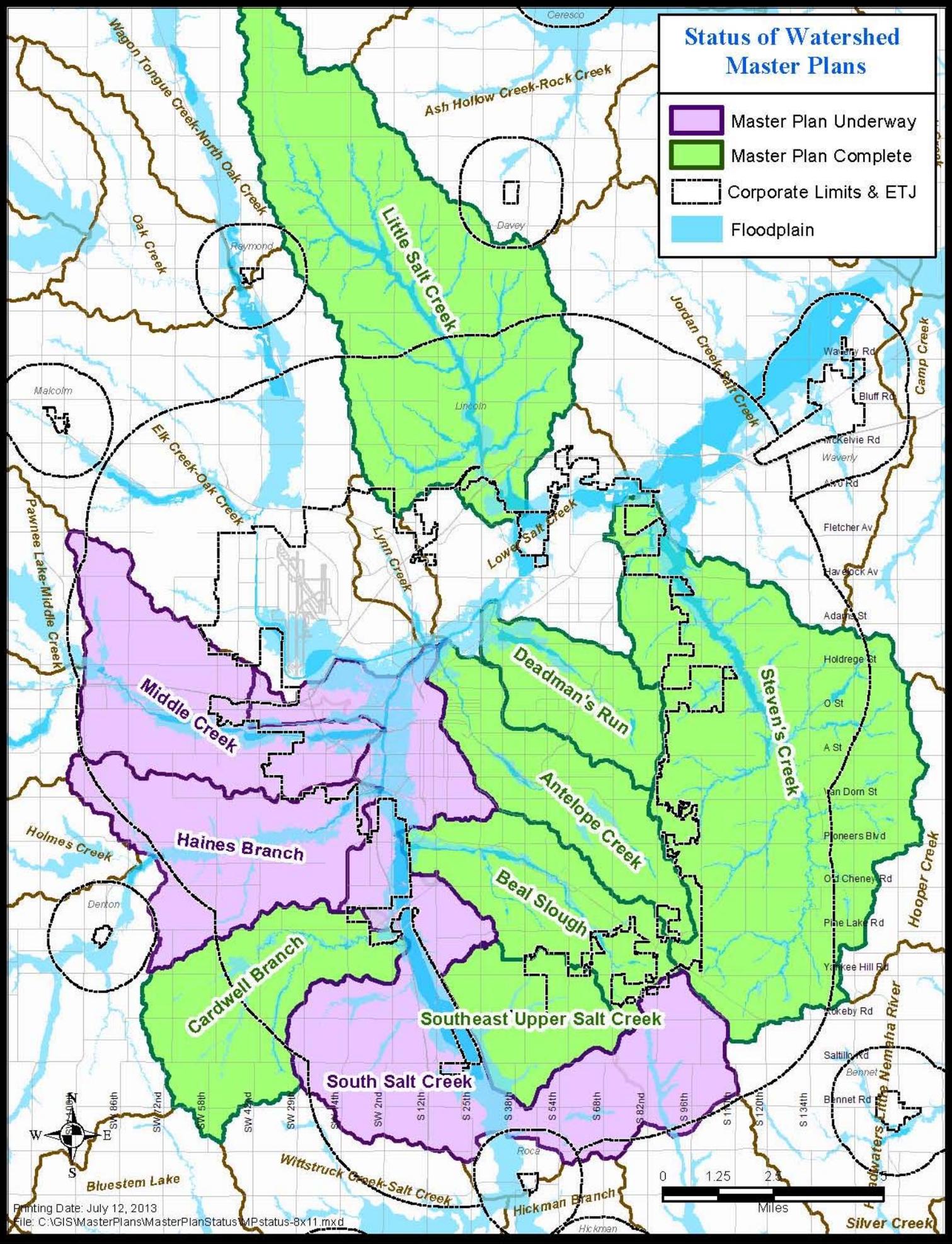
The Middle Creek Watershed Master Plan (Master Plan) is summarized in this report. The purpose of the Middle Creek Watershed Master Plan is to identify needed CIPs for water quality and stream stability as well as to quantify pre-development hydrologic conditions for sub-basins with potential future developments. The Master Plan also identifies special or unique areas in the watershed for consideration during the design and construction of the Watershed CIPs.

The Middle Creek Watershed Study Area is located within and west of the City of Lincoln, to the west of Salt Creek as illustrated in Figure ES-2. The Middle Creek Watershed Study Area is approximately 19 square miles. The limits of the study area were determined based upon the limits of the current Extraterritorial Jurisdiction (ETJ). The studied portion of the watershed is approximately 7 miles in length with a maximum width of about 6 miles. There are over 81 miles of open channel within the watershed study area.

The project team was led by the City and NRD, in cooperation with Lancaster County (County). The City/NRD retained the consultant team of Intuition & Logic (I&L), in association with the U.S. Geologic Survey (USGS) and Heartland Center for Leadership Development (HC).

Status of Watershed Master Plans

- Master Plan Underway
- Master Plan Complete
- Corporate Limits & ETJ
- Floodplain



Public Participation

As part of the Master Plan development, a public participation process was used to solicit input from area residents and other interested parties. The public participation process included the following:

- Two open houses in August 2013 and May 2014
- Project updates and information on the City's website to post preliminary results and upcoming events
- A series of Three newsletters mailed to over 800 individuals and organizations
- The City, County and the NRD each host open public hearings regarding the Master Plan which provide several opportunities for public input.

The public input and feedback received during this process was used by the project team to formulate and refine the master plan recommendations. Section 1 of the Master Plan provides further details regarding the public participation process.

Capital Improvement Projects

The results of the geomorphic, water quality, and special areas evaluations formed the foundation for identifying problem areas in the watershed. Potential improvement projects addressing each problem area were evaluated based on design considerations, economic feasibility, and overall efficiency.

The Master Plan includes 7 stream stability capital improvement projects. The general locations of the projects are shown in Figure ES-3, CIP Locations. Projects 1, 2, 5 and 7 are grade controls along the main stem and tributaries to stop channel incision from advancing upstream. Continued incision can cause erosion and bank failures that could threaten structures. Sediment released from incision and subsequent bank failures could threaten property and natural resources along the channel. These grade controls will hold the profile grade of the channel, reducing the erosion and sediment released.

Project 3 involves replacing the CMP culvert outfalls and constructing scour protection at each location to stop the erosion. Project 6 is a stilling basins at the outfall of an existing culverts in the 7400 block of W O St. Channel erosion and incision have caused eight existing culvert outfalls to be perched above the channel, thereby threatening the stability of the culverts. The stilling basin at the downstream end of culvert will dissipate energy and protect the outfall. Project 4 is a bank stabilization project with associated channel modification to stop erosion along a tributary and protect S Coddington Ave. Several projects will be joint City, NRD, County and State (NDOR) project and will need participation of all entities.

The total cost for all 7 capital improvement projects is estimated to be approximately \$1.7 million using 2014 material and construction costs. Traditional funding options for the Capital Improvement Projects include City stormwater bonds, funding from the Lower Platte South Natural Resources District, and County/State funding for stream stability measures where appropriate in association with County/State road improvement projects. Therefore, projects to protect private infrastructure do not qualify as CIP Projects because they do not typically qualify for public funding.

The recommended projects were ranked using the prioritization categories from the Prioritization Methodology Report for Watershed Master Planning Projects, City of Lincoln, Nebraska, 2006. The prioritization methodology was developed for the City of Lincoln to set priorities and implement projects for watershed master planning each year. The prioritization system contains five major categories including flooding impacts, stream stability, water quality, safety factor, and miscellaneous factors. The projects with the highest point score are considered a higher priority. Table ES-1 lists the results of the estimated project cost and ranking scores for the 7 projects within the Middle Creek Study Area. Further detail on each project, including the problem description and recommendations are found in Section 7 of this Master Plan.

Table ES-1 Project Priority, Rank and Cost

Project Name	Project Type	Priority Score	Project Ranking	Project Cost
MC 1	Grade Control	220	2	\$ 146,000
MC 2	Grade Control	195	7	\$ 87,000
MC 3	Pipe Outfall Erosion Control	220	4	\$ 129,000
MC 4	Bank Stabilization	250	3	\$ 175,000
MC 5	Grade Control	210	5	\$ 590,000
MC 6	Stilling Basin	200	6	\$ 287,000
MC 7	Grade Control	240	1	\$ 297,000
			Total	\$ 1,711,000

Summary

The Middle Creek Watershed Master Plan provides the necessary planning tools and improvement projects to address potential stream stability problems in the watershed. This master plan is a reference for the implementation of improvement projects in the Watershed through the City and County Capital Improvement Programs and the NRD's Long Range Implementation Plan, and as a guide for future growth.

By using the detailed study information and applying the Master Plan elements described above, multiple goals will be achieved including:

- Long-term stream stability that protects public infrastructure
- Reduction of future impacts to water quality and stream stability
- Preservation of aquatic and riparian habitat
- Preservation of natural resources