

An aerial photograph of a city, likely Brookings, South Dakota, showing residential houses, trees, and a large building with a dome. The image is overlaid with a semi-transparent blue filter. The title text is centered in the upper half of the image.

# City of Brookings Master Drainage Plan

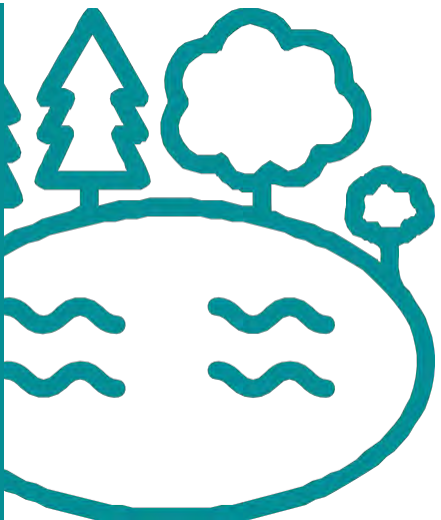
**COUNCIL COUNCIL**  
AUGUST 13, 2024

# Plan Goals

REDUCE  
FLOODING

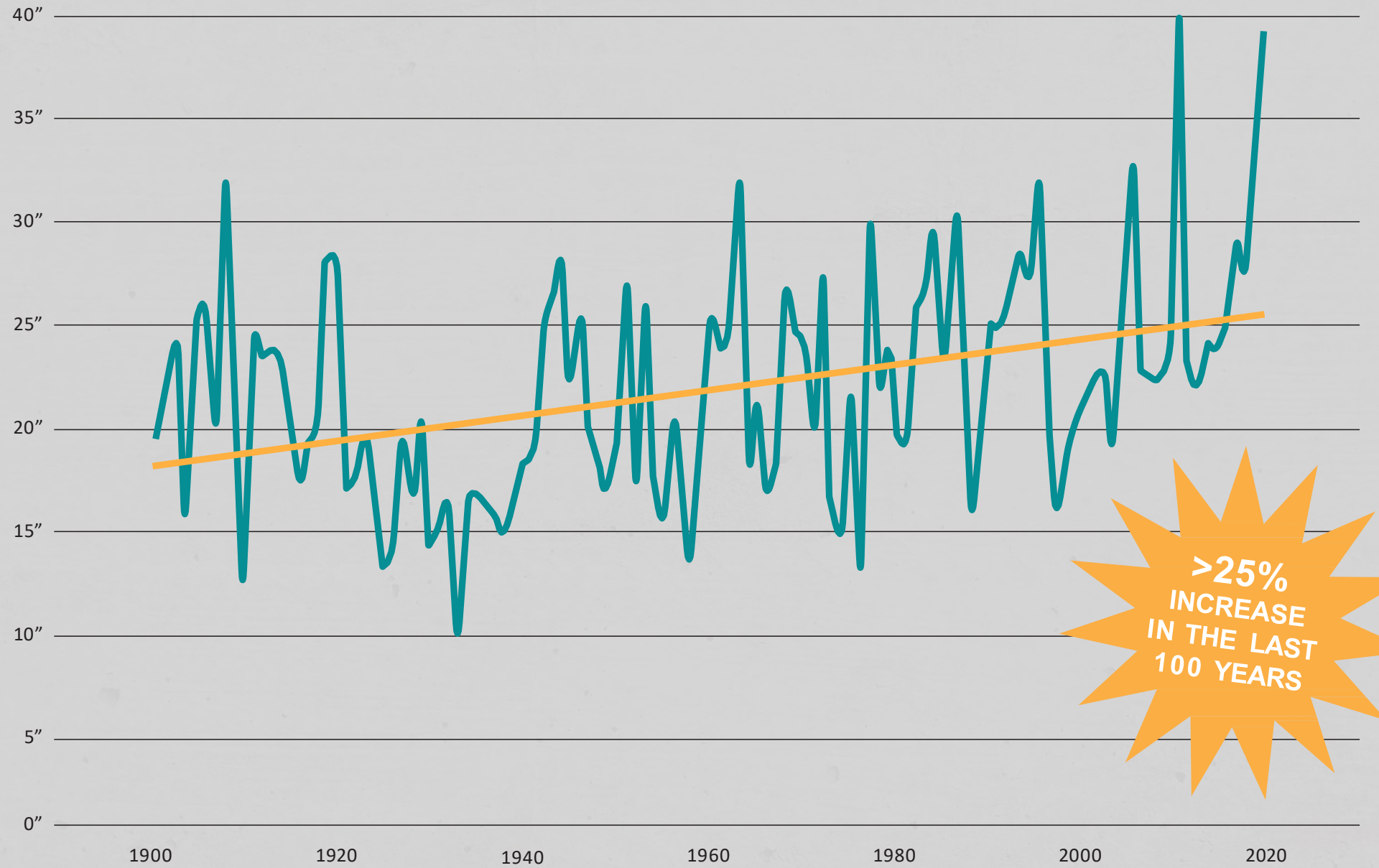


ENHANCE  
WATER QUALITY,  
RECREATION,  
AND AESTHETICS



## ANNUAL PRECIPITATION TREND IN BROOKINGS, SD

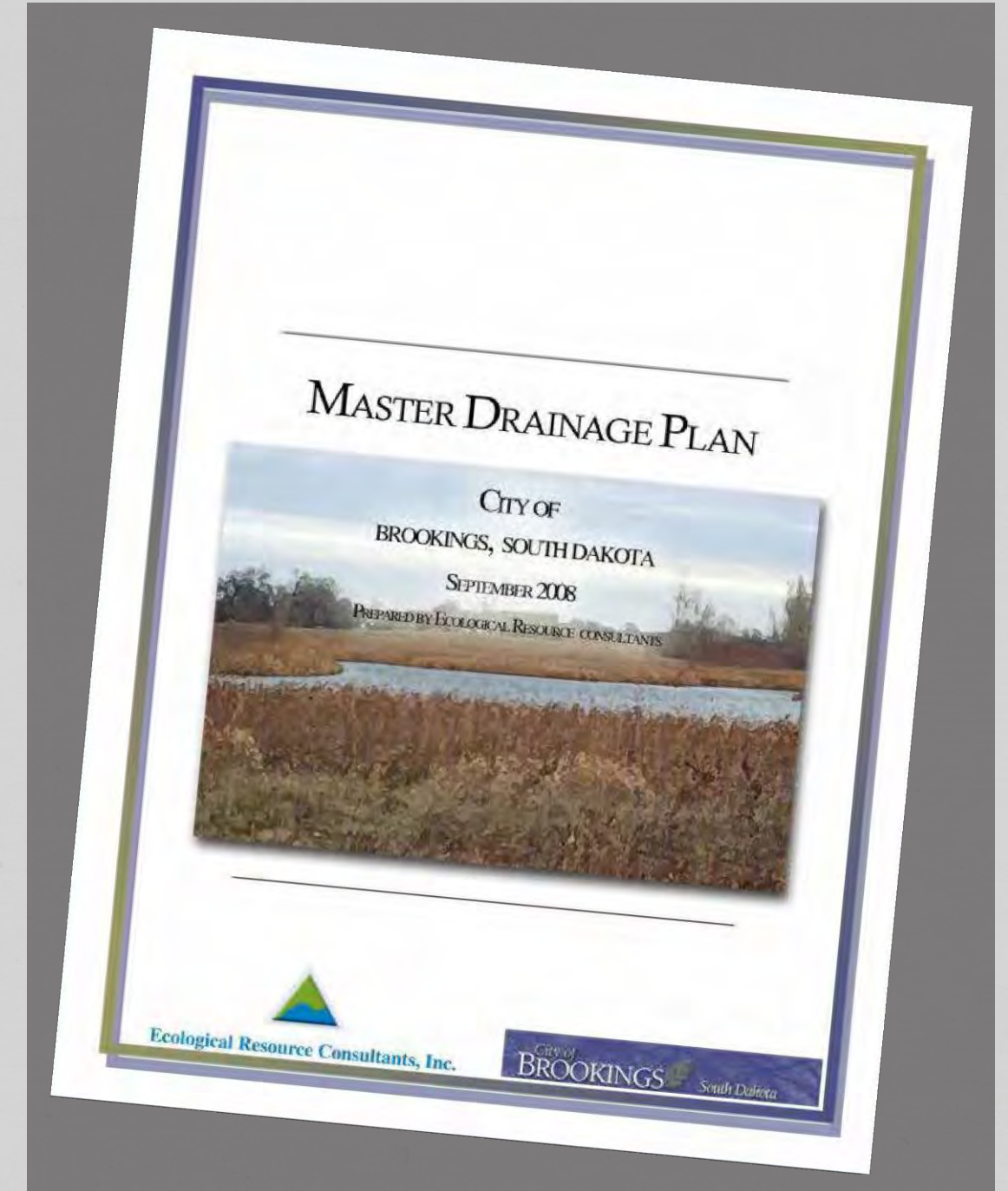
Source: National Oceanic and Atmospheric Administration (NOAA)



# Plan Updates

- New technologies since 2008 plan
- Evaluation of existing conditions
- Plan Recommendations:
  - Improved project prioritization process
  - Provides recommended projects
  - Revisions to stormwater fees
  - New development standards
  - New inspection procedures

*Note: Plan does not address Sixmile Creek (riverine flooding)*



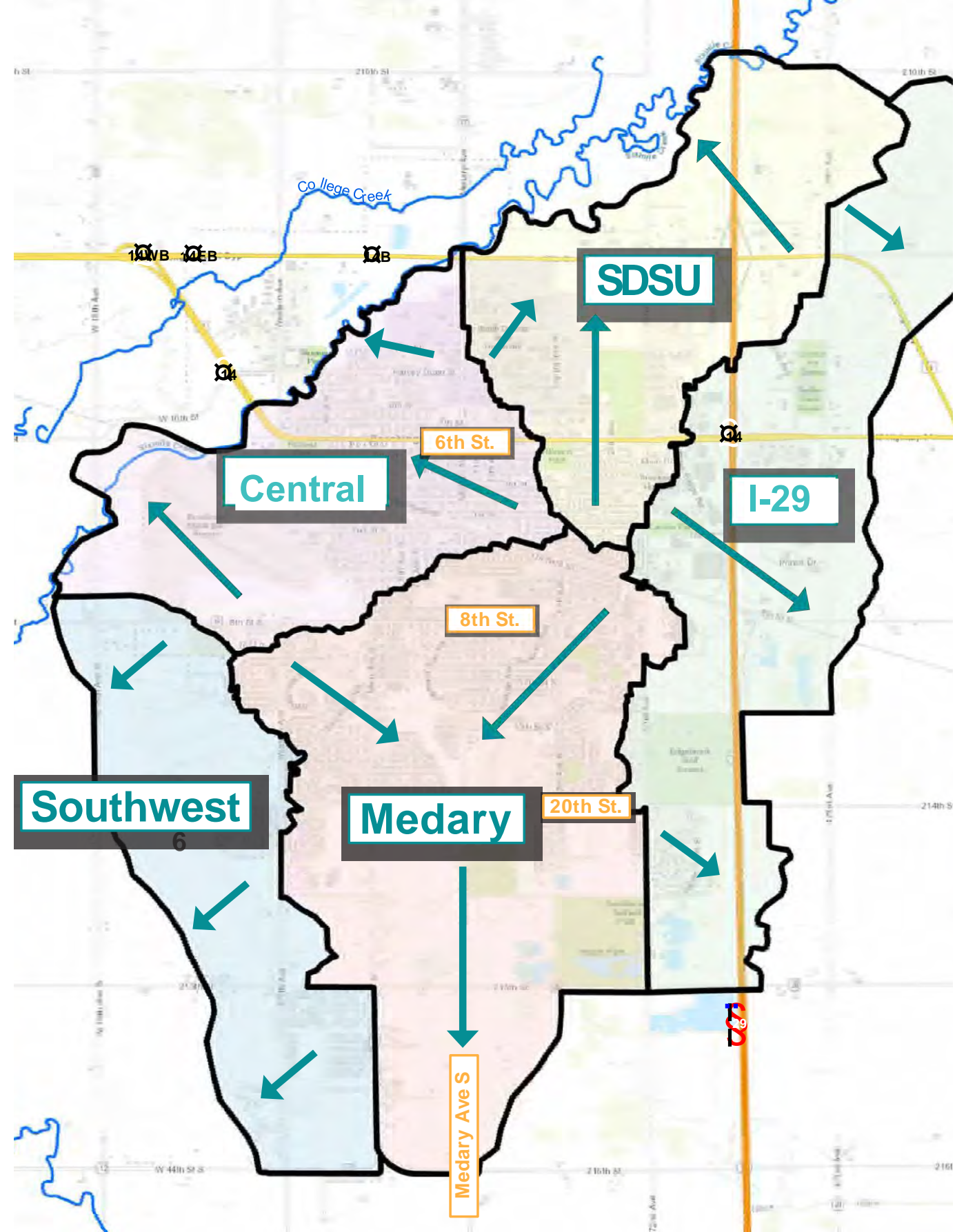


# Existing Conditions

# Drainage Areas



For analysis, the City was broken down into 5 drainage areas



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# Community Engagement

- Multiple public engagement events
- Committee meetings
  - City, SDSU, BMU officials, and community reps
- Online survey
- November 21, 2023 Study Session





# Recommended Projects

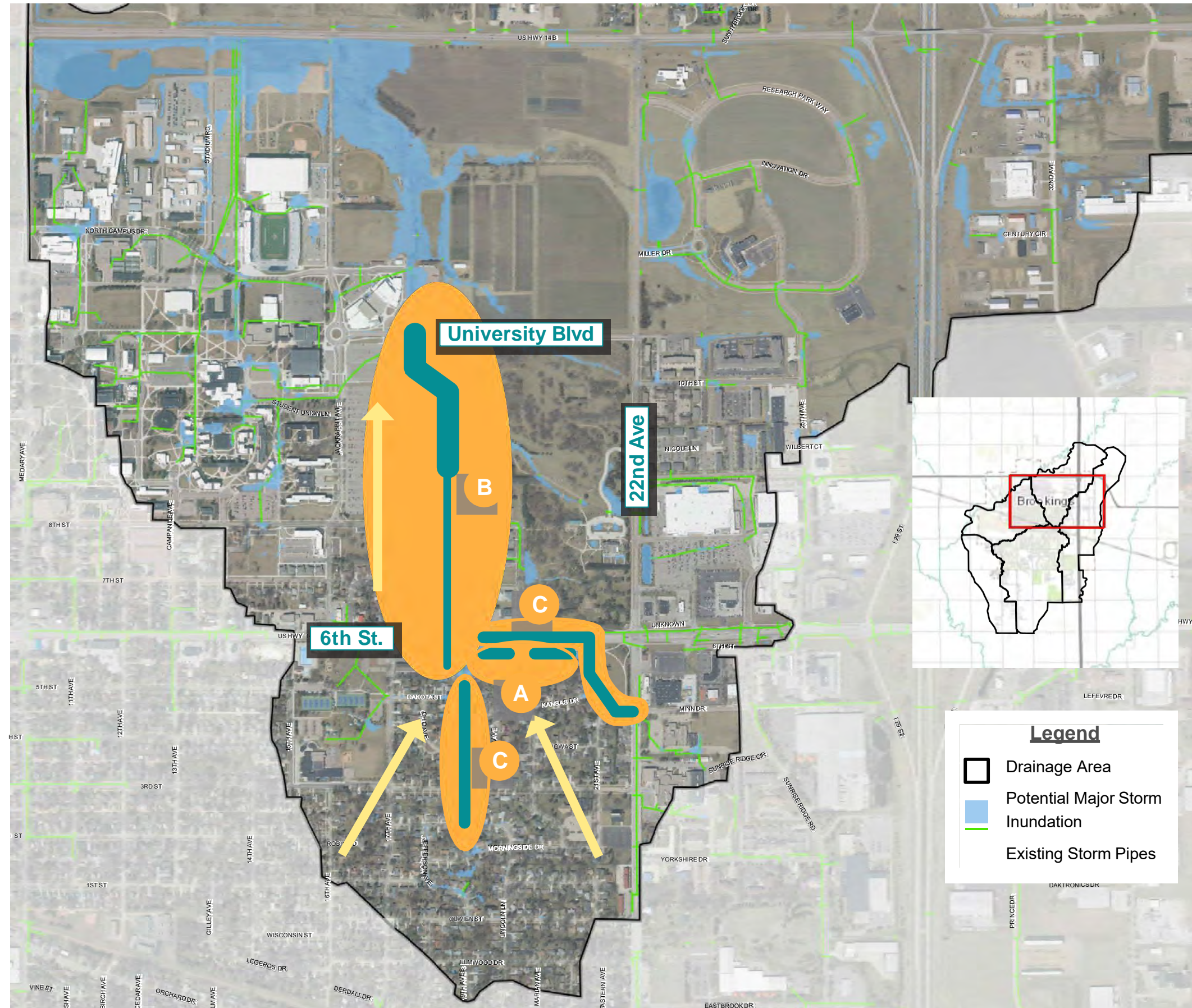
# SDSU Drainage Area

**A** Rotary Park Improvements

**B** Village Square Conveyance + Storage Improvements

**C** State Avenue + Highway 14 Storm Sewer Improvements

Note: Projects are not listed in order of priority





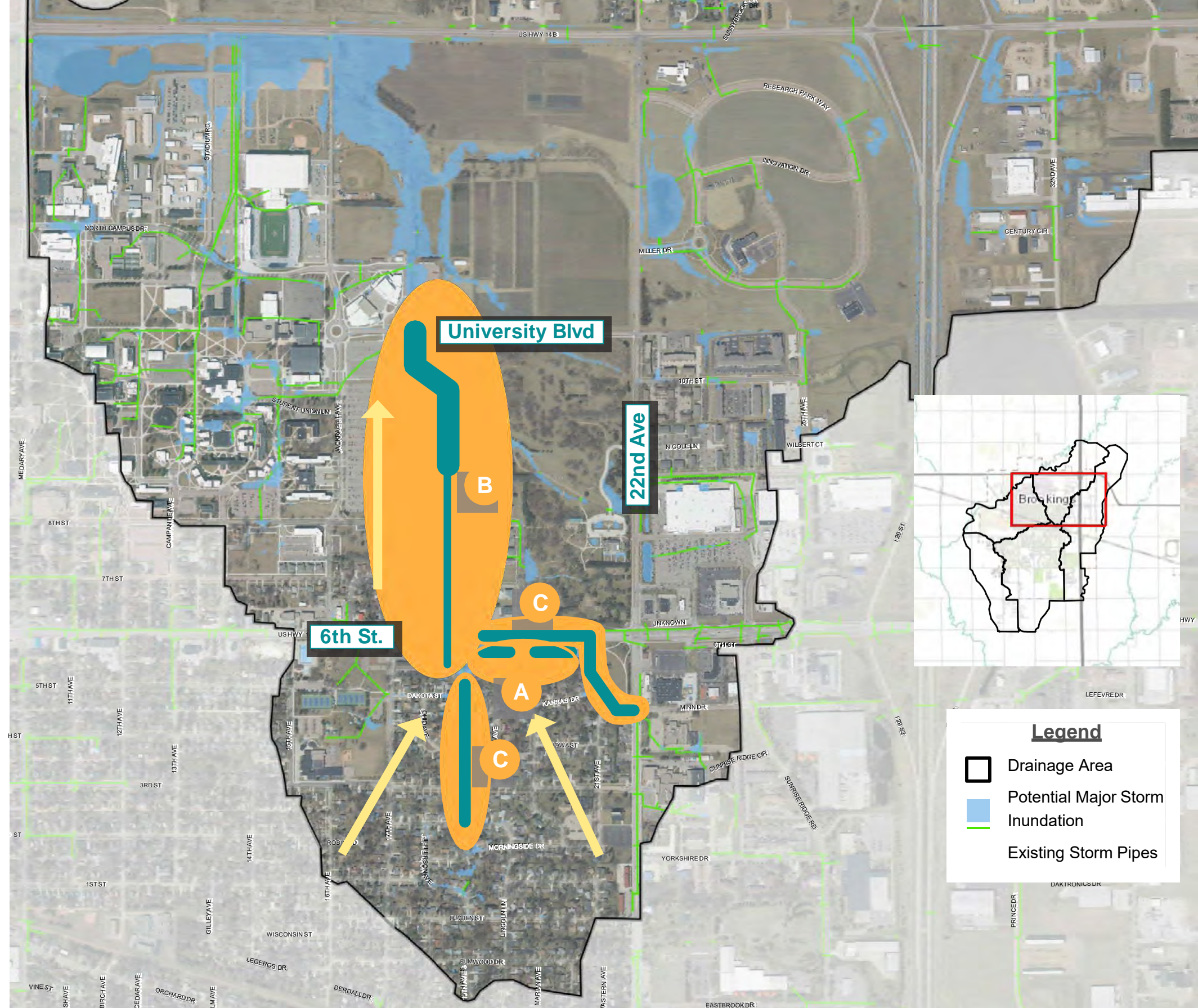
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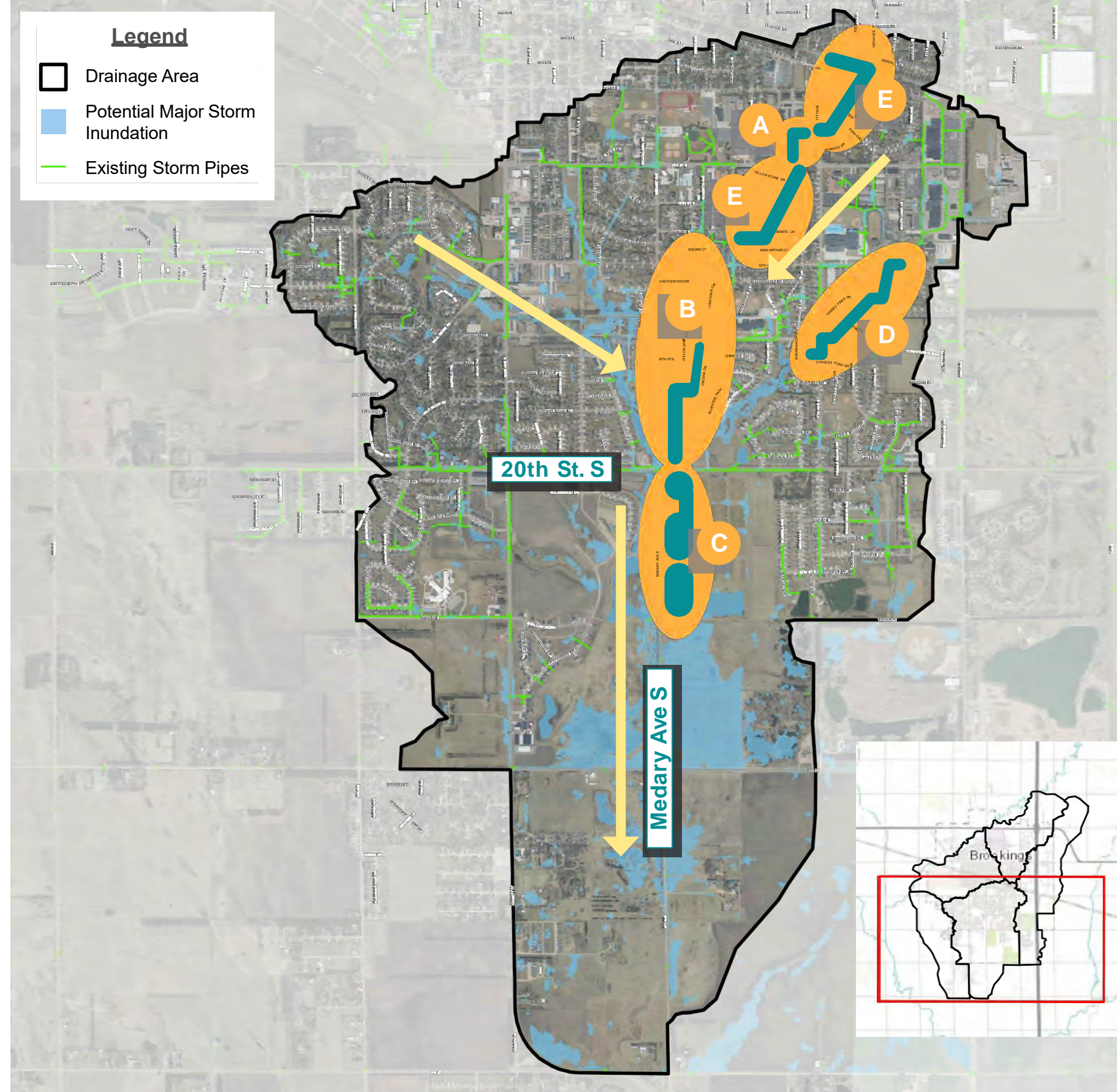
Note: Projects are not listed in order of priority



# Medary Drainage Area

- A** 8th Street South Storage
- B** Nelson Storage + Conveyance Improvements
- C** 32nd Street Storage + Upstream Conveyance Improvements
- D** Sawgrass Drive Storm Sewer Improvements
- E** Parkway Boulevard Storm Sewer Improvements

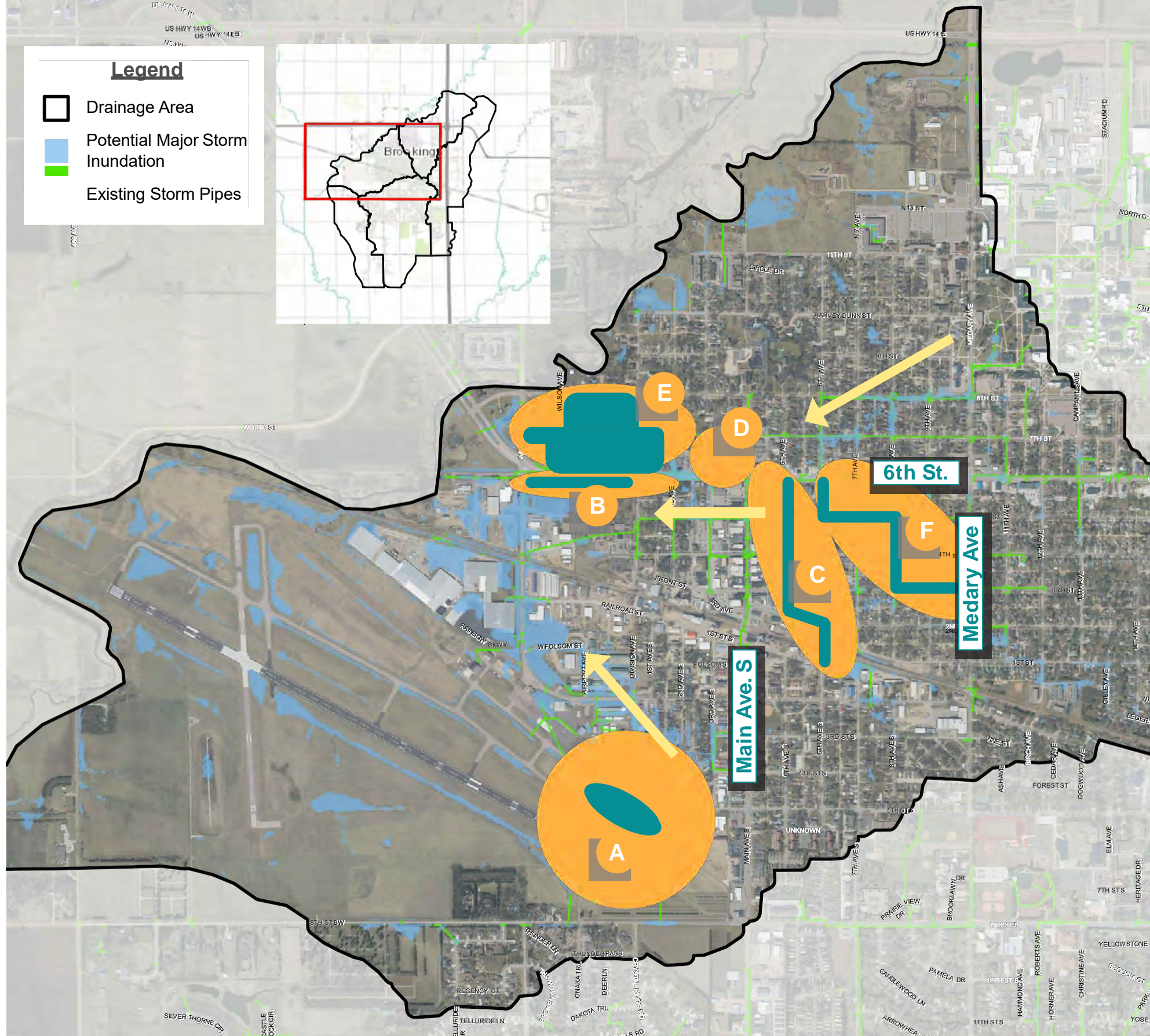
Note: Projects are not listed in order of priority



# Central Drainage Area

- A** Brookings Regional Airport Storage
- B** Pioneer Park Improvements
- C** 5th Avenue Underground Storage + Storm Sewer Improvements
- D** 6th Street Underground Storage
- E** Veterans Memorial Park + Storm Sewer Improvements
- F** 3rd Street Storm Sewer Improvements

Note: Projects are not listed in order of priority



# Projects

## Plan Projections

- \$12 million dollars worth of projects in the next 10 years with ERU
- In the next 10 years, project construction costs range from \$380,000 to \$4,980,000
- \$45 million dollars in projects identified in plan

Capital Project Name	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
	BUDGET	Projected									
Green Infrastructure Incentive for Properties	10,816	11,249	11,699	12,167	12,653	13,159	13,686	14,233	14,802	15,395	16,010
Neighborhood Improvements	180,627	187,852	195,366	203,181	211,308	219,760	228,551	237,693	247,201	257,089	267,372
32nd Street Detention - Phase I - DESIGN	541,882	-	-	-	-	-	-	-	-	-	-
32nd Street Detention - Phase I - CONSTRUCTION	-	-	-	2,442,187	2,539,875	-	-	-	-	-	-
Village Square Conveyance Improvements - Phase I - DESIGN	-	224,973	-	-	-	-	-	-	-	-	-
Village Square Conveyance Improvements - Phase I - CONSTRUCTION	-	-	1,345,337	-	-	-	-	-	-	-	-
Village Square Conveyance Improvements - Phase III - Design	61,219	-	-	-	-	-	-	-	-	-	-
Village Square Conveyance Improvements - Phase III - Construction	-	381,835	-	-	-	-	-	-	-	-	-
5th Avenue Underground Storage - Phase 1 -DESIGN	-	-	-	-	-	-	-	-	-	230,918	-
5th Avenue Underground Storage - Phase 1 - CONSTRUCTION	-	-	-	-	-	-	-	-	-	-	-
Veterans Memorial Park + Storm Networks Improvements - DESIGN	-	-	-	-	-	164,491	-	-	-	-	-
Veterans Memorial Park + Storm Networks Improvements - CONSTRUCTION	-	-	-	-	-	-	-	2,105,078	-	-	-
<b>Total Capital Projects</b>	<b>794,544</b>	<b>805,909</b>	<b>1,552,402</b>	<b>2,657,535</b>	<b>2,763,836</b>	<b>397,410</b>	<b>242,237</b>	<b>2,357,004</b>	<b>262,003</b>	<b>503,402</b>	<b>283,382</b>

An aerial photograph of a city, likely St. Louis, Missouri, showing a dense residential area with many trees and houses. A prominent white building with a dome, likely the St. Louis Courthouse, is visible in the lower center. The entire image is overlaid with a semi-transparent blue filter. The text "Stormwater Fee" is written in a large, white, sans-serif font across the middle of the image.

# Stormwater Fee

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# Stormwater Utility Fee

## What does it pay for?

- Maintenance of drainage infrastructure, such as pipes, street inlets, drainage swales, and basins
- Replacement of aging infrastructure and new projects that reduce flooding and improve water quality
- Personnel/Administration
- Maintenance of stormwater equipment
- Public Outreach and Education



# Stormwater Fee

## Current: Based On Land Use and Area

Stormwater Fee = (Land Use Factor) x  
(Parcel Area Square Feet) x  
(Unit Financial Charge \$/Square Feet)

LAND USE	FACTOR
Cropland, public parks and golf course	1.00
Estate (single-family on 30,000 square feet or more)	2.50
Highway and street right-of-way and airport	5.00
Single-family home and townhouses	7.50
Apartment buildings, mobile homes, dormitories, and education	11.25
Industrial	17.00
Commercial	18.75



## Recommended: Equivalent Residential Unit (ERU)

- Fee based on impervious square footage
  - Infrared technology allows calculation of imperviousness on each lot
- Equity
  - Greater imperviousness equals higher runoff and Infrastructure need
- Best Practice
  - 80% of communities in the U.S. with a stormwater fee use an ERU system

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# ERU in Brookings

- Average single-family residential impervious area = 1 ERU = 4,573 square feet
  - Based on infrared flyover
- All single-family residential properties pay 1 ERU
- Non single-family residential property fees depend on the parcel's impervious area



**EXAMPLE PARCEL WITH 4,573  
SQUARE FEET OF IMPERVIOUS AREA**



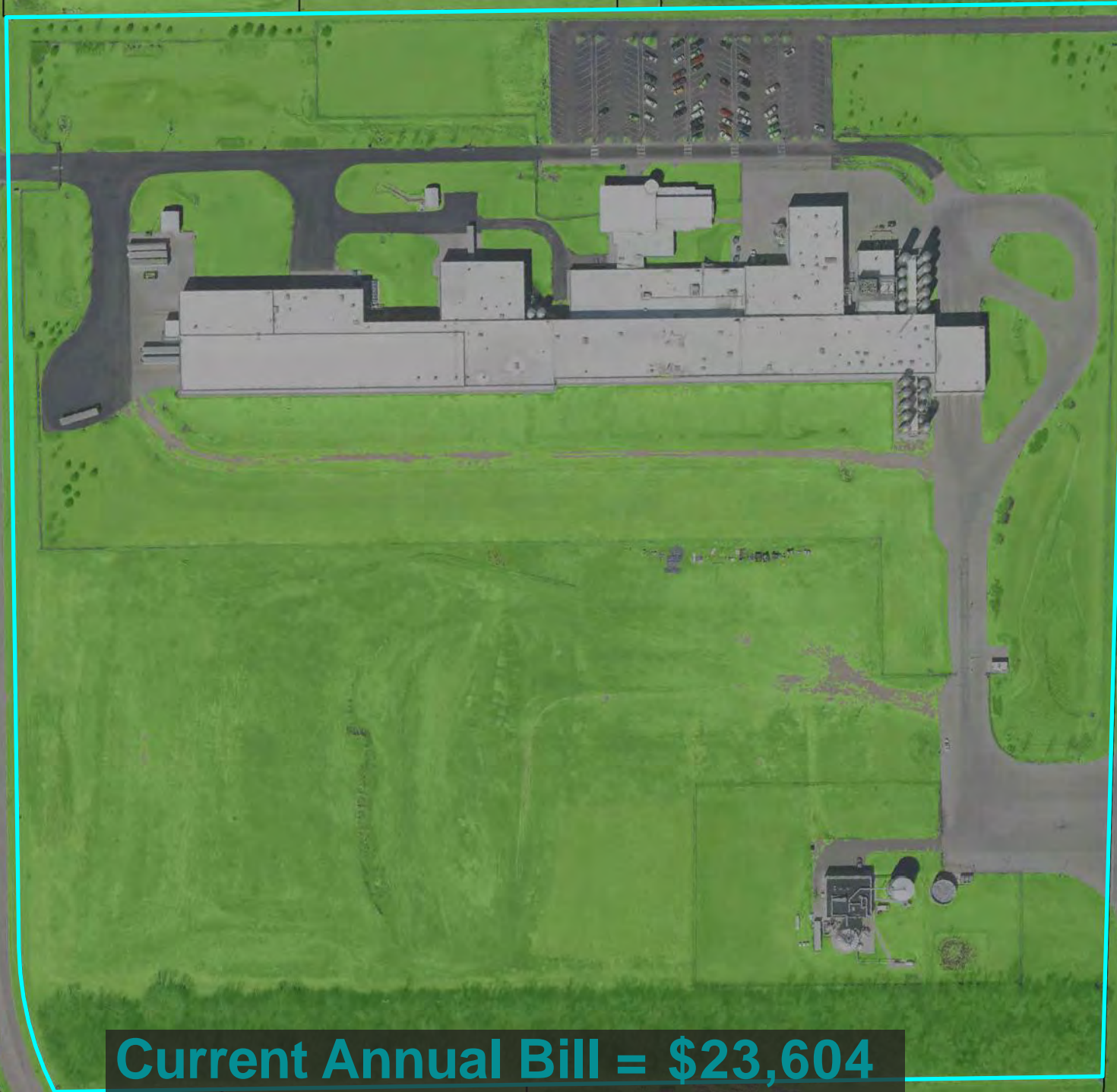
# Proposed Stormwater Fee

## Proposed ERU

- \$6.14/month (effective 2025)
- 4.24% increase to “average” single-family residential property (last increase in 2019)
- 3% annual rate increase (effective 2026)
- Generates approximately extra \$300k/yr
  - 37% single family residential
  - 63% other
- Funds \$12M of projects over the next 10 years
- Billed with property tax

PEER COMMUNITY	ERU?	\$/MONTH FOR SINGLE-FAMILY PROPERTIES	ANNUAL INCREASE S?	POPULATION
Sioux Falls, SD	No	~\$7.41	Yes, 4%	196,528
Cedar Falls, IA	No	\$4.78	Yes, 7%	40,388
Fargo, ND	Similar	\$5.00	Periodic increases	126,748
Mankato, MN	Similar	\$4.89	Unclear	44,693
Ames, IA	Similar	\$5.20	No	66,424
Des Moines, IA	Yes	\$15.87	Periodic increases	212,031
Cedar Rapids, IA	Yes	\$7.40	Yes, 5%	136,467
Dubuque, IA	Yes	\$8.85	Unclear	59,119

**51.0 Acres**  
**13.0 Acres Impervious**  
**25.5% Impervious**



**Current Annual Bill = \$23,604**

**Proposed Annual Bill**  
**= \$9,351.47**

**12.8 Acres**  
**12.1 Acres Impervious**  
**94.1% Impervious**



**Current Annual Bill = \$6,723**

**Proposed Annual Bill**  
**= \$8,670.66**



Pervious vs.  
Impervious  
Example  
Brookings, SD  
Friday, November 3, 2023

**Legend**

- Parcels
- Impervious Cover
- Pervious Cover



0 100 200  
Feet





# Water Quality

# Water Quality Incentive Program

## 2024 Pilot Project

- Rain barrels – 91 barrels sold and distributed
- Native plantings – Issued 40 vouchers

## Potential Expansion of Program in Future

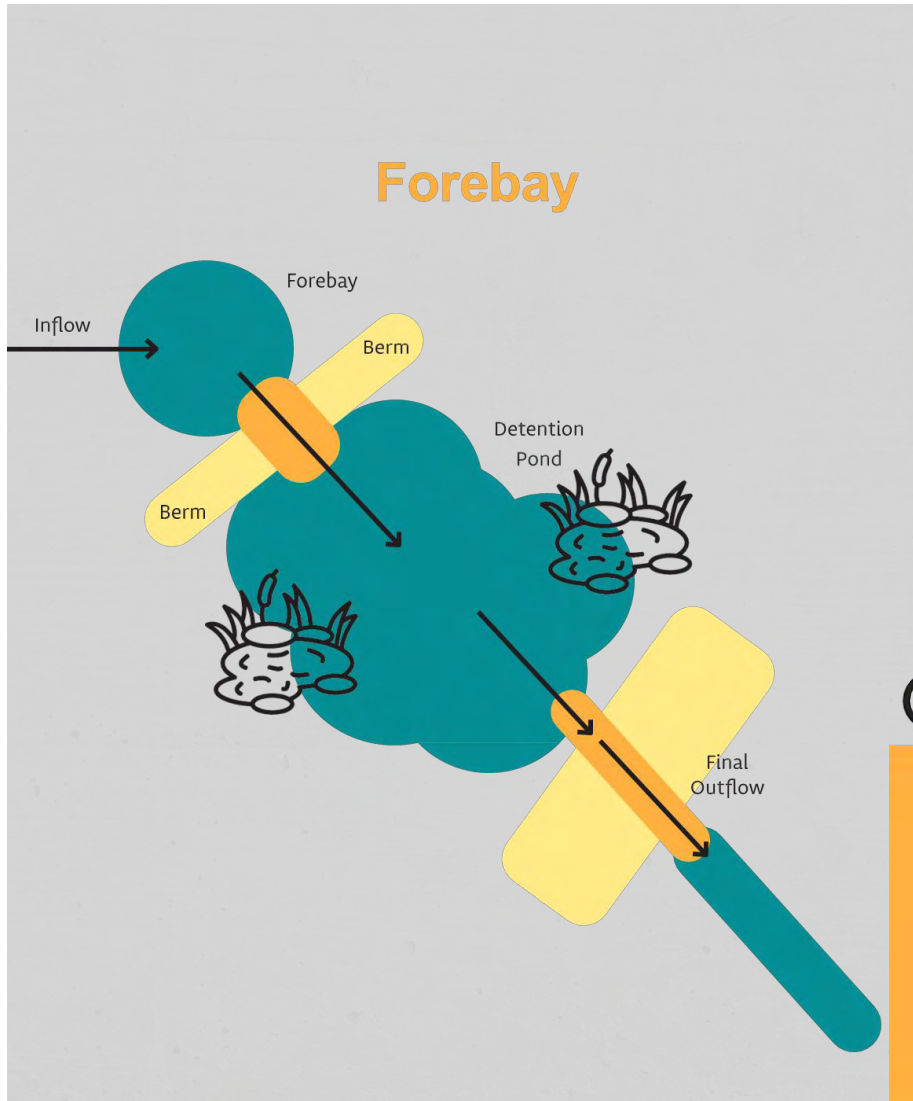
- Rain gardens
- Soil quality restoration
- Permeable pavers



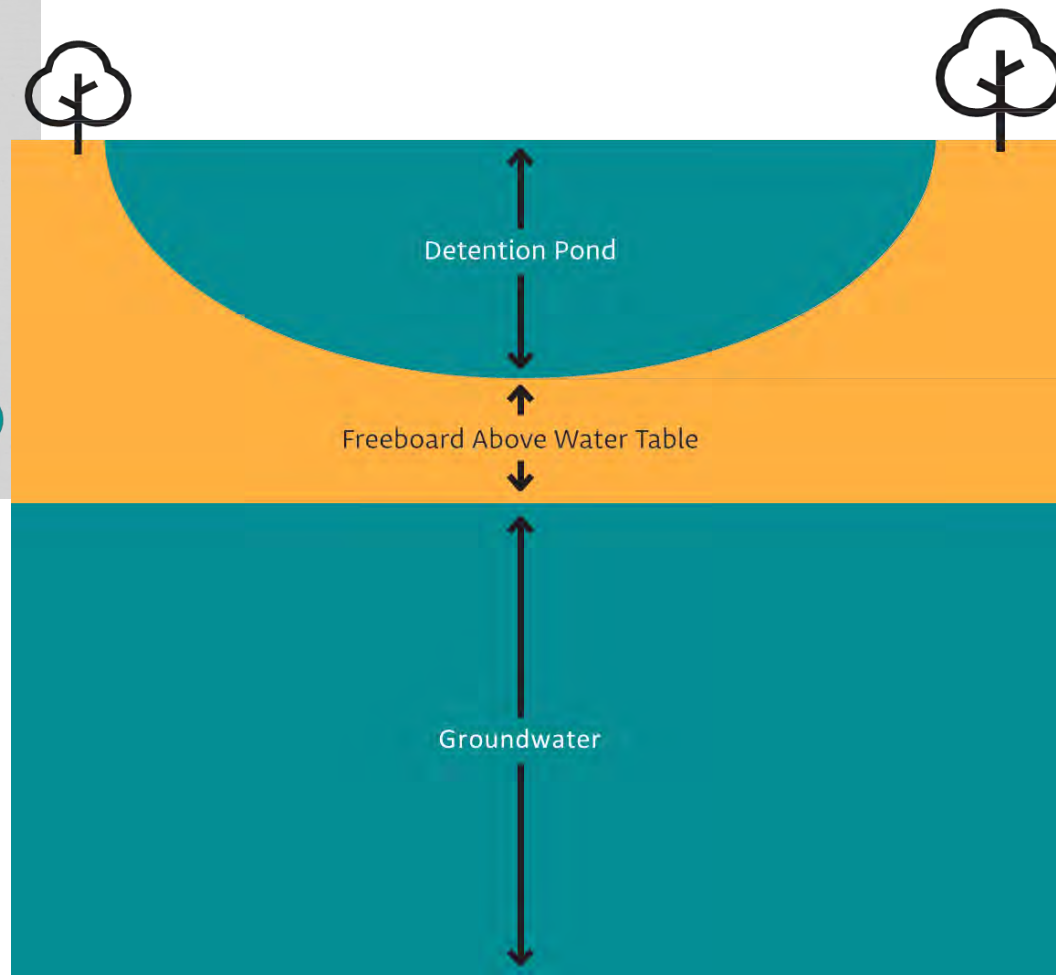
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# Development Standards and Inspection Procedures

# Development Standards and Inspection Procedures



## Groundwater Freeboard



**Stormwater Best Management Practices (BMP) Inspection + Maintenance Report**

brookings SOUTH DAKOTA

**CONTACT INFORMATION**  
Please use one form per BMP.

**Property Overview**

Address/Location: \_\_\_\_\_  
Construction Year: \_\_\_\_\_

**Primary Point of Contact**

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_ Phone Number: \_\_\_\_\_  
Last Rainfall: \_\_\_\_\_

**Inspection Information**

Date of Inspection: \_\_\_\_\_  
Inspector Name: \_\_\_\_\_  
Inspector Company: \_\_\_\_\_  
Email Address: \_\_\_\_\_ Phone Number: \_\_\_\_\_

**FOR CITY USE ONLY**  
The City of Brookings will keep this form on file for property record purposes.

Date Received: \_\_\_\_\_  
Reviewed By: \_\_\_\_\_  
City Staff Reviewed:  Yes  No  N/A  
Signature: \_\_\_\_\_

Contact - Name - Email - Phone

Brookings, SD



# Summary

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## The Plan

- Guiding document for future stormwater improvements and development standards
- Improves resiliency against flood risk
- Provides recommendations to accelerate practices that improve water quality
- Improves sustainability and protection of our watersheds

## ERU FEE

- Improves equity
- Ensures funding for \$12M in projects for next 10 years





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