

LOWER PLATTE SOUTH natural resources district

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Memorandum

Date: November 13, 2023

To: SCFR (Salt Creek Flood Resiliency) Subcommittee members

From: Mike Sousek, General Manager

RE: SCFR November Subcommittee Meeting Minutes

The SCFR Subcommittee met at 4:00pm on Monday, November 13, 2023, at the NRD Office in Lincoln. Subcommittee members present included Subcommittee chair Larry Ruth, Susan Seacrest, Dave Landis, Deb Eagan, Bob Andersen, Anthony Schutz, Ken Vogel, Ray Stevens and Gary Hellerich. The subcommittee member absent was Chelsea Johnson. Other NRD directors in attendance included Gary Aldridge. One member of the public attended, Lalit Jha. NRD staff members in attendance included Mark Lindemann, Dave Potter, McKenzie Barry, Drew Ratkovec, and myself.

Chair Ruth opened the meeting and addressed the subcommittee welcoming all. The first item on the agenda was discussion on the Joint Salt Creek Flood Resiliency work-plan that was developed between the City of Lincoln and the LPSNRD. Sousek explained the changes since the last committee meeting that were incorporated into the draft of the Joint Salt Creek Flood Resiliency work-plan. It was noted how this document was a great depository of all the things the City and District are doing to address flooding in the past and into the future. It was suggested that due to the complexity of all the various efforts, that a visual diagram be developed to highlight how everything is related and built upon the foundation of the past. Staff will be working to create such a diagram. It was also recognized that this work-plan is a living document and can be modified as the board sees fit. *It was motioned by Director Stevens, seconded by Director Andersen, to recommended to the board that the district accept the Joint Salt Creek Flood Resiliency work-plan as written (see attached document). Motion carried <i>unanimously.*

The second item on the agenda did not require any action but rather a discussion dealing with a flood resiliency engagement plan with the public. Many thoughts were shared on the purpose of defining the problem and how that relates to the discussion on the solutions to the problem. A timeline was briefly discussed on the best time to start a campaign as it relates to when the district wants to begin discussion on the solutions. Other comments dealt with the avenues to reach the public, which included YouTube, civic groups, presence at community events, the use of volunteers to spread the message, and the more traditional efforts such as social media, radio, print, television. Barry presented

estimates on what such a campaign would cost if the district hired an outside firm to help with the more traditional efforts. It was mentioned to keep our message simple as we navigate down this road.

Lastly, a short discussion occurred on the need for this committee to continue to meet. Two objectives were completed, budget and workplan which were the task given to this committee. Chair Landis will continue to contemplate the best course of action for this committee but for the time being hit the pause button and allow the committee to be dormant for a while until it is needed again.

There being no further business the meeting adjourned at 4:56pm.

MJS

cc: SCFR Subcommittee members NRD Director Aldridge NRD staff attending and Donna Reid





LOWER PLATTE SOUTH natural resources district

Flood Resiliency Work Plan

prepared by LTU Watershed Management Division & Lower Platte South Natural Resources District – November 2023

Purpose

The purpose of this work plan is to outline the strategies and programs the City of Lincoln and the Lower Platte South Natural Resources District (LPSNRD), as community stakeholders, have underway and are planning to mitigate the increased risk of flooding due to climate change.

Vision

The joint vision between the City of Lincoln and LPSNRD for floodplain management is to implement sustainable strategies and uphold responsible standards that maximize safety, minimize flood damage, and conserve natural resources to ensure quality of life for future generations. To accomplish this vision, it is recognized that at some point in time, interlocal agreements may need to be developed to utilize certain authorities granted to the City of Lincoln and the Lower Platte South NRD.

Objectives

1. Evaluate the feasibility of implementing structural flood risk reduction measures to mitigate flood risk and reduce floodplain elevations. Identify the challenges and opportunities associated with each strategy and the necessary steps, permitting, and funding requirements, and evaluate the costs to implement and the benefits provided by these strategies.

Actions: Comprehensive Watershed Master Plan, Salt Creek Flood Reduction Feasibility Study

2. Identify the non-structural flood risk reduction strategies recommended in the Salt Creek Floodplain Resiliency Study that are top priorities to mitigate flood risk, evaluate the cost to implement and the benefits provided by the identified strategies, and chart a path to implementation. Actions: Comprehensive Watershed Master Plan, Flood Mitigation Master Plan, Salt Creek Flood Reduction Feasibility Study, Upper Salt Creek Study

3. Inform community members and stakeholders of the higher risk of flooding due to climate change, provide information to the public regarding the potential new floodplain elevation prior to updated FEMA floodplain maps becoming effective, and engage these community members for feedback on the non-structural and structural flood risk reduction strategies to understand the challenges and interests associated with each strategy.

Actions: Equitable Community Engagement, Flood Mitigation Master Plan, Floodplain Remapping

4. Identify potential funding sources to fund feasible flood mitigation strategies that will address the additional flood risk due to climate change, including local funding sources that are sufficient and sustainable to match potential state and federal funding sources for the study, design, and construction of the identified non-structural and structural measures, and position these projects for potential grant funding.

Actions: Evaluation of Alternative Funding Opportunities, Salt Creek Flood Resiliency Study, Little Salt Creek WFPO

Background

The City of Lincoln is focused on mitigating the risk of flooding to our community through floodplain programs such as No Adverse Impact Standards that limit hydrologic and hydraulic revisions in the floodplain for New Growth Areas (areas between the 2004 city limit and present jurisdictional boundaries), minimum corridor requirements, Salt Creek Flood Storage Area requirements, limiting hydrologic increases through detention pond requirements, requirements to keep new residential lots out of the floodplain, encouraging no net fill for public projects and projects that use Tax Increment Financing, building restriction agreements, flood storage easements, and similar type practices. These efforts have earned the City a Class 5 rating in the Federal Emergency Management Agency (FEMA) Community Rating System (CRS) program, which offers all flood insurance policy holders a 25% reduction in flood insurance premiums.

The City also has a long history of partnering with the Lower Platte South Natural Resources District (LPSNRD) in watershed master planning, constructing and maintaining flood control, water quality, and stream stabilization projects, updating floodplain and stormwater standards, updating floodplain maps, and conducting floodplain and stormwater education. The City and the LPSNRD entered into an interlocal agreement in 1996 to cooperate in addressing stormwater quality and quantity issues in the City of Lincoln. This 1996 agreement originated from the agreement in 1965 between the City, Lancaster County, and the Salt-Wahoo Watershed District (the predecessor of the LPSNRD). The intent of these agreements is to divide out responsibility between the parties regarding flooding and stormwater issues, with the LPSNRD being responsible for the major named creeks (like Salt Creek, Beal Slough, and Antelope Creek) and the City being responsible for all other storm drainage within the City.

The City and the LPSNRD, in partnership with the United States Army Corp of Engineers (USACE), have been working together for the past several decades to provide flood protection for residents that live near the Salt Creek channel. The first major flood control effort began with the USACE Salt Valley Flood Control Project in the 1960s, which included 10 flood control dams and a levee system along Salt Creek in Lincoln. The partnership between the City of Lincoln and the LPSNRD was also instrumental in completing the Antelope Valley Flood Reduction Project (see appendix D). Following the completion of these improvements, numerous planning efforts have been completed to identify additional feasible flood control improvements to increase the level of flood protection for area residents. A summary of these efforts can be found in Appendix A and a map of the flood control dams can be found in Appendix B.

Most recently, the City and the LPSNRD completed the Salt Creek Floodplain Resiliency Study, with the goal of illuminating how existing non-structural and structural floodplain management measures can be strengthened to further reduce flooding impacts to existing infrastructure, local businesses, residences, and future developments and enhance the floodplain resiliency in Salt Creek. The study revealed that actual flood risks and potential flood damages in Lincoln are greater than depicted in the current regulatory models, maps, and public information; and, as the climate models illustrate, the flood hazards are expected to increase in the future. This study outlined six recommendations to enhance resiliency, which are summarized here:

- 1. Continue active participation in the FEMA Community Rating System program to continue to provide flood risk reduction and flood insurance premium savings for the residents of Lincoln.
- 2. Adopt higher floodplain regulatory standards for new construction and substantial improvements.
- 3. Update the FEMA regulatory floodplain maps and the drainage design criteria to incorporate NOAA Atlas 14 precipitation information.
- 4. Review the national Best Management Practices (BMPs) to guide a decision-making process for selecting strategic BMPs that align with the goals of making Lincoln more flood resilient.
- Consider implementation of the following non-structural flood resiliency strategies: cluster subdivision regulations, overlay zoning, voluntary buyout program, setbacks and riparian preservation, low impact development regulations, and higher floodplain management standards.
- 6. Continue with the development of a comprehensive flood resiliency strategy for Salt Creek and the City of Lincoln.

Action Items

Equitable Community Engagement

Meets Objective #3

The City and LPSNRD have the goal of increasing civic engagement in our community to advance equity in City/LPSNRD services, resources, and programs, to ensure that everyone has access to the same

quality of life and has the ability to provide input on the decisions that affect their lives. Flooding can impact residents' lives in multiple ways, and it is important that those potentially affected have the opportunity to provide input to evaluate the potential flood mitigation strategies that are best for our community.

Through each study, project, and initiative, a plan for engagement will be developed based on the following framework:

- 1. Why? Formulate concrete compelling purposes for the engagement effort.
- 2. What? Clarify and carefully frame the subject of the engagement effort.
- 3. Who? Identify the right groups of residents and pay attention to marginalized voices.
- 4. How? Select a mix of tools and methods that effectively engage residents.

LPSNRD has continually publicized flood management efforts and the importance of nonstructural and structures for the community. Information has been distributed on these topics through social media, print and digital newspaper advertisement, television and radio advertising, the district's newsletter, among other methods. The Salt Creek Levee System, Antelope Valley Project, high-hazard dams, stream stabilization projects, and other projects have all been highlighted through LPSNRD's various mediums of information distribution.

Continued messaging around these items is important to the education of community members and stakeholders. Coordination between the City of Lincoln and LPSNRD will be important for distribution of a consistent message. Potentially with the assistance of an outside consultant, messaging and information distribution will strongly focus on the impact and progress of Salt Creek Flood Resiliency.

More information can be found in Appendix C.

Timeline: ongoing

Comprehensive Watershed Master Plan

Meets Objective #1 & 4

Between 2000 and 2018, the City and the LPSNRD developed Watershed Master Plans for all 14 watersheds in the City of Lincoln and its future growth areas, including portions of Lancaster County. These Plans identified flooding, stream erosion, and water quality issues, and capital improvement projects to address these issues. The Comprehensive Watershed Master Plan combined these 14 plans into one plan and evaluated the proposed projects under a unified prioritization scoring and cost estimation. This Plan has been adopted as an amendment to the 2050 Lincoln-Lancaster County Comprehensive Plan and will be used to plan future projects.

The City Council and LPSNRD Board annually adopt a work plan on stormwater management, as agreed upon between the two parties in the 1996 Interlocal Agreement. One of the outcomes of this annual work plan is inclusion of capital improvement projects from the Comprehensive Watershed Master Plan Priority List. These projects are reviewed annually to determine the most appropriate project at the

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current time. The City and the LPSNRD will update the Comprehensive Watershed Master Plan as need arises, to identify additional capital improvement projects to address updated flood risk, stream erosion hazards, and water quality issues.

Timeline: adopted in 2022

Flood Mitigation Master Plan

Meets Objectives #2 & 3

The City and the LPSNRD partnered together, building off the 2020 LPSNRD Multi-Jurisdictional Hazard Mitigation Plan, to develop a Flood Mitigation Master Plan (FMMP) that follows the guidelines outlined in FEMA's Community Rating System (CRS). The City is already enrolled in the CRS as a Class 5 community, which currently provides a reduction in flood insurance rates for businesses and residents by 25%. This plan is assessing risk and identifying actions that can reduce long term flood risk to human life, local properties, and the environment. Through the planning process, the City and LPSNRD are promoting public awareness of flood hazards and the community's response to flooding. With feedback from the public, the Final FMMP will be brought to City Council for adoption at the end of 2023 and will be used to help guide ongoing and future action items developed as a result of the FMMP.

Moving forward, the City and LPSNRD will consider implementation of the identified actions in the FMMP. The FMMP will also be incorporated into the next update of the LPSNRD Multi-Jurisdictional Hazard Mitigation Plan.

Timeline: 2021 – 2023

Floodplain Remapping

Meets Objective #3

The City became a Coordinating Technical Partner (CTP) with the FEMA in 2022 to receive funding to update the FEMA regulatory floodplain maps for all of Lincoln based on current topography and updated rainfall data, to portray flooding risks more accurately. Detailed and accurate flood data is essential for managing the local floodplains to protect people from flood risks. Accurate and readily accessible detailed maps allow for consultants, City staff, elected officials, and the overall community to identify flood risks, provides the ability for the City floodplain administrators to respond to questions and concerns from others, and better equip the City to respond to flood emergencies.

The City has received two grant totaling \$940,350 for the first two phase of updating the floodplain maps and anticipates receiving additional grants in the next few years to complete all phases of this project, with the goal of having updated effective FEMA regulatory floodplain maps by 2030. The City will have draft maps available sooner that may be adopted by City Council as flood prone and used to inform the community of the flood risk, prior to the effective FEMA regulatory floodplain maps being published. After the initial floodplain models are developed and problem flooding areas are identified,

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the City and LPSNRD plans to start looking at mitigation options, some of which may already exist as capital improvement projects in the Comprehensive Watershed Master Plan, to address these issues using FEMA's Real Time Technical Assistance (RTTA) program. The goal is to look at feasible alternatives through the RTTA that can then be implemented through other funding programs. Identified projects will be incorporated into the Comprehensive Watershed Master Plan.

*Timeline: 2023 – 2030**

Salt Creek Flood Reduction Feasibility Study

Meets Objective #1, 2 & 3

The City has received a grant through FEMA's Building Resilient Infrastructure and Communities (BRIC) to evaluate the benefits and costs for implementing different non-structural and structural measure on Salt Creek to address the higher risk of flooding based on climate change. The City and the LPSNRD will both be contributing financially and through consultation in this study, with the goal of finding feasible flood reduction and mitigation strategies, outlining the necessary steps and challenges to implementation, and then looking at a path forward for funding. Once feasible strategies are identified, the next step(s) would be to apply for additional FEMA BRIC or Flood Mitigation Assistance (FMA) grants, initiate a request for assistance through the Natural Resources Conservation Service (NRCS) to develop a preliminary feasibility study (PIFR) under the Watershed and Flood Prevention Operations (WFPO) program, and/or submit a letter to the US Army Corps of Engineers (USACE) to request a feasibility study through the General Investigations (GI) program.

Timeline: 2023 – 2025*

Upper Salt Creek Study

Meets Objective #2 & 3

Wilderness Park is an important environmental resource of woodlands, grasslands, and riparian habitat that provides significant flood protection for the City, while also serving as an important recreational and educational wilderness area. The City and the LPSNRD will be conducting a study of how future growth in the upper watershed of Salt Creek may impact Wilderness Park and the City, and what strategies can be implemented to reduce any adverse impacts of to flooding, stream stability, and water quality. The City will evaluate if this study should be incorporated into the Wilderness Park Subarea Plan update.

*Timeline: 2023 – 2024**

Smaller Scale Structural Flood Reduction Projects

Meets Objective #1

Consider implementation of smaller scale structural flood resiliency strategies: Continue planning, design, and construction of flood reduction projects in sub-basin watersheds. Deadman's Run upstream of 48th Street Flood Reduction and components of the Little Salt Creek Ecosystem Restoration Plan and other opportunities at the sub-basin level can be beneficial for flood resiliency. This also includes the operation and maintenance of existing non-federal flood control structures operated by the LPSNRD.

Timeline: ongoing

Agricultural Best Management Practices

Meets Objective #1 & 2

The City and the LPSNRD will continue to promote use of cover crops, riparian buffers, basins, and terrace systems with tiled outlets on agricultural land in the watershed to increase infiltration and reduce runoff, reduce erosion, and improve water quality for Salt Creek and its tributaries. The City will consider cover crops as a requirement on their leased land contracts.

Timeline: ongoing

Evaluation of Alternative Funding Opportunities

Meets Objective #3 & 4

The City currently funds the Watershed Capital Improvement Program for stormwater and flood mitigation studies and projects through General Obligation Bonds. While these Bonds have consistently been successful, they are not a sustainable and efficient funding source, with limitations on how this funding can be used. For example, Bond funding cannot be used for maintenance work, which is a critical component to keep stormwater and flood mitigation projects functioning to provide the intended benefits. The City has the goal of evaluating a Stormwater Utility to generate consistent funding for studies, projects, and maintenance, while also looking at the option of larger General Obligation Bonds to fund larger flood reduction projects. The City will also evaluate other potential Federal, State, and local funding sources, as well as opportunities for partnerships with non-profit and private entities.

*Timeline: 2023 – 2024**

Stormwater & Floodplain Regulations

Meets Objective #2

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The City has adopted and continues to enforce stormwater and floodplain regulations for development and redevelopment projects to ensure these projects do not cause adverse impact to flooding, erosion, and water quality on other property, and to ensure that buildings and infrastructure are built to a safe standard. This includes recent updates to the Flood and Water Quality Protection Manual, the Land Subdivision and Zoning Ordinance, and the Design Standards. The City will continue to evaluate any needs to update these standards, with input from community stakeholders.

Timeline: ongoing

*Timelines are estimates and subject to change (ex: changes in funding availability)

Appendix A – Summary of Watershed Projects and Studies to Reduce Salt Creek Flooding in Lincoln

Major flooding occurred in 1908, 1942, 1950, and 1963 on Salt Creek which led to Salt Creek Flood Risk Reduction Project

Salt Creek Flood Risk Reduction Project (U.S. Army Corps of Engineers)

1967 – Ten Corps of Engineer flood control dams were completed in the Salt Creek Watershed 1968 – The final portion of the levee system completed along Salt Creek in Lincoln

- Levee provides protection from Calvert Street to Superior Street.
- Levee originally designed to provide 100-year protection but today only provides protection from a 50 to 75year event based on the location along the levee system.

LPSNRD Flood Control Structures in the Salt Creek Watershed (USDA NRCS)

1950s to present - 66 LPSNRD managed flood control structures have been constructed to reduce runoff in the Salt Creek Watershed.

1994 Section 205 study

This plan was completed by the Corps of Engineers to look at numerous ways to reduce flooding on Salt Creek

- Study looked at 11 potential sites in the Salt Creek basin for offline storage
- Storage areas narrowed down to three with a benefit cost ratio of 0.8:1.0
- Study looked at raising the levees for 100-year protection but was found to be infeasible
- This was the first study that was evaluated based on the Salt Creek storage areas (ice cube tray effect)

1996 Middle Creek and Oak Creek Flood storage pre-feasibility study

HWS study in conjunction with the 205 study to look at groundwater and soil issues.

1999 Corps of Engineers, Wilderness Park Hydrologic Study

Study showed the flood benefits of keeping Wilderness Park in its current condition.

2006 Geotechnical Engineering Report: Oak Creek Levee Study (Private Airport Levee)

Report evaluated the Oak Creek levee near the airport

- It was determined that the levee did not meet FEMA standards
- Portions of the airport property had to be mapped into the floodplain

2009 City of Lincoln and LPSNRD fresh look at the offline storage on Middle Creek and Oak Creek

- Looked at same basins in more detail of the 1996 Section 205 Study
- Total estimated project cost \$38,600,000
- Benefit Cost Ratio 0.44
- Maximum Flood Depth Reduction on Salt Creek 0.14 feet.

Floods of record in Salt Creek through Lincoln (1989- Present, all crests were measured at the 27th Street Gage on Salt Creek)

- September 1989 Crested at 22.65 ft. No flooding on Salt Creek*
- July 1993 Crested at 26.5 ft. Low lying area flooding adjacent to Salt Creek
- May 2007 Crested at 21.05 ft. Sloughing of some banks but no flooding
- October 2014 Crested at 20.62 ft. No flooding along Salt Creek
 May 2015 Crested at 28.83 ft. Low lying area flooding adjacent to Salt Creek numerous roadways closed down due to flooding.

Appendix B – Map of Watershed Projects to Reduce Salt Creek Flooding in Lincoln



Appendix C – Civic Engagement Framework



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(⑦) WHY?	
Goal	Formulate concrete, compelling purposes for the engagement effort Set transparent goals that help residents understand why you want to engage them.
Questions to Ask	 Why are you asking residents to participate? Is your primary goal to: 1. Advance equity 2. Build relationships 3. Generate knowledge 4. Mobilize resources 5. Share power 6. Some combination of these five? How will you know if you are achieving your goal(s)? How will you communicate your goal(s) to residents?

WHAT?		
Goal	Be clear about the subject of the engagement effort and frame it carefully Explain what you are asking residents to think, talk, or do something about and be clear what is and what is not within the scope of the effort.	
Questions to Ask	How important is this subject of engagement (e.g., a dangerous intersection, the future of the riverfront, etc.) to residents and why? How important is the subject to city officials and why? How has the engagement subject been discussed and resolved (or not) in the past? Do you hope to change the terms of the debate? If so, how will you frame the subject to accomplish that? What role have residents had in defining, redefining, and/or refining the subject? What background information might participants need in order to understand the topic? What are you asking residents to do (e.g., give time, input, resources, expertise, etc.)? What can residents expect to receive from you in return?	

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የ ች) who?		
Goal	Identify the right groups of residents and pay attention to marginalized voices Ensure equitable community representation and meaningful city hall representation.	
Questions to Ask	Are you hoping to engage a broad cross-section of the community or a focused subset of residents relevant to the engagement subject? Who has been engaged on this subject in the past? Should they continue to be? Why? Who has not been engaged but should? Why? Who should be consulted early in the process of deciding who should be engaged? How much latitude will these actors have to determine who participates and how? What are the demographics of the target group, including average age and digital literacy? Have you asked potential participants how to make the engagement more accessible and/or inclusive? Are there specific community leaders, business associations, voluntary civic organizations, or activists being engaged? Are there particular dynamics between those invited to participate (both in general and in relationship to the specific topic of engagement) you should anticipate? Is there trust or relationship building that needs to occur before moving forward with some participants?	
	Who will facilitate? How will the style, position, and decision-making power of the people running the engagement and/or representing city hall affect the engagement?	

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S HOW :	
Goal S	Select a mix of tools and methods that engage residents Optimize for functionality, accessibility, and inclusiveness.
Questions to Ask	 Will you engage participants individually (e.g., surveys, interviews), in small groups (e.g., focus groups, working groups), or as a whole group (e.g., town hall meeting, online event, metaverse neetup, etc.)? What type(s) of interaction (e.g., listening, collaborative inquiry, brainstorming, debating, voting on priorities and preferences, digital forum or discussion, game, etc.) will help you accomplish your engagement goals? What <i>mix</i> of engagement opportunities (e.g., an open town hall forum and a Zoom event; a leliberative poll and a neighborhood listening session; a crowdfunding campaign, a digital anti-litter exampaign, and an in-person clean-up-your-block rally, etc.) maximizes inclusiveness and equity as well as effectiveness and efficiency? What kind of outreach will you do? How will you monitor enrollment, participation, and ongoing engagement? How formal or informal will the terms of the engagement be? How long will the engagement last? What are the key steps at each stage? Who holds authority over decision-making processes? How much power or authority over public policy and decision-making is vested in the engagement process? How will the results inform city hall actions, decisions, or policies? What should participants expect or not expect as a result of their engagement? How will the city communicate decisions and outcomes back to participants and the public?

Appendix D – Summary of Antelope Valley Flood Reduction Project

Antelope Valley Flood Reduction Project:

- Antelope Creek Watershed is one of the 14 watersheds that are part of the City of Lincoln and future growth areas in Lancaster Co.
- Antelope Creek drains 13 sq miles of urbanized land through Lincoln. The upstream Holmes Lake flood control structure controls the upper 5.4 sq miles of drainage, leaving 7.6 miles of uncontrolled drainage downstream.
- Downstream, the remaining uncontrolled drainage was a flood threat to the heart of the city. This flood conveyance was transported through open channel and a 12' x 12' underground box culvert which only had a 5-yr flood event capacity. Any flooding greater than a 5-yr event would flood overland at the city center.
- As a result of flood control studies in the 80's and 90's the City of Lincoln, UNL, and the LPSNRD joined together with public input to develop and implement the Antelope Valley Project.
- Purpose of the project was for Flood Control, Transportation Facilities Improvement, and Community Revitalization.
- The City of Lincoln, UNL, and LPSNRD (Local Sponsors) formed the Joint Antelope Valley Authority (JAVA) in 2000.
- Federal Partners were the US Army Corps of Engineers, Federal Highway Administration, and Housing and Urban Development.

Project Details: More than a flood control project

- The Antelope Valley Project is the biggest public works project to date.
- \$246 M project, of which \$71.1 M was for flood control. (2008 Dollars). Today's \$550 M.
- The AV flood reduction portion of the project was designed by the Corps of Engineers.
- Funding was a mix of State, local, Federal, and private funds.
- Construction took 9 years to complete from 2003 to 2012.
- Project starts at "J" Street and ends at the confluence of Salt Creek. Channel length ~>2 mi.*
- 6 miles of new roadway, 12 new or replaced bridge structures (vehicle, railroad, and pedestrian).
- Removal of two at grade railroad crossings at north 14th and 17th streets.
- Construction of new open channel in 3 phases in addition to rehabbing the existing 12' CBC.
- Construction of new or rehabbed trails and on-street trail connections.
- Landscaping along the entire project.
- Of note is the construction of a labyrinth weir just south of "N" St.- which are useful for water level control in flat areas. The trapezoidal shape provides for a long crest in a limited area & allows it to pass large flows yet keep water levels low.

Project Benefits:

- The flood control portion of the project has reduced the flooding threat to more than 800 dwellings & businesses & 1200 floodplain residents by removing the 100-yr floodplain restrictions on 400 acres of land, which includes 50 acres of UNL property. See graphic
- The AVP has decreased traffic congestion & improved travel time with the construction of the new roadways, bridges, and RR overpass structures. The busy RR used to block road 5 hrs/ day.
- There is an improvement in vehicle and pedestrian traffic safety, which is also enhanced by moving Non-University traffic through 16th & 17th St directly through campus. Travelers now can use the new Antelope Valley Parkway road.
- The AVP has spurred the creation of community revitalization projects: Commercial and
 residential development examples are the Assurity Center to the West, the Hub Café right here,
 and new residential housing can be viewed to the east from where we are located right now.
 There continues to be new development along this corridor, including recent mixed-use redevelopment in the Telegraph District at the upstream portion of the project.
- The linear greenway connects Antelope Park to the south to the Innovation Campus at State Fair Park to the north and provides biker/pedestrian trail connections to 6 other trails and increased public park and rec space at Union Plaza, Trago Park, and Fleming Fields.

Operation & Maintenance:

- The City and NRD have an agreement in place in the O&M of Antelope Valley project and shares responsibilities to keep the project operational and
- NRD is the local sponsor to the USACE for the Flood Protection portion of AV
 - Coordinate with the USACE on Inspection

Antelope Creek E coli De-Listing

- Only one of 90 in the nation to de-list for E coli, with few in an urban setting.
- City & NRD developed Antelope Creek Watershed Master Plan
- Focus on Water Quality
- City/NRD 50/50 cost-share (City Lead)
- E coli Source- Non-point with potential contributors:
- City Wildlife
- Birds
- Pets
- Animals at State Fair Park (Livestock, Horses)
- Lincoln Zoo

What was done?

- Open channel & daylight drainages (bio-swales, bio-retention)
- State Fair Park moved
- Better capture of stormwater runoff events

- BMP's at Zoo
- Education- Dog waste stations
- CAP- Rain gardens (cost-share 119 projects) Commercial & Residential