

Southern Sarpy Watersheds Partnership

Stakeholder Engagement Meeting



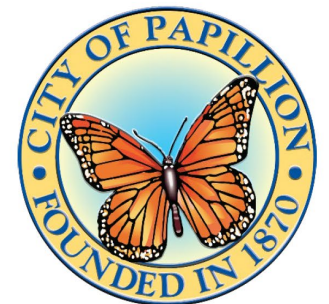
Background & Introduction

What is the Partnership, who is involved, where does it work, and what are its goals?

The Southern Sarpy Watersheds Partnership

The Partnership was created in 2016 to establish the framework for a stormwater management program and to develop a watershed master plan. The plan addresses surface water quality, stormwater quantity and stream stability.

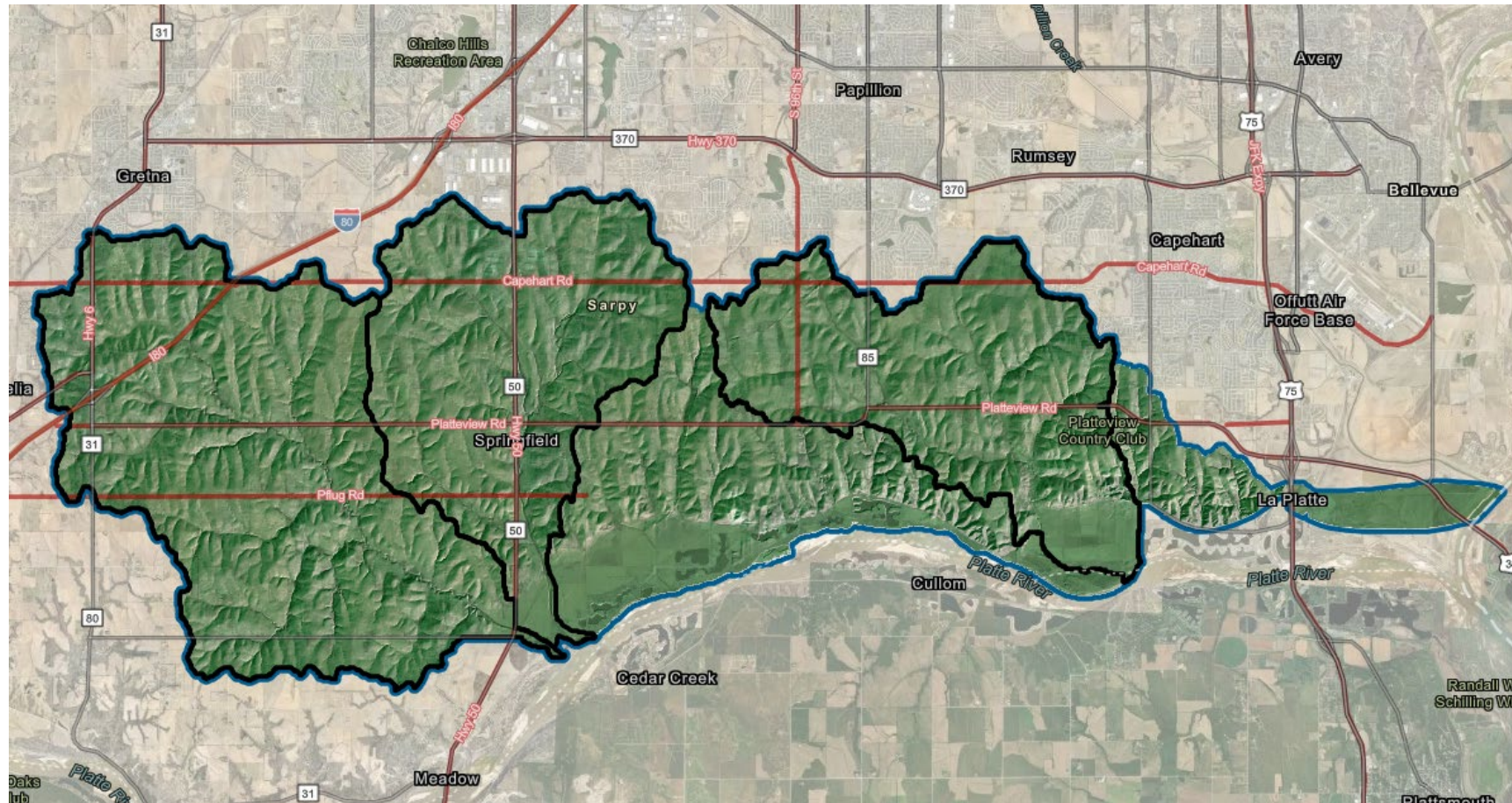
The Partnership utilized the existing Papillion Creek Watershed Partnership (PCWP) as its foundation for interim policies while a Southern Sarpy specific Plan was developed.



The Watershed Management Area

The plan to provide sewer service in Southern Sarpy County is spurring urban and suburban development. This development is the basis for the Watershed Management Area, where the Partner jurisdictions enforce the Stormwater Management Policies and collect Watershed Fees.

This area contains the Buffalo, Springfield, and Zwiebel Creek Watersheds which were studied during development of the plan.

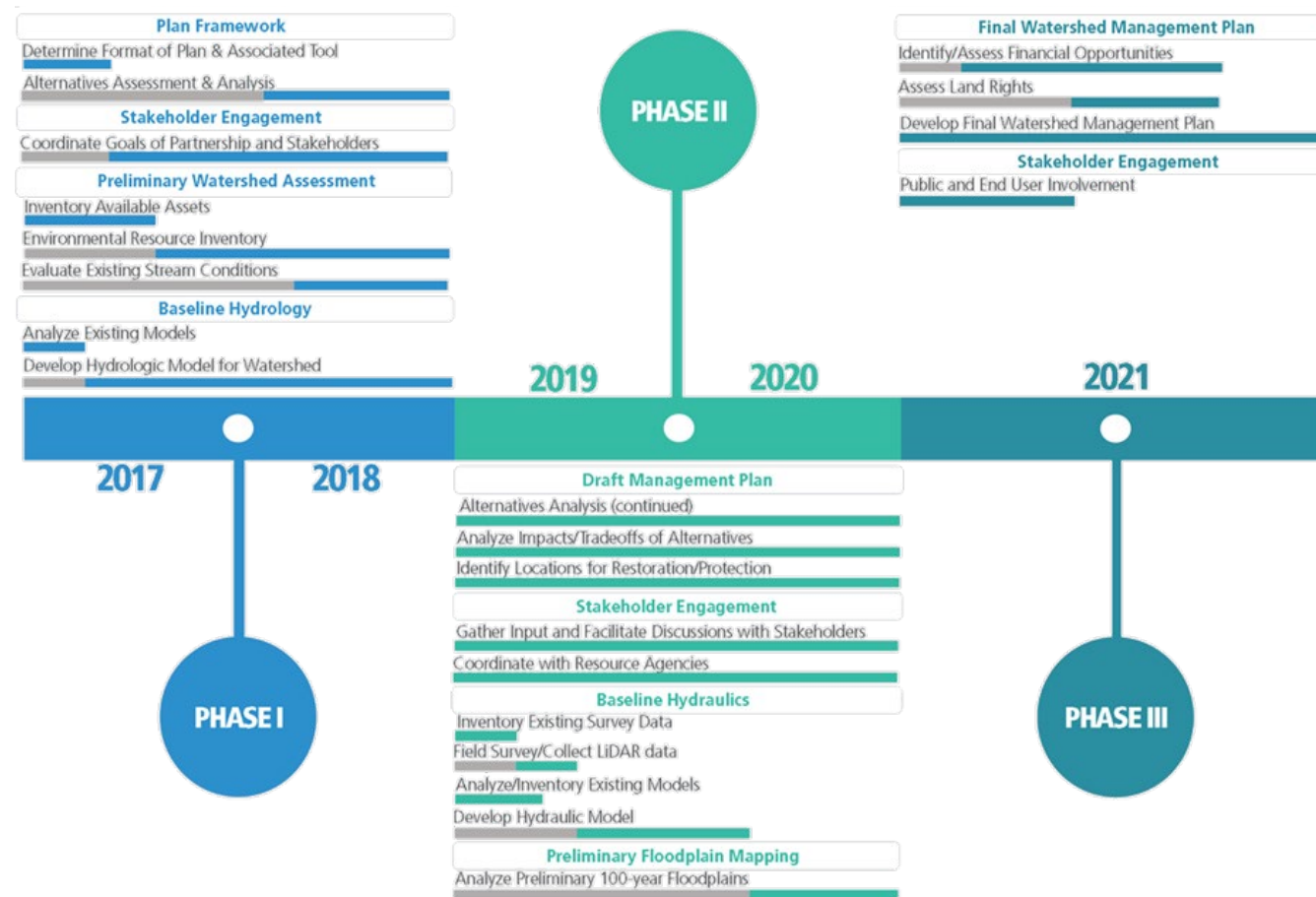


The Study Process

In 2017, FYRA Engineering (now Houston Engineering) was selected to study hydraulics and hydrology and the effects of anticipated development in the Watershed Management Area to help inform the Plan.

The study showed that flood risk would minimally increase with new development due to physical watershed characteristics. The benefit-cost analysis of providing peak flow management determined that the cost was significantly disproportionate to the benefits of reducing or maintaining increased discharges associated with future land use within the floodplain.

An investigation of the soils in the watersheds revealed that the riparian areas largely contain highly erosive soils which will create challenges with increasing development and the increased discharges associated with the changing land use.



Stream Degradation in the Southern Sarpy Watersheds

Streams in the Watershed Management Area have already begun to degrade making stream stability a key issue for the Partnership. As the Watershed Management Area continues to develop, the risk of degradation increases the threat to public infrastructure and private property.

Photo: MoPac Trail Bridge Springfield Creek Degradation



Planning and taking action proactively helps to prevent increased challenges in the future.

While the two areas differ, examples from the more developed Papillion Creek Watershed clearly show the impact excessive degradation can have on public infrastructure and private property.

Photo: Cole Creek in the Papillion Creek Watershed



The Partnership's Goal

The goal of the Partnership is **proactive management** within the Watershed Management Area to **protect infrastructure** and **preserve natural resources** by establishing regionally common goals and standards for storm water.

This presentation will detail the Partnership's efforts and future plans to meet this goal.

Photo: DS-24 in Buffalo Creek Watershed



Policy Recommendations

In 2016 the Partnership adopted interim policies based on the Papillion Creek Watershed Partnership's Policies, for use while the Southern Sarpy Watershed Plan was being developed.

The Partnership's Interim Policy Groups are:

1. Water Quality Improvement
2. Peak Flow Reduction
3. Landscape Preservation, Restoration, and Conservation
4. Erosion and Sediment Control and Other Best Management Practices (BMPs)
5. Floodplain Management
6. Stormwater Management Financing

EXHIBIT B SOUTHERN SARPY WATERSHED STORMWATER MANAGEMENT POLICIES

POLICY GROUP #2: PEAK FLOW REDUCTION

ISSUE

Urbanization within the Southern Sarpy Watershed will increase runoff leading to flooding problems and diminished water quality.

ROOT POLICY

Maintain or reduce stormwater peak discharge during development and after full build-out land use conditions from that which existed under baseline land use conditions.

SUB-POLICY

- 1) Regional stormwater detention facilities and other structural and non-structural BMPs shall be located in general conformance with an adopted Southern Sarpy Watershed Management Plan and shall be coordinated with other related master planning efforts for parks, streets, water, sewer, etc.
- 2) All new developments and significant redevelopments shall maintain or reduce peak discharge rates during the 2, 10, and 100-year storm event under baseline land use conditions.

REFERENCE INFORMATION

DEFINITIONS

- 1) Low-Impact Development (LID). A land development and management approach whereby stormwater runoff is managed using design techniques that promote infiltration, filtration, storage, evaporation, and temporary detention close to its source. Management of such stormwater runoff sources may include open space, rooftops, streetscapes, parking lots, sidewalks, medians, etc.
- 2) Water Quality LID. A level of LID using strategies designed to provide for water quality control of the first ½ inch of stormwater runoff generated from each new development or significant redevelopment and to maintain the peak discharge rates during the 2-year storm event to baseline land use condition, measured at every drainage (stormwater discharge) outlet from the new development or significant redevelopment.
- 3) Peak Discharge or Peak Flow. The maximum instantaneous surface water discharge rate resulting from a design storm frequency event for a particular hydrologic and hydraulic analysis, as defined in the Omaha Regional Stormwater Design Manual. The measurement of the peak discharge shall be at the lower-most drainage outlet(s) from a new development or significant redevelopment.
- 4) Regional Stormwater Detention Facilities. Those facilities generally serving a drainage catchment area of 500 acres or more in size.
- 5) Baseline Land Use Conditions. The pre-developed conditions which existed in Year 2014.
- 6) Full Build-Out Land Use Conditions. Fully platted developable land use conditions for the Southern Sarpy Watershed are assumed to occur by the Year 2055; or as may be redefined through periodic updates to the respective community and county comprehensive plans.

The Partnership's Recommended Policy Groups are:

1. Water Quality Improvement
2. Peak Flow Management
3. Stream Corridor Preservation
4. Erosion and Sediment Control and Other Best Management Practices (BMPs)
5. Floodplain Management
6. Stormwater Management Financing

These recommendations were developed collaboratively by the Partners based on the study completed by Houston Engineering.

EXHIBIT B SOUTHERN SARPY WATERSHED STORMWATER MANAGEMENT POLICIES

POLICY GROUP #2: PEAK FLOW MANAGEMENT

POLICY: Maintain stormwater *peak discharge* during development and after *full build-out land use conditions* from that which existed under *baseline land use conditions*.

REQUIREMENTS:

- 1) All *new developments* and *significant redevelopments* shall maintain or reduce peak discharge rates during the 2- and 10-year storm event under baseline land use conditions.

GOALS:

- 1) Limit increases in *peak flow* for frequent storm events to prevent excessive flooding and erosion.
- 2) Reduce the potential risk of damage to infrastructure.

SEE APPENDIX A – DEFINITIONS FOR *REFERENCED INFORMATION*

Substantial Policy Recommendations

Many of the policies will remain the same, however there will be some key changes. Where the PCWP has focused on reservoirs for flood reduction, the SSWP will focus on grade control for stream stability.

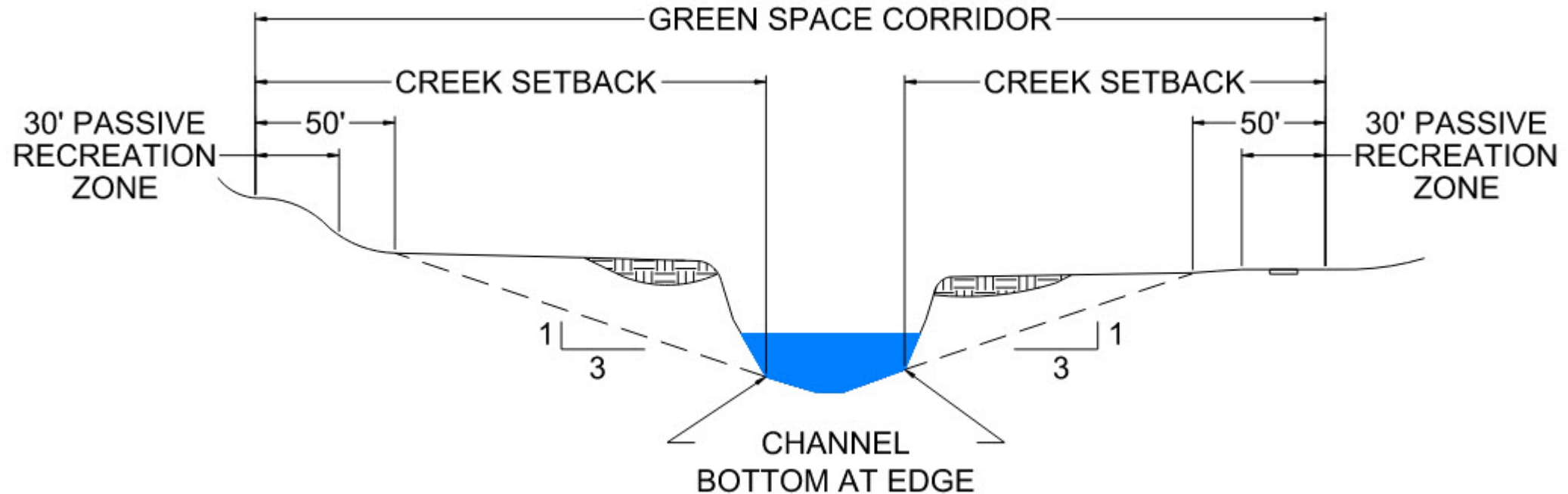
1. Reduce the peak flow maintenance requirement to the 2-year and 10-year peak runoff events for new developments. Maintenance of the 100-year peak runoff is no longer required.
2. Within the creek setback, the outer 30 feet may be used for passive recreation features such as trails.
3. Grade control structures designed to prevent stream bed degradation in excess of four feet will be required on streams identified in the Watershed Management Plan. The construction costs for these structures will be reimbursed by the Partnership with Watershed Fees.

Policy Group	Interim Policy	Recommended Policy
1) Water Quality Improvement	<ul style="list-style-type: none"> Retain LID Storm (Control first $\frac{1}{2}$" of runoff; maintain peak flow from 2-year storm) 	<ul style="list-style-type: none"> Retain LID Storm (Control first $\frac{1}{2}$" of runoff; maintain peak flow from 2-year storm)
2) Peak Flow Management	<ul style="list-style-type: none"> Maintain or reduce peak discharge rates of the 2-, 10-, and 100-year storm events on all new development 	<ul style="list-style-type: none"> Maintain peak discharge rates of the 2- and 10-year storm events on all new development
3) Stream Corridor Preservation	<ul style="list-style-type: none"> Dedicate a creek setback (3:1 + 50') along all streams 	<ul style="list-style-type: none"> Dedicate a creek setback (3:1 + 50') along all streams and allow passive recreation in the outer 30' Construction of grade control structures required in all streams with a drainage area of 0.5 mi² or greater
4) Erosion and Sediment Control and Other BMPs	<ul style="list-style-type: none"> Comply with state and federal regulatory requirements 	<ul style="list-style-type: none"> Comply with state and federal regulatory requirements
5) Floodplain Management	<ul style="list-style-type: none"> 25% floodway fringe fill limitation 	<ul style="list-style-type: none"> 25% floodway fringe fill limitation
6) Stormwater Management Financing	<ul style="list-style-type: none"> Private (1/3) and Public (2/3) to support Stormwater Program and development of Watershed Management Plan 	<ul style="list-style-type: none"> Grade control structure construction cost to be reimbursed by the Partnership

Setback Area

A setback area of three times the channel depth plus fifty feet from the edge of the channel bottom on both sides of the channel is required. The setback area provides:

- Protection from stream widening and meander
- Space in the outer 30 feet where passive recreation can be incorporated, creating a green space corridor for communities



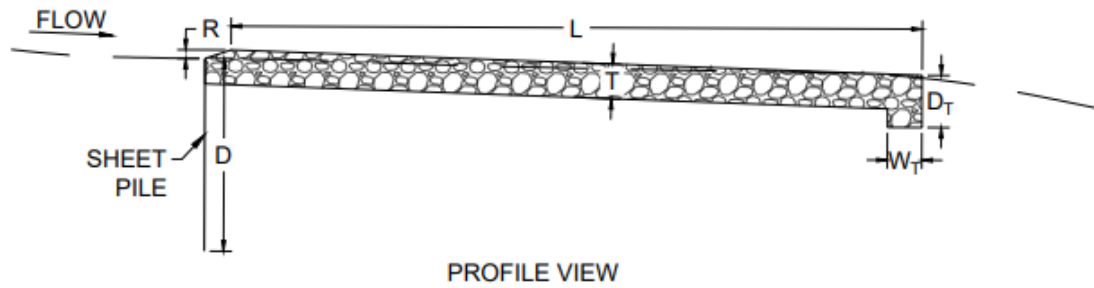
Grade Control Structure Recommended Policies

- Grade control structures are required to be installed along all streams with a drainage area of at least 0.5 square miles at the time of development.
- Grade control structures must be designed to prevent stream degradation of more than four feet.
- The construction costs of the grade control structures will be reimbursed by the Partnership with Watershed Fees.
- In areas that have been platted prior to the adoption of the new policies, the Partnership will construct the necessary grade control structures.

These policies will prevent substantial stream degradation from occurring and help support the construction of projects at the time of development.



Grade Control Structure Example

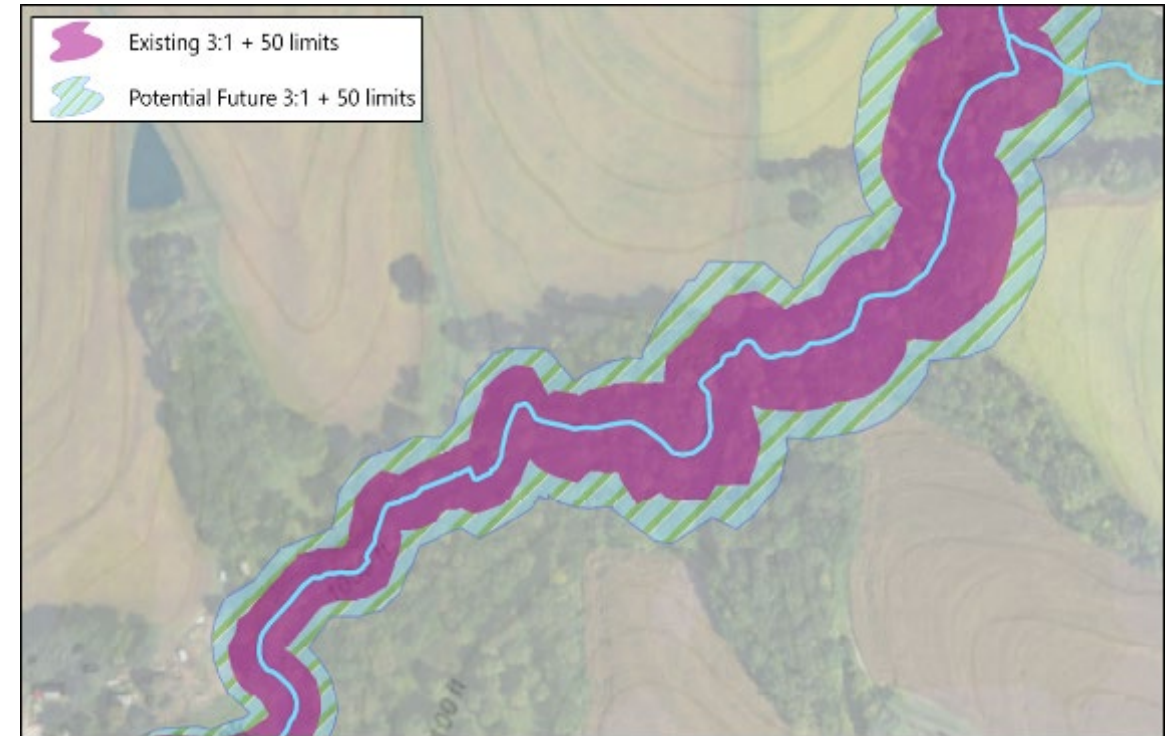


Grade Control Policy Alternatives

1. Accept damage from stream degradation
2. Increase setback area to account for future degradation
3. Grade control for stream stability

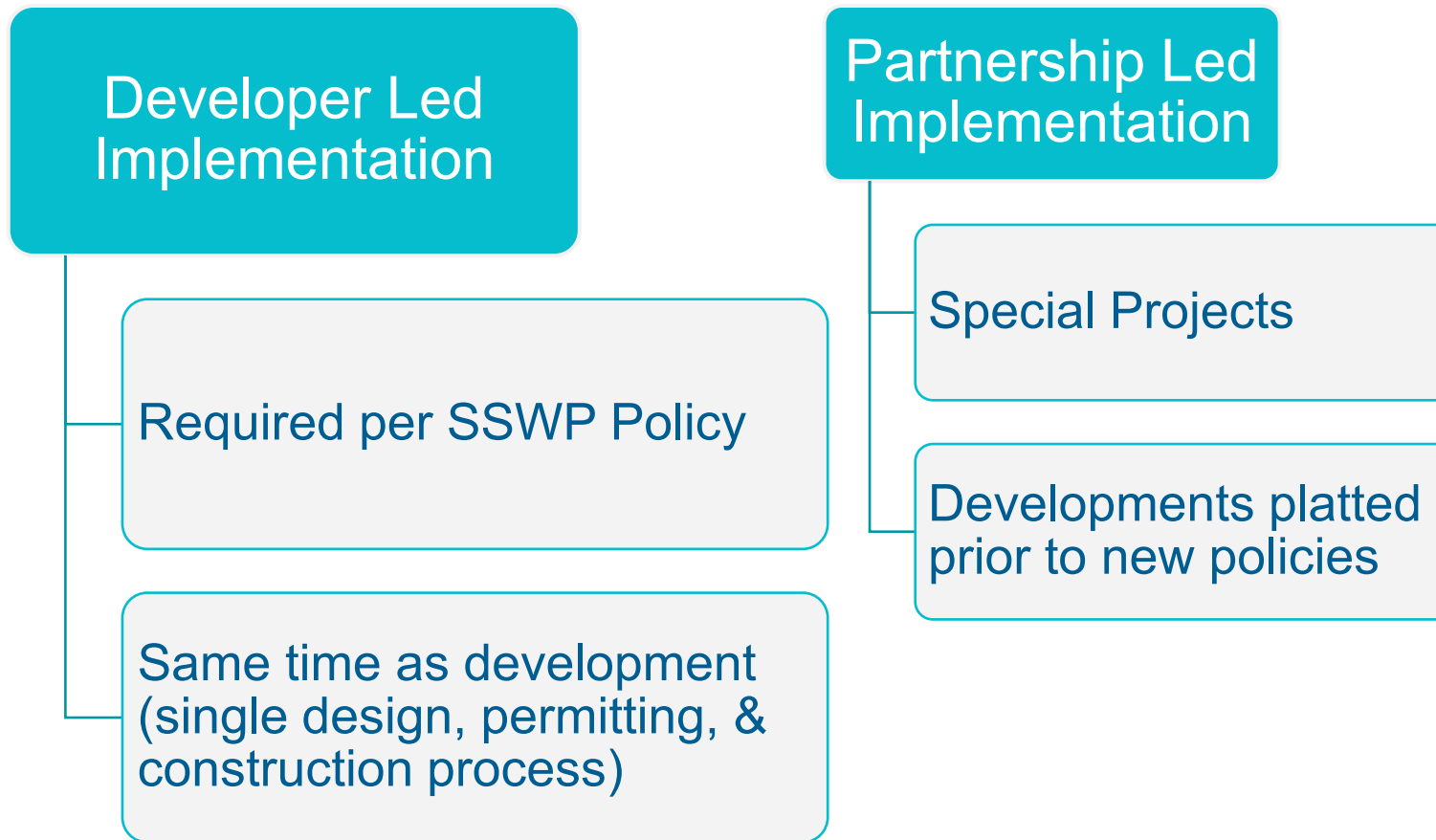
Grade Control Policy Key Benefits

1. Cost savings through a single design, permitting, and construction process (economy of scale)
2. Project construction can happen at the pace of development in the watersheds



Grade Control Implementation General Approach

The Partnership does not have the resources to manage the number of anticipated projects. By collaborating with the development community, the recommended grade control projects can occur more efficiently at the pace of development.



Developer Led Implementation Process

Design & Review

- Developer responsible for design
- Local jurisdiction responsible for reviewing and approving project design along with plat application; Papio NRD can assist with technical input on reviews
- Design guidance document will be available to aid in design and review

Permitting

- Developer responsible for obtaining permits
- Design & permitting guidance document will be available to expedite application

Developer Led Implementation Process

O&M Enforcement

- SID responsible for O&M until annexation by local jurisdiction
- O&M easement and maintenance agreement signed prior to reimbursement

Reimbursement

- Papio NRD will administer reimbursement with Partnership funds
- 100% reimbursement of construction costs after review and approval
- Guidance document will include pre-approved material unit cost range

Developer Led Implementation Process Outline

<u>Component</u>	<u>Responsible Party</u>
Design	Developer
Review	Local jurisdiction
Permitting	Developer
O&M	SID/Local jurisdiction
Reimbursement	Partnership

Partnership Led Implementation



Project Identification

- Partnership will maintain a list of potential projects (parcels platted prior to new requirements, special projects, etc.)
- Priority projects will be selected based on available budget, impact and partner feedback



Project Management

- Papio NRD will manage design and construction of Partnership projects
- O&M responsibility will vary based on project specific agreements

Grade Control Structure Design & Permitting Guidance

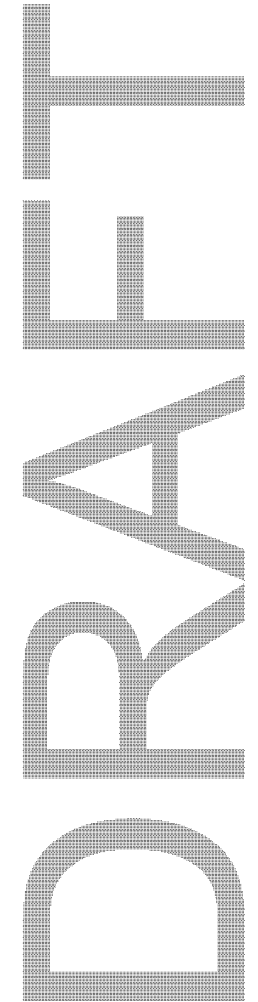
The Partnership understands that for effective execution of new policies and procedures guidance is required. To support the design, permitting, and construction of grade control structures as part of the Watershed Plan, the Partnership is developing a full design guidance document and permitting template.

Additionally, the Guidance Document will detail the process by which developments may be reimbursed by the Partnership for the construction of required grade control structures. The Partnership will fund reimbursement with Watershed Fees.

Southern Sarpy Watershed SWMP Design and Permitting Guidance Document

Table of Contents

1. OVERVIEW AND DESIGN INTENT
2. USACE 404 PERMITTING PROCESS
3. GRADE CONTROL STRUCTURE SUBMITTAL
4. COST REIMBURSEMENT
5. OPERATION AND MAINTENANCE
6. APPENDICES



Guidance Document Further Details

Design & Permitting

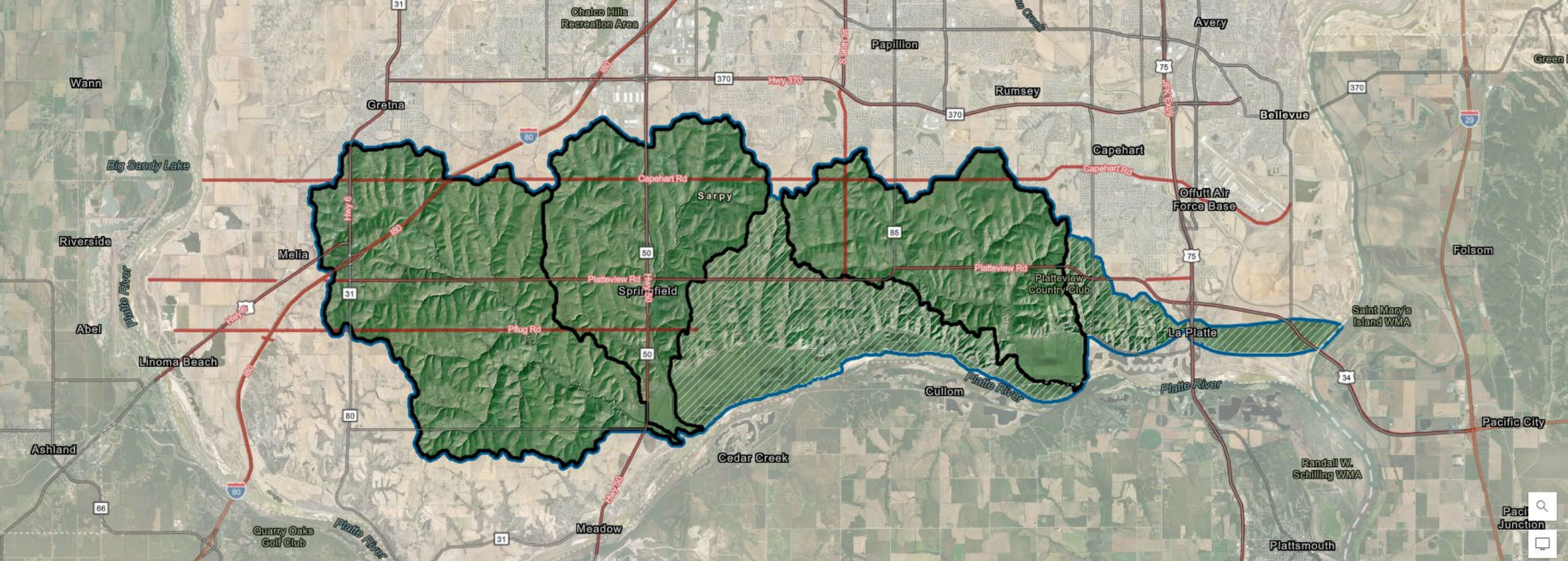
- 5 standard grade control template designs
- Guidance for multiple potential types of permits
- Developed collaboratively with the USACE and the Technical Advisory Group

Reimbursement

- 100% of construction costs reimbursed
- Acceptable range of unit costs provided
- Reimbursement processed within 60 days of Public Improvement Inspection

The Watershed Management Plan

The Watershed Management Plan details Partnership projects and policies which address issues related to surface water quality, stormwater quantity, and stream stability in the Watershed Management Area.



The Watershed Management Area

Blue Outline - The Watershed Management Area where the Partner jurisdictions enforce the Stormwater Management Policies and collect Watershed Fees.

Black Outlines - Buffalo, Springfield, and Zwiebel Creek Watersheds

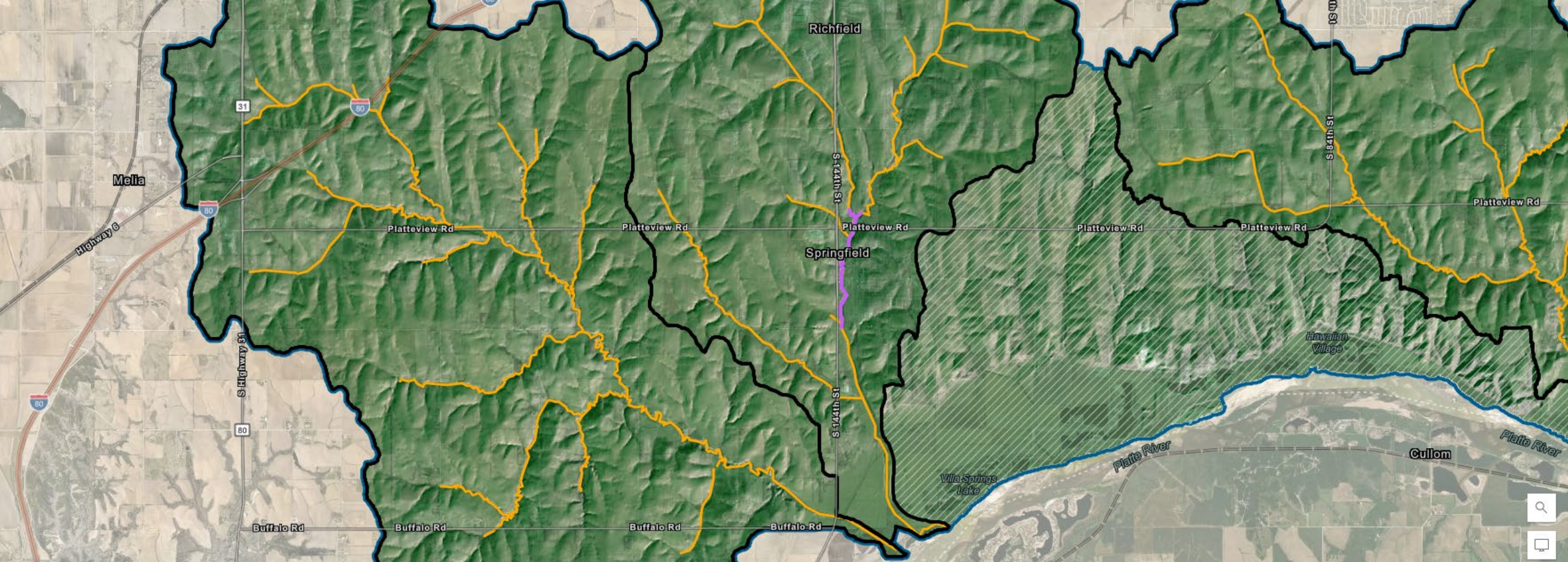
Striped Areas - The entire Watershed Management Area has not been studied. The striped areas shown on the map are future planned study areas where the need for additional projects is undetermined.



Stream Project Segments

One component of the Watershed Plan is the construction of grade control structures on streams with a drainage area of at least 0.5 square miles. **65.2 miles** of stream (shown in orange) meet this requirement.

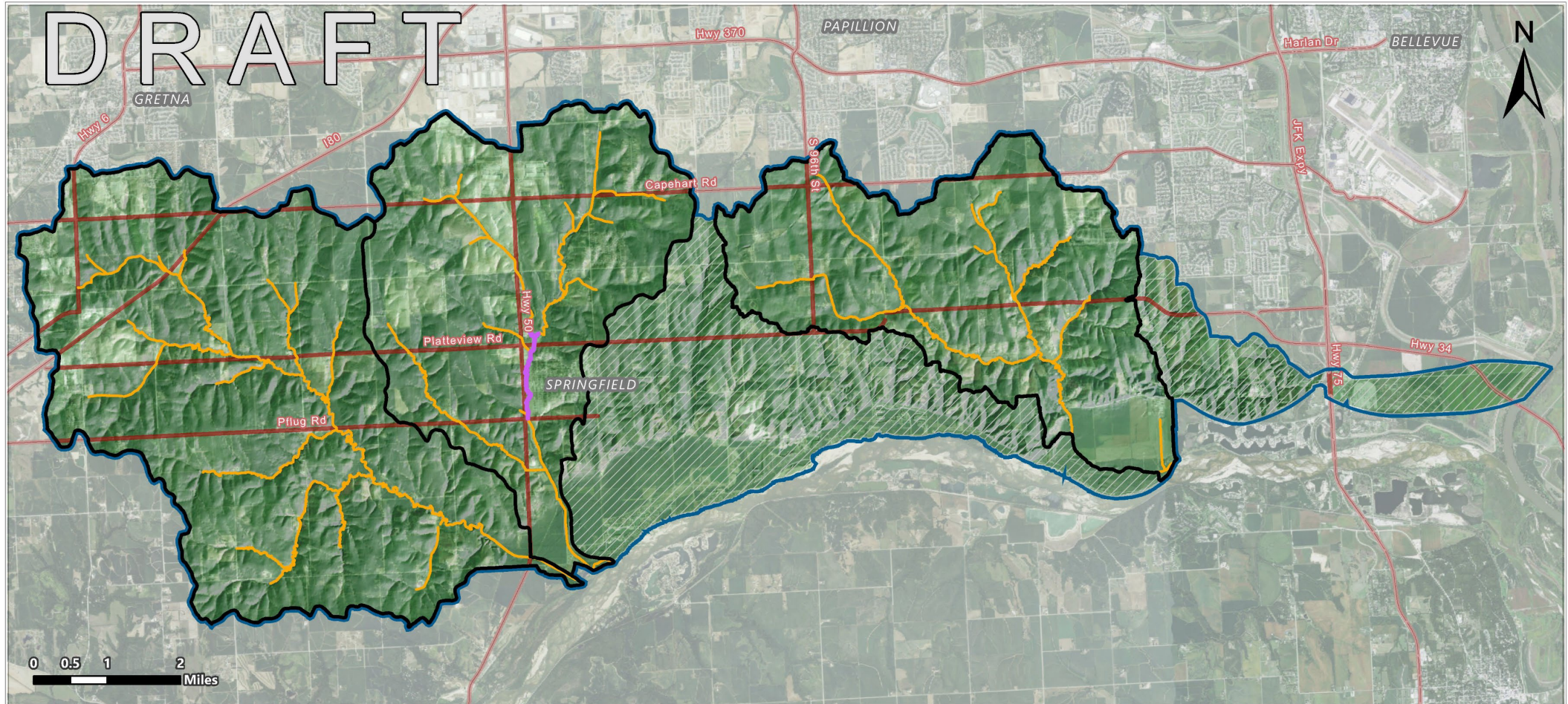
Developments adjacent to the displayed stream segments will be required to construct grade control structures per the policy requirements. Construction costs will be reimbursed by the Partnership with Watershed Fees.



City of Springfield Channel Stabilization Project

The Partnership has also proposed a grade and bank stabilization project through the City of Springfield to protect public infrastructure and private property along the stream section shown in purple.

Southern Sarpy Watersheds Partnership (SSWP) Watershed Management Plan



- Watershed Boundaries
- Watershed Management Area ^a
- Major Roads
- City of Springfield Channel Stabilization Project ^b
- Stream Project Segments ^c
- Future Planned Study Areas

KEY WATERSHED MANAGEMENT POLICIES

- 1) 2- and 10-year peak discharge maintained by new development
- 2) Green space corridors of 3:1 + 50' maintained along all watercourses (not mapped)
- 3) Grade control structures installed in all streams with a drainage area greater than 0.5 mi² as mapped by the Stream Project Segments.

WATERSHED MANAGEMENT COSTS: \$70 Million (in 2022 Dollars)

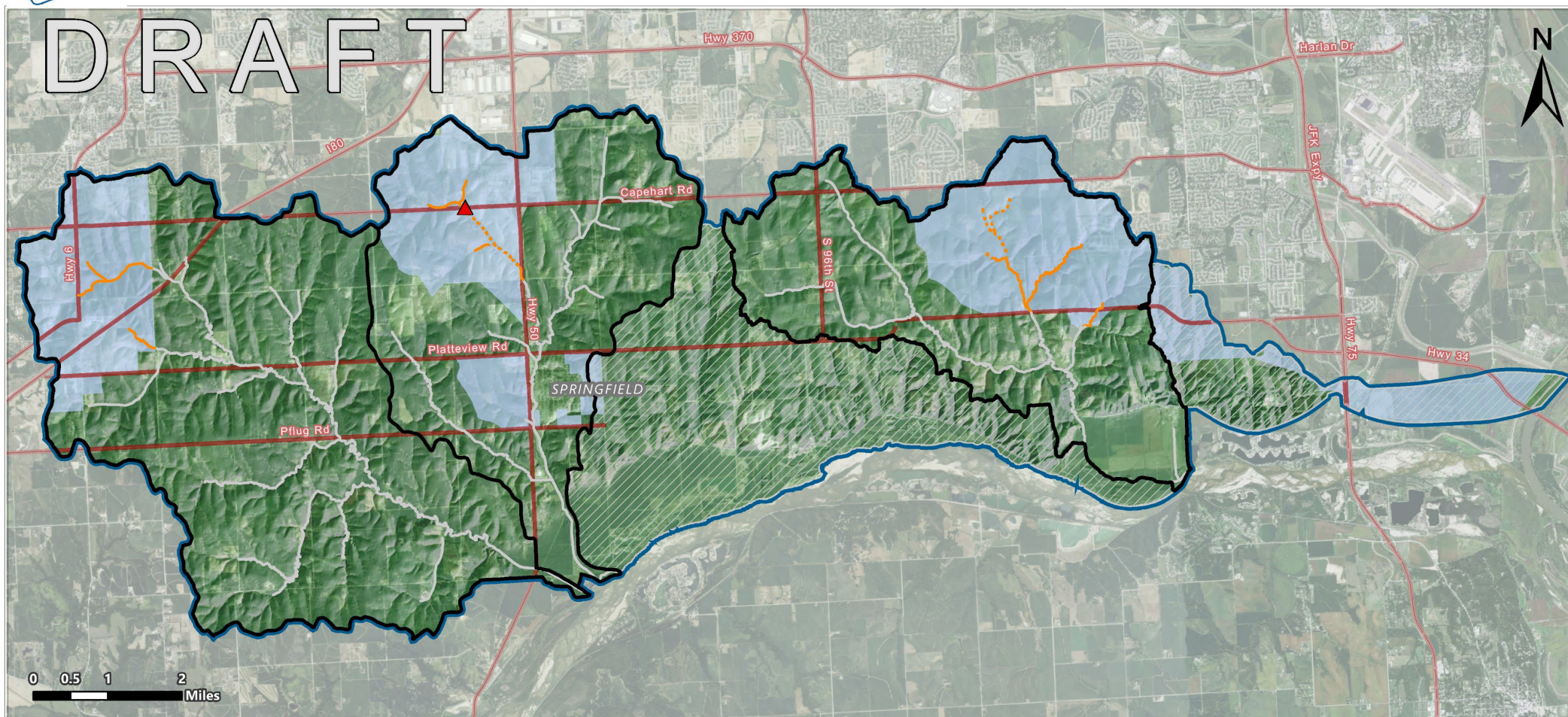
NOTES

- ^a The Watershed Management Area is the area subject to the plans and policies defined in the Watershed Plan.
- ^b A proposed grade and bank stabilization project by the Partnership.
- ^c 65 miles of stream were identified based on having a drainage area greater than 0.5 mi². Grade stabilization projects designed to prevent more than 4 ft of degradation will be constructed or funded by the SSWP in these streams.

The Implementation Plan

The Implementation Plan more specifically details the projects that the Partnership intends to complete over the next five year plan period (July 2024 - July 2029) and distinguishes where grade control projects are to be constructed by developers or by the Partnership based on existing development.

Southern Sarpy Watersheds Partnership (SSWP) Five Year Implementation Plan (2024-2029)



- Watershed Boundaries
- Watershed Management Area ^a
- Urban Development Zones ^b
- 5-Yr Plan Stream Project Segments - Developer Led ^c
- 5-Yr Plan Stream Project Segments - Partnership Led ^c
- Stream Project Segments Outside 5-Yr Plan
- Proposed Partnership Project ^c
- Future Planned Study Areas

KEY WATERSHED MANAGEMENT POLICIES

- 1) 2- and 10-year peak discharge maintained by new development
- 2) Green space corridors of 3:1 + 50' maintained along all watercourses (not mapped)
- 3) Grade control structures installed in all streams with a drainage area greater than 0.5 mi² as mapped by the Stream Project Segments.

IMPLEMENTATION PLAN COSTS: \$9 Million (in 2022 Dollars)

NOTES

- ^a. The Watershed Management Area is the area subject to the plans and policies defined in the Watershed Plan.
- ^b. Sarpy County Sewer Agency projection of area anticipated for development used for five-year implementation planning purposes.
- ^c. 10 miles of stream were identified based on having a drainage area greater than 0.5 mi² within the Urban Development Zone. Grade stabilization projects designed to prevent more than 4 ft of degradation will be led or funded by the SSWP in these streams.

Important Dates

Between now and July 1st, 2024 when the new interlocal agreement must be adopted, the Partnership will be working on developing the Guidance Document and finalizing the Watershed Management Plan.

2023

July 28th

- Deadline for comments on plan recommendations (submitted via <https://southernsarpy.org/submit-comments/>)

2023

December 31st

- Watershed Management Plan finalized based on stakeholder feedback.

2024

July 1st

- Interlocal Agreement adopted by all Partner jurisdictions. Policies incorporated into local regulations.

Questions?



Submit comments via <https://southernsarpy.org/submit-comments/>