1 PURPOSE AND BACKGROUND

1.1 Purpose

Between 2000 and 2018, the City of Lincoln (City) and the Lower Platte South Natural Resources District (NRD) developed Watershed Master Plans for all watersheds in the City and its future growth areas, including portions of Lancaster County. An overview of previously master planned areas is shown on Figure 1. The plans for these 14 watersheds have been used to identify and evaluate watershed management projects and recommendations consistent with City and NRD priorities. Typical focus areas included development of existing hydrologic conditions data for the purposes of future development management; identification of key problem areas within the watershed; and development of watershed management activities that facilitate long term sustainability of the watershed. As a result of these evaluations, the City and NRD have identified over 200 capital improvement projects (CIPs). Since all watershed study areas within the jurisdiction now have completed individual watershed master plans, the City and NRD are developing a Comprehensive Watershed Master Plan (Plan) in association with the project team (City, NRD, JEO Consulting Group, Inc., Stantec, and Wright Water Engineers, Inc.).

CIPs identified in prior plans vary in status – some have been implemented, some have been removed from further consideration, and some remain proposed. The Plan focuses on an updated CIP program and prioritization along with a review of selected watershed management activities that support CIP implementation. The Plan is intended to be used to guide future CIPs aligned with the core values of the City's Watershed Management Division:



City of Lincoln ■ Comprehensive Watershed Master Plan ■ August 2022 JEO Consulting Group, Inc.





1.2 Watershed Management and Master Planning History

The City watershed management program was developed in the early 2000's to support comprehensive watershed management objectives within the City's jurisdiction. The initial focus area was flood risk reduction (water quantity) for both urban (developed) and rural (developing) regions of the community. Watershed master planning data are used for both improving existing flooding problems as well as to support assessment of new development for the purposes of meeting stormwater management requirements and avoiding future flooding increases and

impacts. Over time, additional focus areas have been added to include stream stability and water quality. Collectively these three primary focus areas comprise the general framework of the watershed management policy and CIPs developed through the existing master plans. These considerations support the role of watershed management and master plans within the City's broader planning goals.

Watershed master planning objectives have varied over time, necessitating a current review and evaluation of the CIP and watershed management activities previously developed in the historical plans. To provide context for this planning effort, it is informative to understand the focus of prior watershed master plans. The plans were developed in two broad phases, best understood by their timing and context within the development of the City's watershed management program. It is also important to recognize the prominent role floodplain management policy has in the history of the City's flood risk reduction actions and ongoing watershed master plan CIPs that impact flood risk.

A major milestone in the City's flood risk reduction efforts started in 1954 through coordination with the USACE regarding flood risk reduction for Salt Creek completed by the City and the NRD's predecessor. This effort was

CITY COMPREHENSIVE PLAN POLICY P55:

The City of Lincoln Watershed Management program combines previously separate floodplain and stormwater management initiatives. This approach recognizes that floodplains, tributaries, and upland areas are all part of a comprehensive, integrated watershed system. A comprehensive approach to watershed planning is crucial as development expands into new basins around the Lincoln city limits and as redevelopment occurs within the existing urban area. A comprehensive watershed management program needs to incorporate a range of strategies including land use planning, conservation design for new subdivisions, conservation efforts, appropriate standards for floodplains and stormwater, flood warning system development/ expansion, stream stabilization, stormwater storage basins, and other structural flood control efforts.

followed by the City's entry into the National Flood Insurance Program (NFIP) in 1971 and the NFIP's Community Rating System (CRS) in 1991. These actions established the foundation of floodplain management within the City, focusing on flood risk avoidance and reduction for floodprone areas. Following these steps, the City developed the Drainage Criteria Manual (DCM) for the purposes of development management and to establish general drainage management technical standards. Alongside the DCM effort, the City began the development of the Beal Slough Watershed Master Plan. Both of these items were initiated in 1997, with the adoption of both by the City Council occurring in 2000. As a follow up to these foundational elements of the watershed management program, several major actions have taken place that support the identification and ongoing implementation of floodplain management activities. An overview of these actions is provided in the following Figure 2. Collectively the actions preceding this Plan represent the basis for the current CIPs and ongoing watershed management activities.

1.3 Summary of Existing Effective Watershed Master Plans

An overview summary of the effective watershed master plans, basic details, and coverage area is provided in Figure 1 and the following Table 1. These plans and associated CIPs are the foundation of the current planning effort.



Completed Project SSC-3

	Таы		ive water	Shea Master	T lans Gammary
Watershed	Year Completed	Watershed Size (Acres)	Master Plan Study Area (Acres)	Number of CIPs Identified in Original Plan	Plan Purpose and Hydrologic and Hydraulic (H&H) Status
Beal Slough (BS)	May 2000	8,646	8,646	31	To identify CIPs for flood management, water quality and stream stability improvements throughout the area; new H&H was developed for FIRM updates.
Southeast Upper Salt Creek (SE)	October 2003	6,451	6,451	47	To identify CIPs for flood management, water quality and stream stability improvements throughout the area; new H&H was developed for FIRM updates.
Stevens Creek (ST)	March 2005	35,200	35,200	26	To outline long term planning as well as identify CIPs that would address water quality, flood control and stream stability improvements; new H&H was developed for FIRM updates.
Cardwell Branch (CB)	September 2007	10,432	4,928	9	To identify CIPs for flood management, water quality and stream stability improvements throughout the area; new H&H was developed for FIRM updates.
Deadmans Run (DR)	December 2007	5,760	5,760	13	To develop planning tools and a list of CIPs that would improve flood control, stream stability, and water quality in the region; new H&H was developed for FIRM updates.
Little Salt Creek (LS)	June 2009	29,440	29,440	18	To improve water quality, flood management, and stream stability alongside long-term development planning; new H&H was developed for FIRM updates.
Antelope Creek (AC)	March 2012	8,389	4,932	13	To improve water quality by identifying sources of pollution and reducing the impacts below EPA criteria for impaired waters. No new H&H evaluations; this was accomplished as part of a LOMR that was completed as part of the Antelope Valley Project.
Haines Branch (HB)	January 2015	44,160	10,880	10	To identify CIPs that would improve water quality and stream stability along areas prior to future potential development.
Middle Creek (MC)	January 2015	63,360	12,160	7	To identify CIPs that would improve water quality and stream stability along areas prior to future potential development.
South Salt Creek (SSC)	January 2015	263,040*	33,920	19	To identify CIPs that would improve water quality and stream stability along areas prior to future potential development.
Upper Wagon Train (UWT)	February 2017	1,575	1,000	0	To provide watershed specific hydrology and hydraulics for the purposes of supporting future development assessment, and meeting City new growth area development standards. Plan was completed for development management purposes by the Rokeby Coalition; no CIPs were identified.
Lynn Creek (LC)	May 2018	3,840	3,840	7	To identify CIPs that would address stream stability needs throughout the watershed.
North Salt Creek (NSC)	May 2018	551,680*	21,760	5	To identify CIPs that would address stream stability needs throughout the watershed.
Oak Creek (OC)	May 2018	163,840	23,040	4	To identify CIPs that would address stream stability needs throughout the watershed.

Table 1 - Effective Watershed Master Plans Summary

* The drainage areas noted here include the watershed areas upstream of the outlet within the study area of the plan. Therefore, certain upstream watersheds are incorporated in these areas.

Figure 2

WATERSHED MANAGEMENT & MASTER PLANNING HISTORY

April 1971 🗘

The City of Lincoln joins the NFIP.

October 1991 🗘

The City joins the NFIP CRS program.

Watershed Master Plan Development & Implementation

PHASE 1: 2000-2009 🕻

Focus on flood risk reduction, stream stability, and water quality with an emphasis on flood risk analysis and reduction. Plans developed during this phase included:

Beal Slough (2000), Southeast Upper Salt Creek (2003), Stevens Creek (2005), Cardwell Branch (2007), Deadmans Run (2007), Little Salt Creek (2009).

September 2002 🗘

Implementation of large development construction stormwater runoff management through sediment and erosion control.

May 2004 🗘

Implementation of updated floodplain standards pursuant to the Floodplain Task Force Recommendations. These standards included the addition of a Minimum Flood Corridor (MFC).

December 2007 🗘

Salt Creek floodplain study.

2008 🗘

Development of the Lower Platte South NRD's first Hazard Mitigation Plan (HMP), with the City as a participating jurisdiction. The plan was then updated in 2015 and in 2020.

February 2014 🗘

Implementation of post-construction stormwater management regulations for individual sites.

2016-2020 🔇

Development of the Salt Creek Levee Assessment and Systemwide Improvement Framework (SWIF).

🗘 1954 - Present

The City and Lower Platte South NRD have coordinated with the U.S. Army Corps of Engineers (USACE) regarding multiple flood risk reduction actions including:

Salt Creek and Tributaries Flood Control project, Antelope Valley project, Deadmans Run Flood Risk Management project

July 1972

Lower Platte South NRD formed from the Salt Wahoo SID #1.

🕽 1994

Mayor's Stormwater Task Force – developed stormwater quantity management recommendations.

🗘 2000-2012

Antelope Valley Project.

🗘 February 2000

Initial adoption of Drainage Criteria Manual (DCM).

🗘 August 2001

Mayor's Floodplain Task Force – developed floodplain management policy recommendations.

2003 🕽

Watershed Management Division of Public Works and Utilities formed.

🕽 December 2006

Development of Master Plan Capital Improvement Project Prioritization scoring methodology.

Watershed Master Plan Development & Implementation

PHASE 2: 2012-2018

Focus on stream stability and water quality with a lower emphasis on flood risk reduction. Plans developed during this phase included:

Antelope Creek (2012), Haines Branch (2015), Middle Creek (2015), South Salt Creek (2015), Upper Wagon Train (2017), Oak Creek (2018), Lynn Creek (2018), North Salt Creek (2018).

🗘 2015-Present

Deadmans Run Flood Risk Management Project.

🗘 August 2015

The City achieves a CRS ranking of Class 5, providing a 25% flood insurance discount to NFIP policy holders.

-🗘 2020

Salt Creek Floodplain Resiliency Study.

🔉 2020-Present

Evaluation of potential updates to the DCM, and development of this Plan.

1.4 Plan Development

The focus of the Plan is to review the existing CIPs and develop an updated prioritization approach for future CIP implementation planning. Actions in the Plan to support this effort included:

- **1.** Review of historical watershed master plans supporting data and CIPs. This review specifically focused on:
 - a. CIPs and prioritization scoring,
 - **b.** Hydrologic and hydraulic (H&H) analysis data, if available, and
 - c. Supporting Geographic Information System (GIS) data, if applicable.
- 2. Establishing which supporting data are current, best available, and which are no longer relevant for ongoing CIP implementation.
- 3. Update of the prioritization methodology (last evaluated in 2006) for proposed CIPs. This included more detailed reviews of CIPs to support the update.
- **4.** Review of plan supporting data and watershed management activities supporting CIP implementation:
 - a. Minimum Flood Corridor (MFC) application and evaluation of MFC mapping impacts based on proposed policies.
 - b. Stream restoration, including grade control evaluation of stream management policy and approach recommendations to support effective long term stream corridor management, enhancement, and restoration to promote a sustainability policy rather than reactive projects.
 - c. NFIP CRS evaluation of additional activity category point opportunities to maintain or improve the City's CRS class, with a focus on activities related to stormwater management.
- Coordination with stakeholders and a Technical Advisory Committee (TAC) to support this process.

The Plan is intended to be used to prioritize and guide proposed CIP projects associated with the core watershed management focus areas of flood risk reduction, stream stability, and water quality.