globeville stormwater systems study

resiliency planning | education | outreach

Project Completion Date: December 2019

CASFM OUTSTANDING NON-CONSTRUCTION PROJECT 2021 AWARD SUBMITTAL

MAY 28, 2021

DENVER TRANSPORTATION & INFRASTRUCTURE

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Project Background

The Globeville basin is located along the west bank of the South Platte River, downstream of downtown Denver. The basin is four square miles and the majority of the basin lies within the City and County of Denver while the northern section sits in Adams County. The eastern boundary of the basin is defined by the South Platte River and the western boundary is the highpoint near Federal Boulevard and I-70.

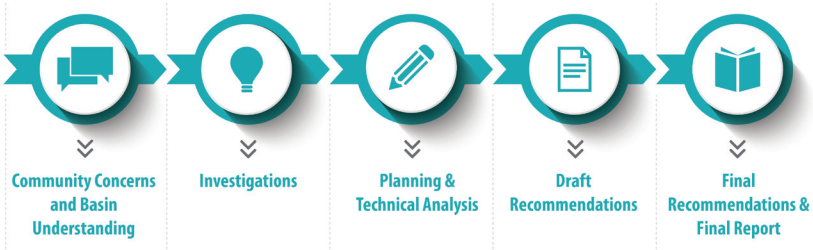
The Globeville basin is subject to flooding risk from two sources: stormwater runoff and riverine flooding from the South Platte River. Additionally, the existing levee along the South Platte River no longer meets FEMA criteria, which risks remapping the entire Globeville neighborhood back into the FEMA regulated floodplain.

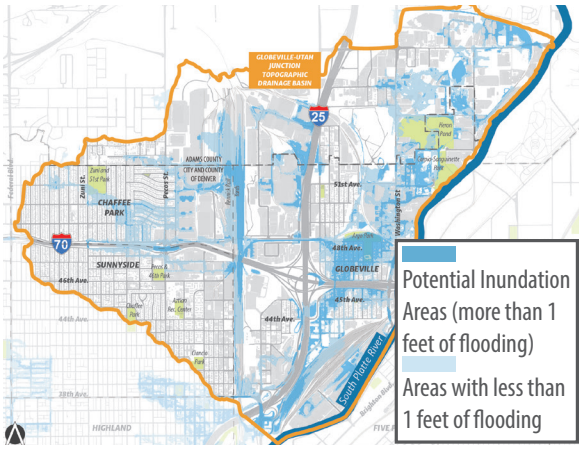
Study Approach

In Spring 2018, the City and County of Denver Department of Transportation and Infrastructure launched the Gloveville Stormwater Systems Study to evaluate the Globeville basin and explore solutions to the South Platte River and local stormwater flooding. The Study was a partnership with the community, project team members, city staff, elected officials, stakeholders and community members. Through participatory basin tours and educational workshops, this group studied basin topography, historical industrial development and key land use patterns that influence today's physical conditions, runoff patterns and flooding.

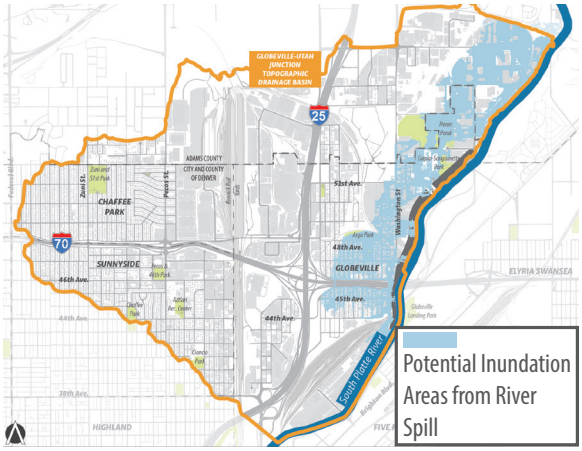
Developing a keen understanding of the historical and current physical constraints and conditions was fundamental to the community conversation around future improvements to address flooding and ensure integrated community benefits. This approach recognized the importance of utilizing previous drainage infrastructure studies within the basin while conveying complex, technical drainage information through easy-to-understand graphics and educational materials. "Community-centric" neighborhood-level discussions of green and gray infrastructure, integrated aspects of stormwater management and innovative solutions that address local flooding concerns as well as neighborhood needs were critical aspects of building a stronger, more resilient Globeville community.

Globeville Stormwater Systems Study Process





Globeville Modeled Stormwater Flooding



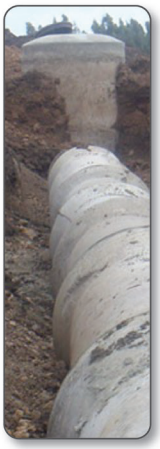
Globeville Modeled Riverine Flooding

Study Process

The Globeville Stormwater Systems Study followed a two-year community process that concluded in December 2019. Throughout the process several groups supported the Study including the city's multi-departmental Project Management Team (PMT), the Community Stakeholder Vision Implementation Team (VIT) and the broader community. The project team relied on the dedicated involvement of the stakeholder VIT which consisted of residents, business owners, neighborhood associations and community based groups that provided direction and representation of the needs and vision for the greater community. The group met nine times at key milestones throughout the planning process and were critical to the review of existing conditions, the development of study goals and purpose, the identification of community-driven investigations and the development of concepts and recommendations.

Enhancing Public Health, Safety and Welfare

Previously, Denver's approach to stormwater management was focused on Gray Infrastructure improvements with little community engagement. Through the efforts of this study and city staff, the paradigm for examining improvements within the community shifted to include distinct community engagement, as well as opportunities to address the broader public health, safety and welfare of its residents. In the Globeville basin public health concerns range from a lack of connectivity due to railroad and highway infrastructure decisions over the years, poor water quality conditions, poor air quality and a lack of tree canopy and green space that contribute to the heat island effect. Additionally, historic equity issues, lack of economic opportunities and vulnerability to displacement are serious human environment stressors facing this community. The community conversations around stormwater management included the options to begin to address some of these additional community health needs and connections.



Pipes
(Gray Infrastructure)

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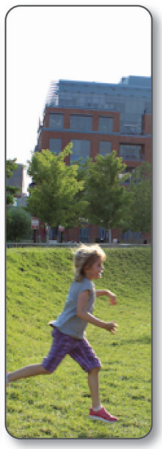
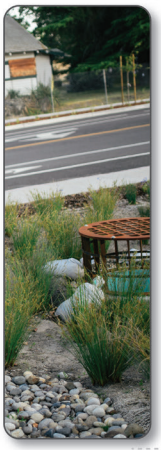
Community Conversations



Other Concerns



New Perspectives
(Green Infrastructure)

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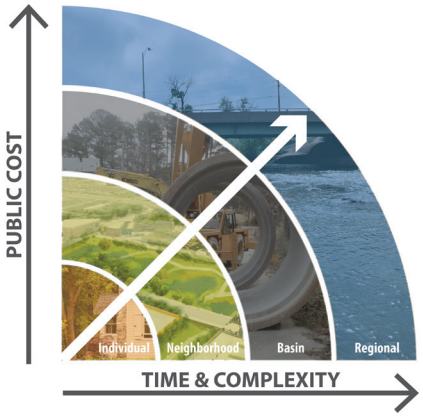
Solutions with multiple community benefits



Innovative Solutions

The development of concept improvements with city staff, stakeholders, elected officials and community was guided by a thoughtful and innovative understanding that "we are all part of the solution". Innovative solutions to flooding, stormwater management, water quality and community benefits were based in individual property strategies and practices identified in the Community Resource Guide, neighborhood design strategies to increase local connectivity and green space while managing stormwater and water quality, basin-wide grey infrastructure improvements and regional river strategies. This approach and process resulted in a multitude of innovative solutions that were derived from the community and stakeholders and embraced by the City and Elected Officials.

Community Developed Goals

Primary Goals

- Alleviate local stormwater flooding
- Reduce risk of river flooding and avoid floodplain designation
- Improve water quality

Supporting Community Goals

- Create innovative solutions that provide community benefit and reconnect the community
- Encourage natural and sustainable solutions
- Provide individual support against flooding, communicate flood risk, strengthen community partnerships and improve safety during rain events
- Coordinate and leverage concurrent projects in the area
- Be consistent with the Globeville Neighborhood Plan

Community Members at an Outdoor Community Meeting, October 2018

A Model for Other Communities

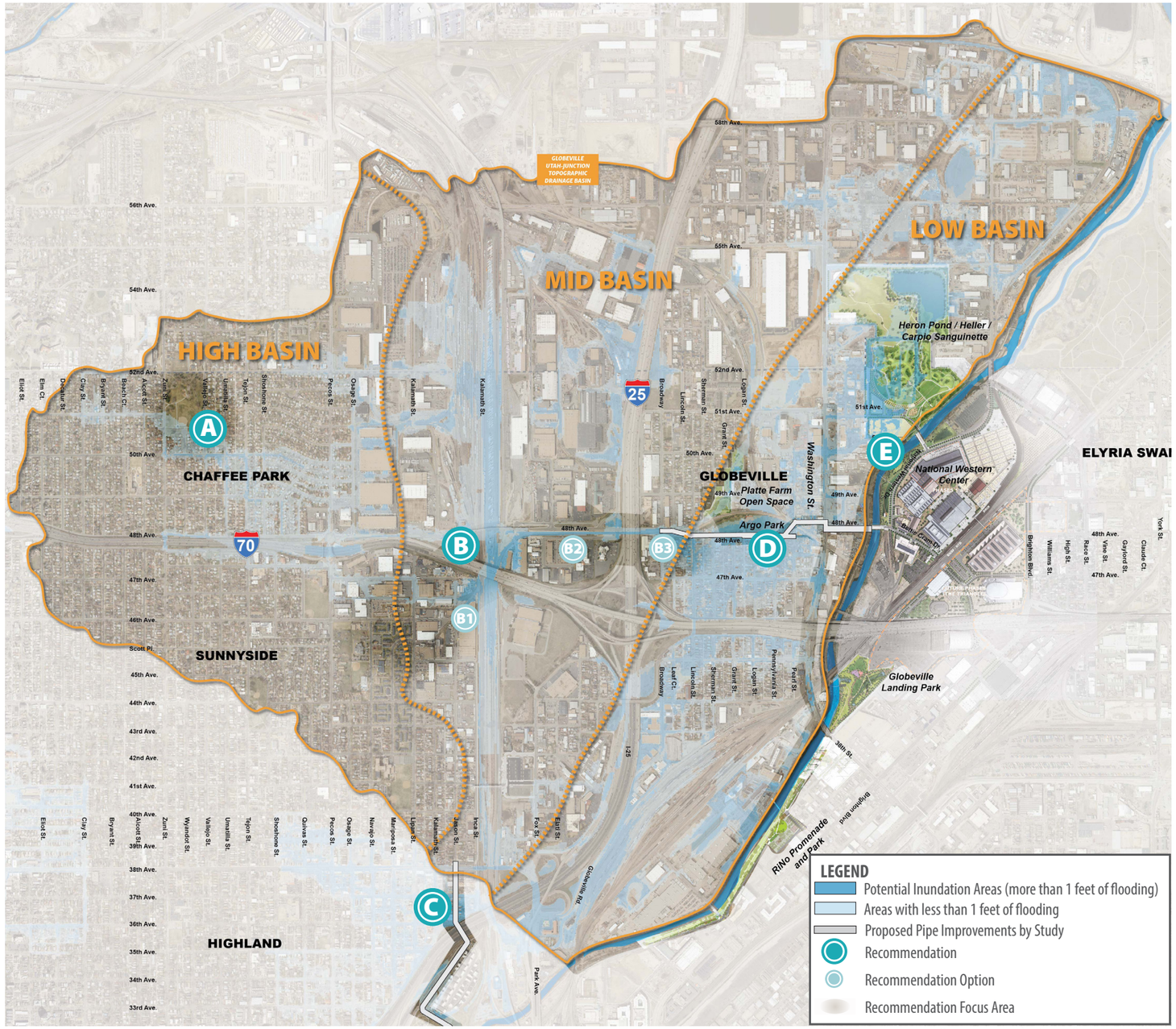
The Globeville Stormwater Systems Study focused on an educational community-centric approach to addressing stormwater management and flooding concerns. Outreach, history, education, planning and urban design were the basis for working with the community to understand today's physical conditions and to develop an integrated approach to solutions. Specifically, the study process and stakeholders identified the public health, welfare and safety concerns of the community and worked to integrate those issues into the solutions for stormwater runoff and riverine flooding from the South Platte River. Creative, innovative solutions incorporated much needed water quality improvements, neighborhood connectivity opportunities, green space and tree canopy options, consistent with the Neighborhood Plan and previous drainage studies. Grounding the technical drainage process in a robust community planning and education program resulted in a comprehensive understanding, clear goals, empowered residents and stakeholders and transformative solutions that improve the health, safety and welfare of the community. The success of this Study has ensured that it will continue to be used in other basins and neighborhoods across Denver. The planning and educational engagement process in Globeville serves as an ideal model for other cities and communities to utilize as their embark on their own stormwater or riverine flooding planning efforts.

Recommendations in Action!

The unprecedented success and collaboration with the community did not end after the final resident meetings, or even with the publishing of the final report in December, 2019. Since the completion of the Gloveville Stormwater Systems Study, the City has begun design of Project D- 48th Avenue Green Corridor, and Project E – Flood Protection from the South Platte River.

Project D – 48th Avenue Green Corridor is being designed from the length of 48th Avenue from just east of I-25 to a new outfall at the South Platte River. The design specifically incorporates the community's expressed goals and concepts to manage stormwater flooding through combined grey infrastructure and green infrastructure improvements the length of the corridor. 48th Avenue design addresses the community goal of re-connecting community with a greenway connection, linking the greenway to the South Platte River trail, expanding resident access to green space and furthering the community's desire for a more comfortable, walkable neighborhood.

Project E includes the design of the flood protection the length of the South Platte River from the new Heron Pond/ Carpio Sanguinetti Park area south to 31st Street, thereby keeping 700 structures from being remapped into the FEMA-regulated floodplain and distinctly protecting the Globeville neighborhood.



Recommendations Overview Map

Project D – 48th Avenue Existing Conditions

Project D – 48th Avenue Preliminary Design Concept

HIGH BASIN RECOMMENDATIONS

A — 51ST AND ZUNI PARK SPACE
Implement water quality and moderate detention opportunities.

MID BASIN RECOMMENDATIONS

B — DETENTION AND PARK SPACE
Identify and implement detention and potential park opportunity located along the stormwater runoff path before it gets to Globeville. Potential options include the following:

B1 — OPTION 1: SUNNYSIDE (SOUTH OF I-70 AND WEST OF RAILROADS)
Integrated detention and park opportunity south of I-70 and west of the railroad tracks.

B2 — OPTION 2: INDUSTRIAL AREA (NORTH OF I-70 AND EAST OF RAILROADS)
Detention located north of I-70 along 48th Avenue in industrial area.

B3 — OPTION 3: UPPER RIDGE (ALONG 48TH AVE - BETWEEN I-25 AND LINCOLN ST)
Detention and gateway park/ plaza opportunity near the Globeville Neighborhood that utilizes underused space.

C — TRUNCATED PROJECT "L" (Northwest Denver Sub-Area Drainage and Transportation Study)

Implement Truncated Project "L" pipe improvement along Jason Street alignment to the South Platte River.

LOW BASIN RECOMMENDATIONS

D — 48TH AVENUE GREEN CORRIDOR
Further study and implement new stormwater pipe along 48th Avenue with a new outfall at the South Platte River; a stormwater overflow management area at Argo Park and green infrastructure and mobility improvements along 48th Avenue to Washington Street.

RIVER RECOMMENDATIONS

E — FLOOD PROTECTION FROM THE SOUTH PLATTE RIVER
Design and implement improvements to the height of the existing levee and extension of levee from 38th Avenue to approximately 35th Avenue along Ringsby Court. Levee Improvements and extension coupled with a vision for neighborhood amenities along the river.