



# The Weir Gulch Flood Hazard Area Delineation (FHAD) Study

# Welcome & Introductions



**MILE HIGH FLOOD DISTRICT**



**DENVER**  
TRANSPORTATION &  
INFRASTRUCTURE



**Lakewood**  
Colorado



## Mile High Flood District (MFHD)

- Chartered in 1969 as regional floodplain & stormwater management resource for metro communities



## City & County of Denver (CCD)

- Participates in the National Flood Insurance Program (NFIP)
- Responsible for enforcing floodplain regulations that meet or exceed NFIP minimums
- Conducts development review and land use planning
- Partners in producing studies and some projects

# Updated Flood Risk Information

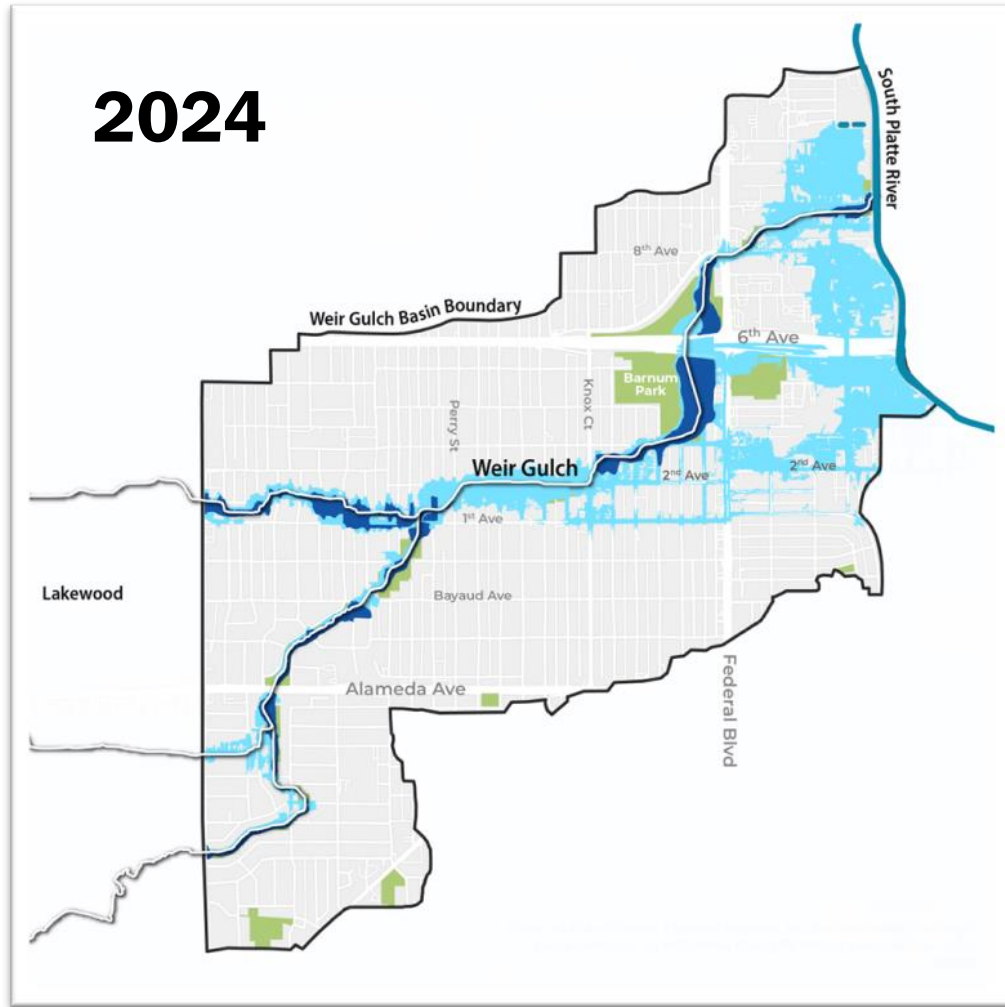


The last flood risk study of Weir Gulch was completed in 1972. It identified flood risk along the gulch as indicated on the map.

In 2024 MHFD, in partnership with the City and County of Denver and City of Lakewood, completed the Weir Gulch Flood Hazard Area Delineation (FHAD) Study, or FHAD.



# Updated Flood Risk Information



The FHAD Study provides a revised evaluation of flood risks in the Weir Gulch and its associated streams.

The 2024 FHAD indicates that properties along Weir Gulch are at a higher risk of flooding than previously identified.

# Why Do We Update Flood Risk Information?

- Flood risk changes over time.
- Modernized computer modeling and mapping methods
  - Updated ground elevation data
  - Updated land use conditions
  - Updated rainfall data
- Climate change is bringing increasing severity and frequency of storms - many people may experience flooding in areas that were not previously affected.
- Important to know if you are in a high, medium, or low risk area.



# Why do we study Flood Risk?

Flood hazards present a serious risk to life, health, safety, and property.

**Just 6 inches of fast-moving water can knock down an adult**

**Just 12 inches carries a small car**

**Driving or walking through moving floodwater are the highest causes of flood-related deaths**







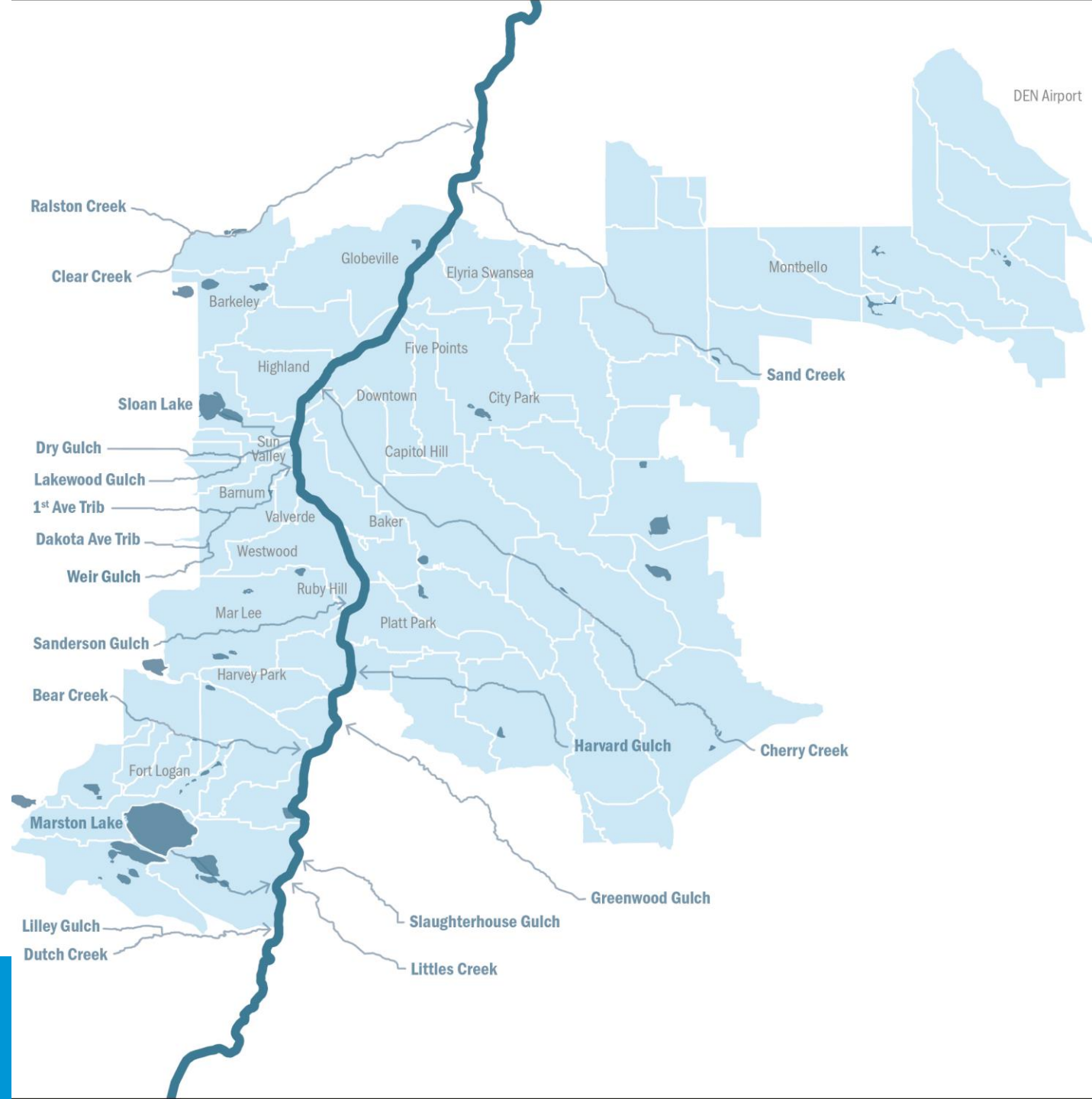
# The Weir Gulch Basin



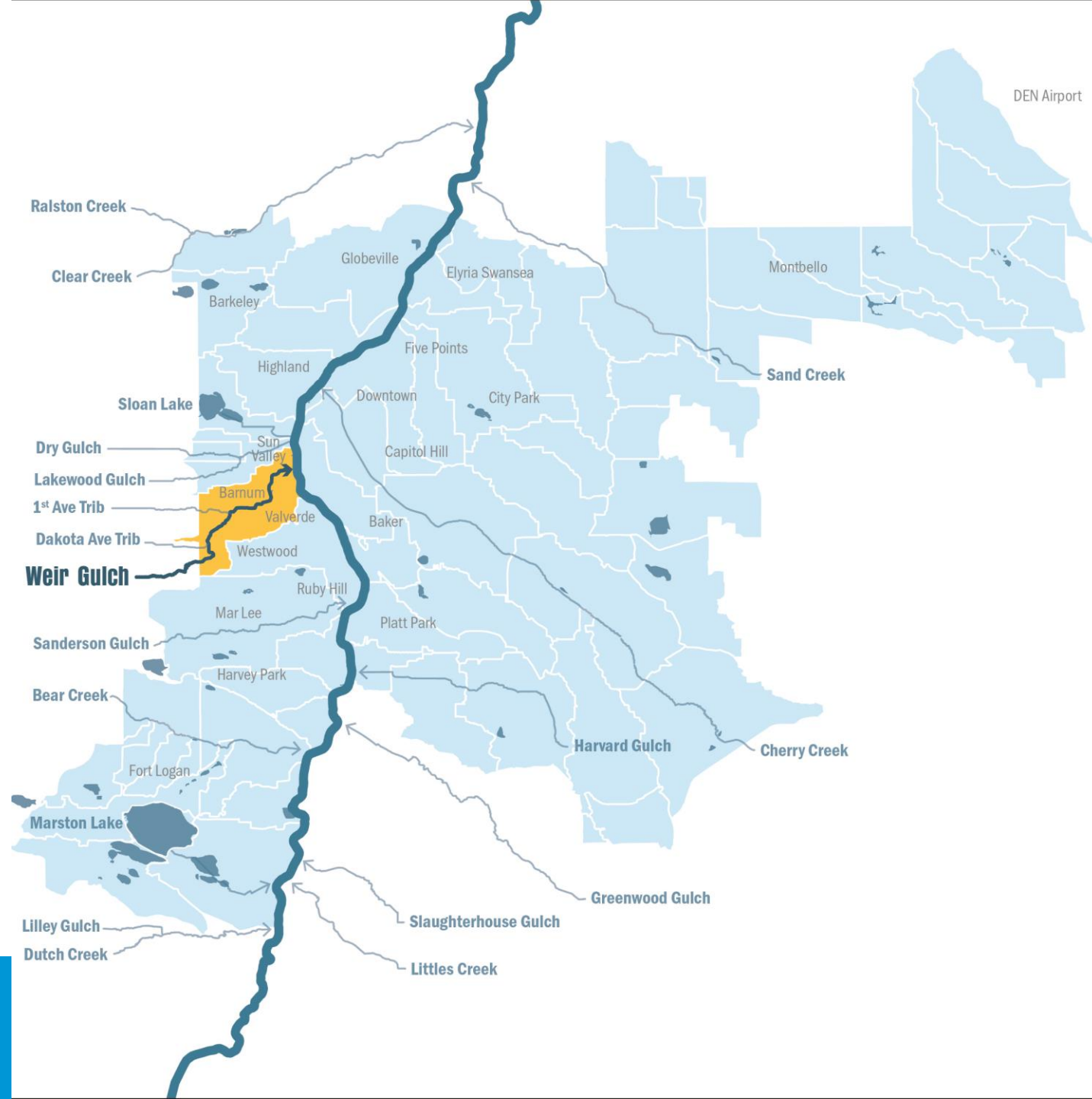
# Denver's Drainage Basins

There are 67 Drainage Basins within the City and County of Denver.

Drainage Basins follow the topography of the land, gathering stormwater runoff and carrying that stormwater to the South Platte River.



# The Weir Gulch Basin

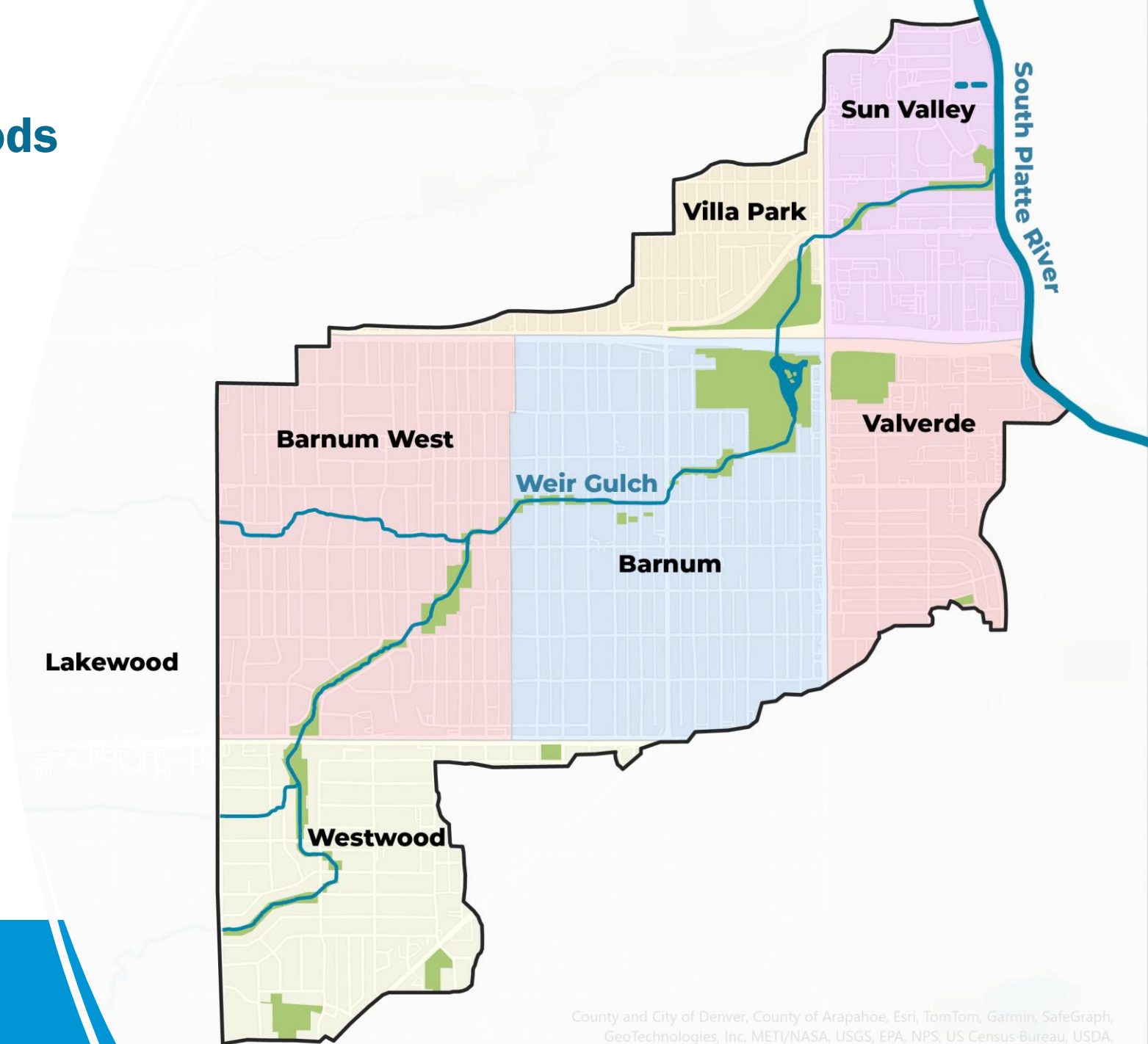


# The Weir Gulch Basin

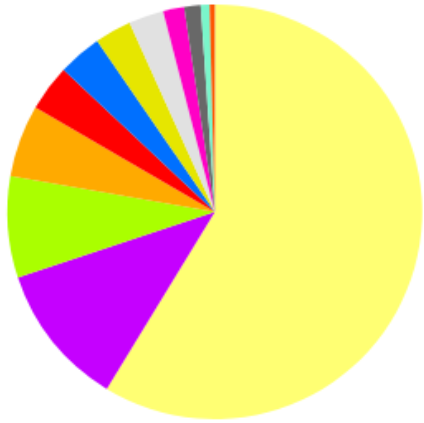




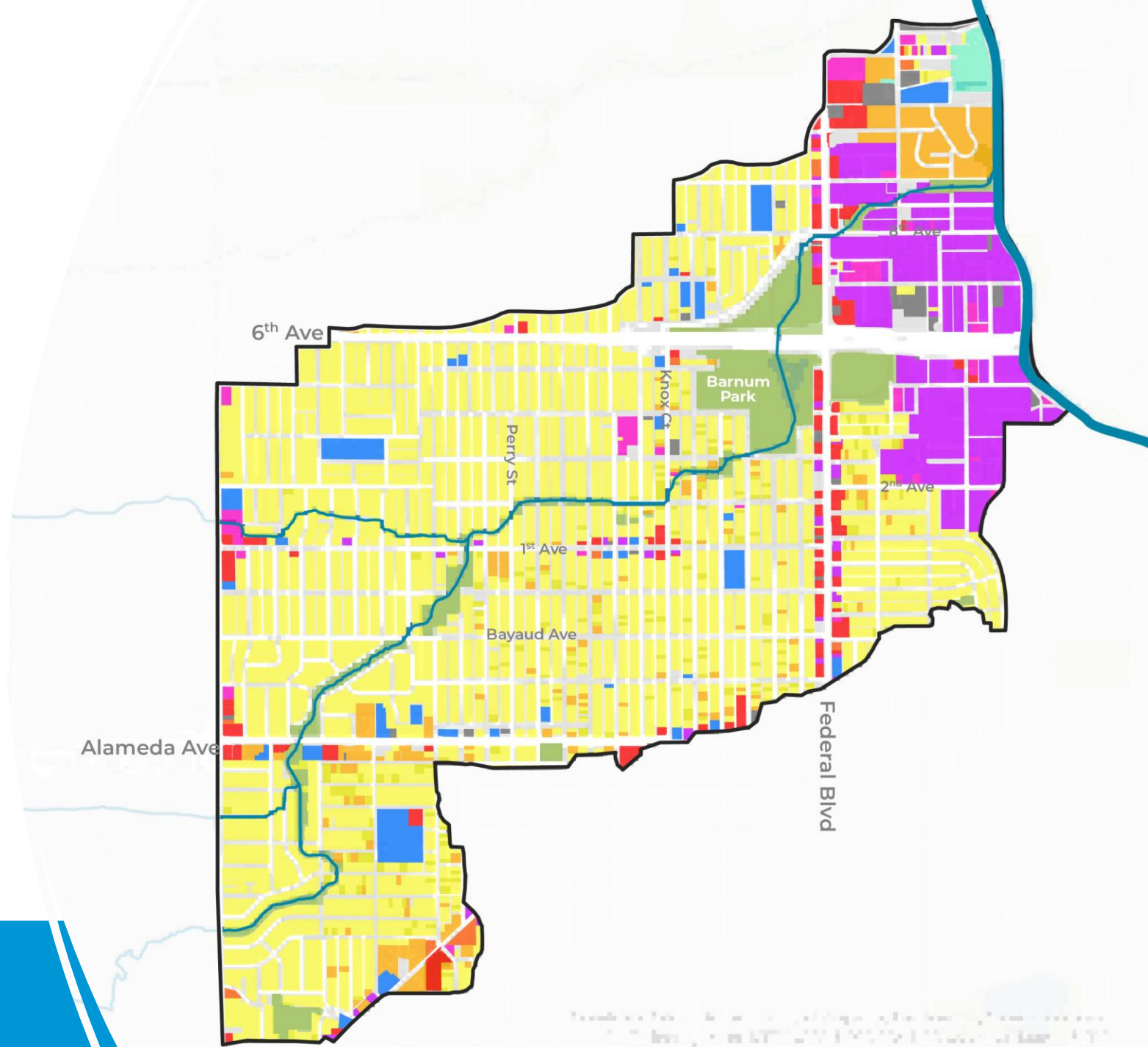
# Weir Gulch Neighborhoods



# Existing Land Use



- Single-unit Residential 58.7%
- Industrial 11.15%
- Park/Open Space 7.9%
- Multi-unit Residential 5.63%
- Commercial/Retail 3.594%
- Public/Quasi-public 3.414%
- Two-unit Residential 2.85%
- Vacant 2.74%
- Office 1.646%
- Parking 1.27%
- Trans/Comm/Utilities 0.68%
- Mixed-use 0.3996%
- ROW/Road 0.00686%



# The Stormwater System

Our stormwater system capture stormwater runoff and conveys water safely away from people and property.

Streets, curb gutters, underground drainage pipes, and channelized or natural waterways are part of that system



**Streets**



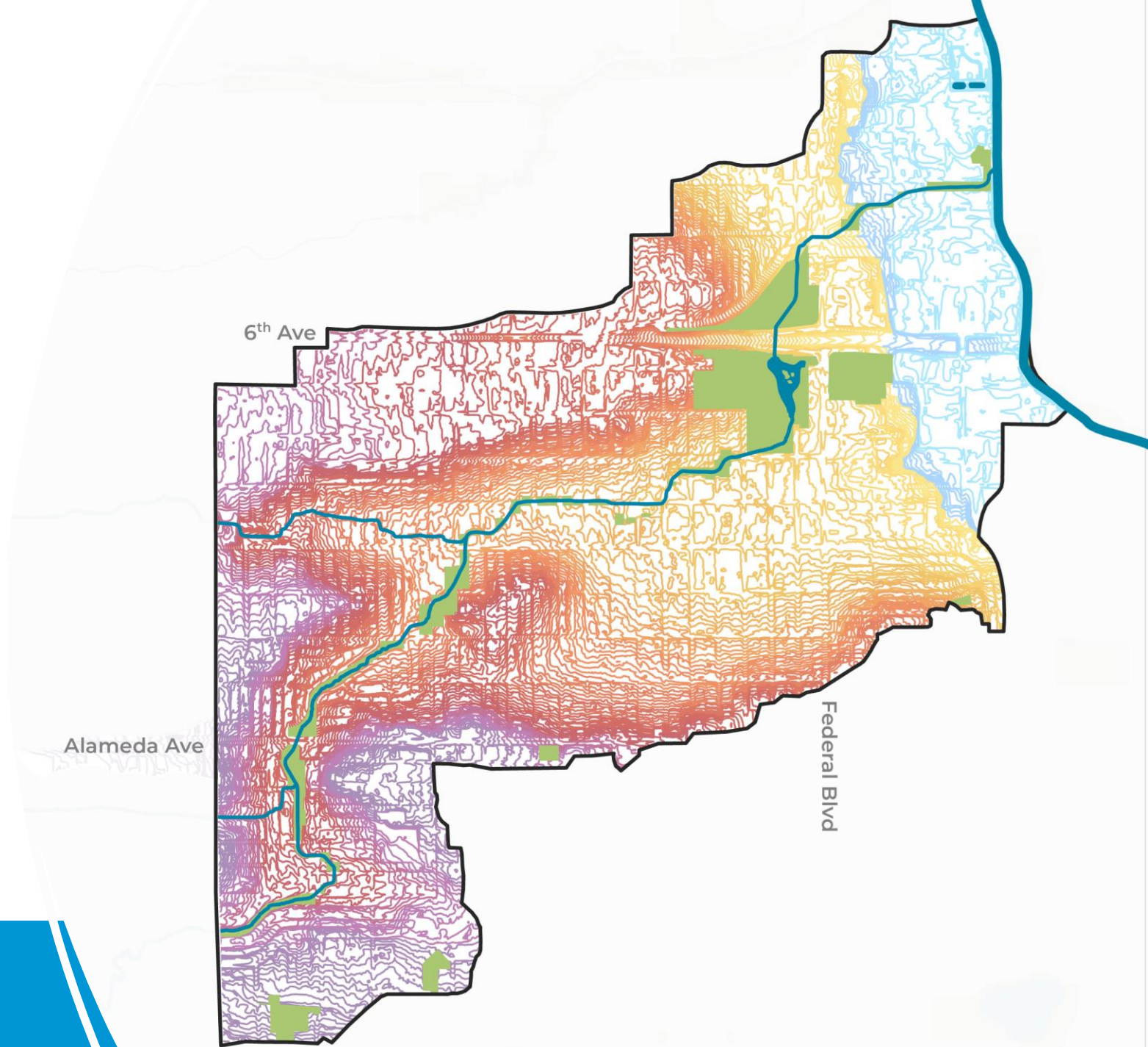
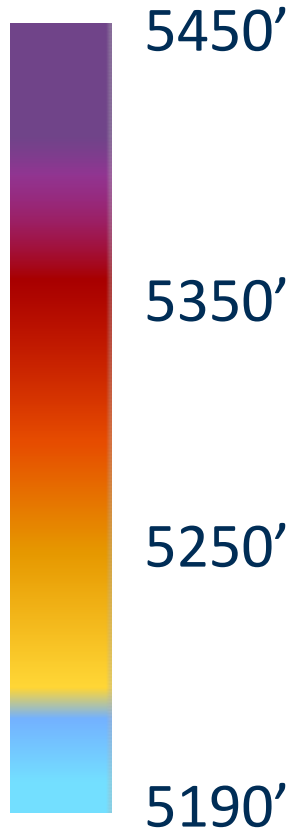
**Drainage Pipes**



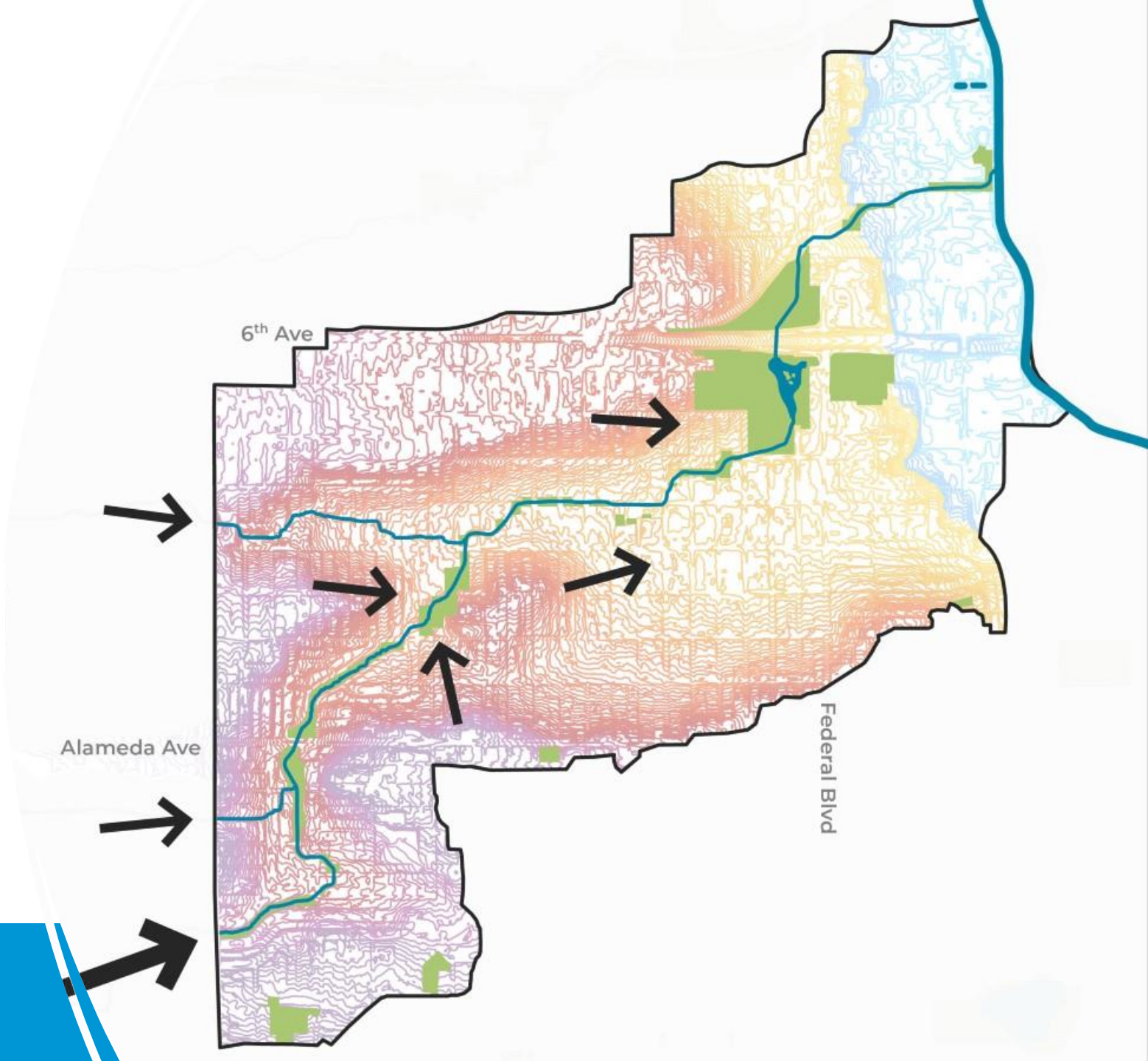
**Creeks & Channels**



# Basin Topography

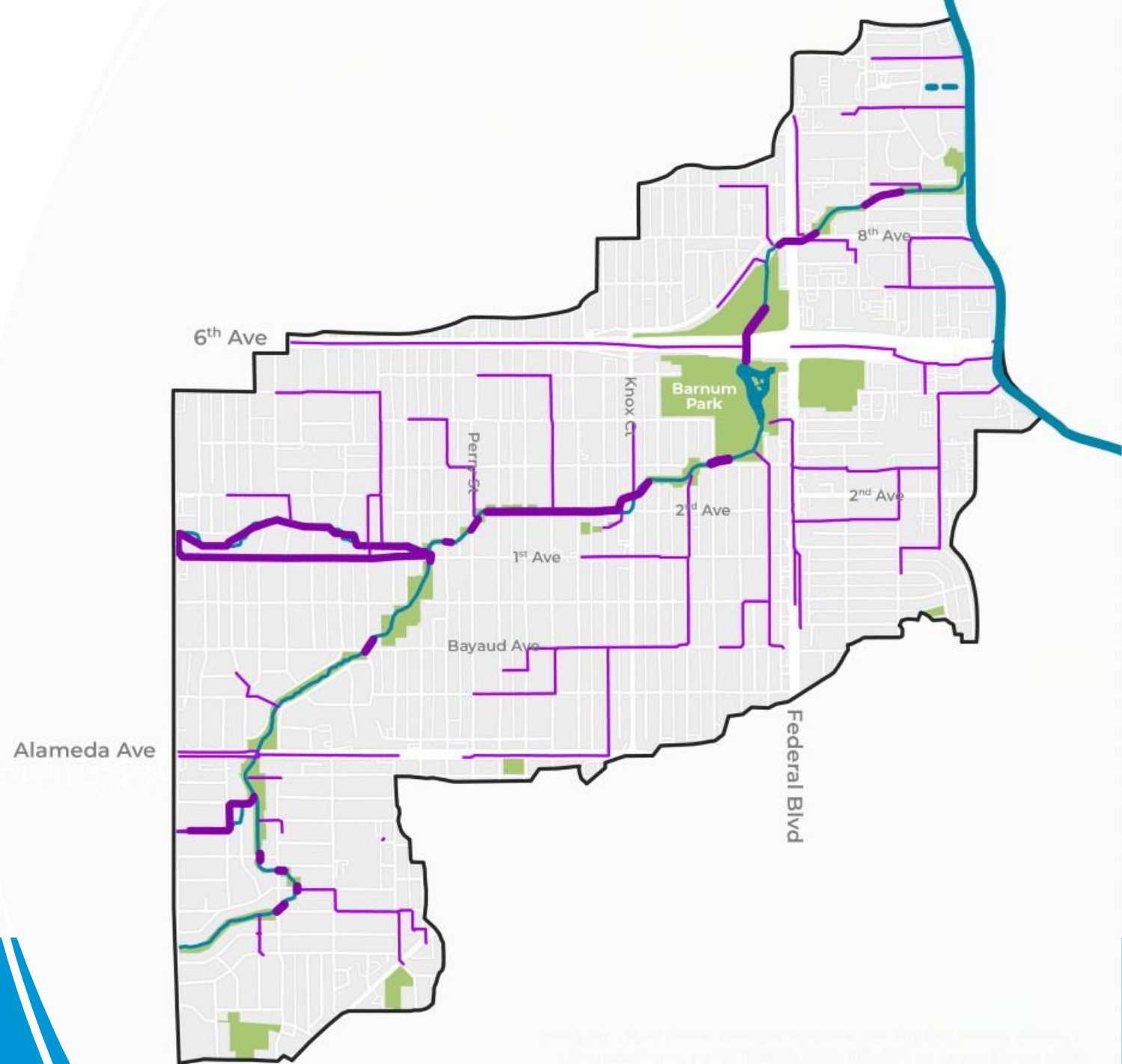


# Stormwater Collection and Flow Through Weir Gulch

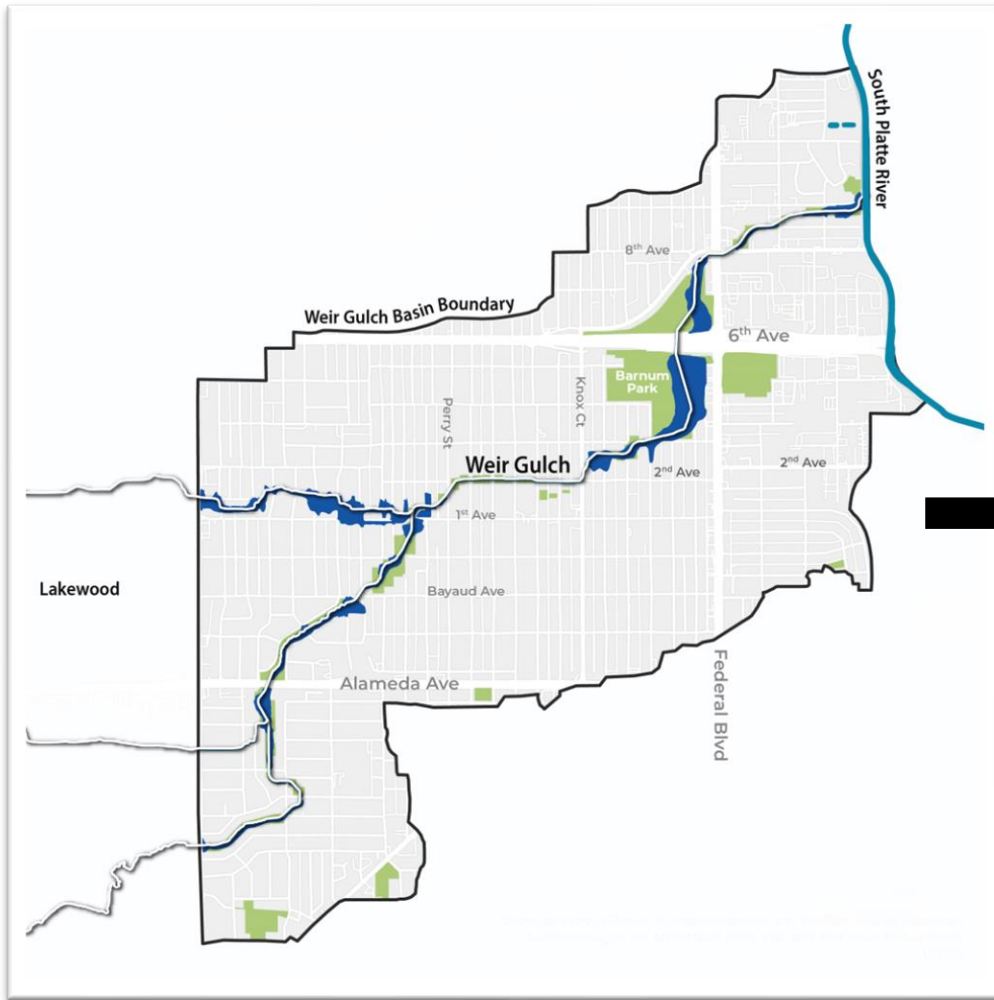




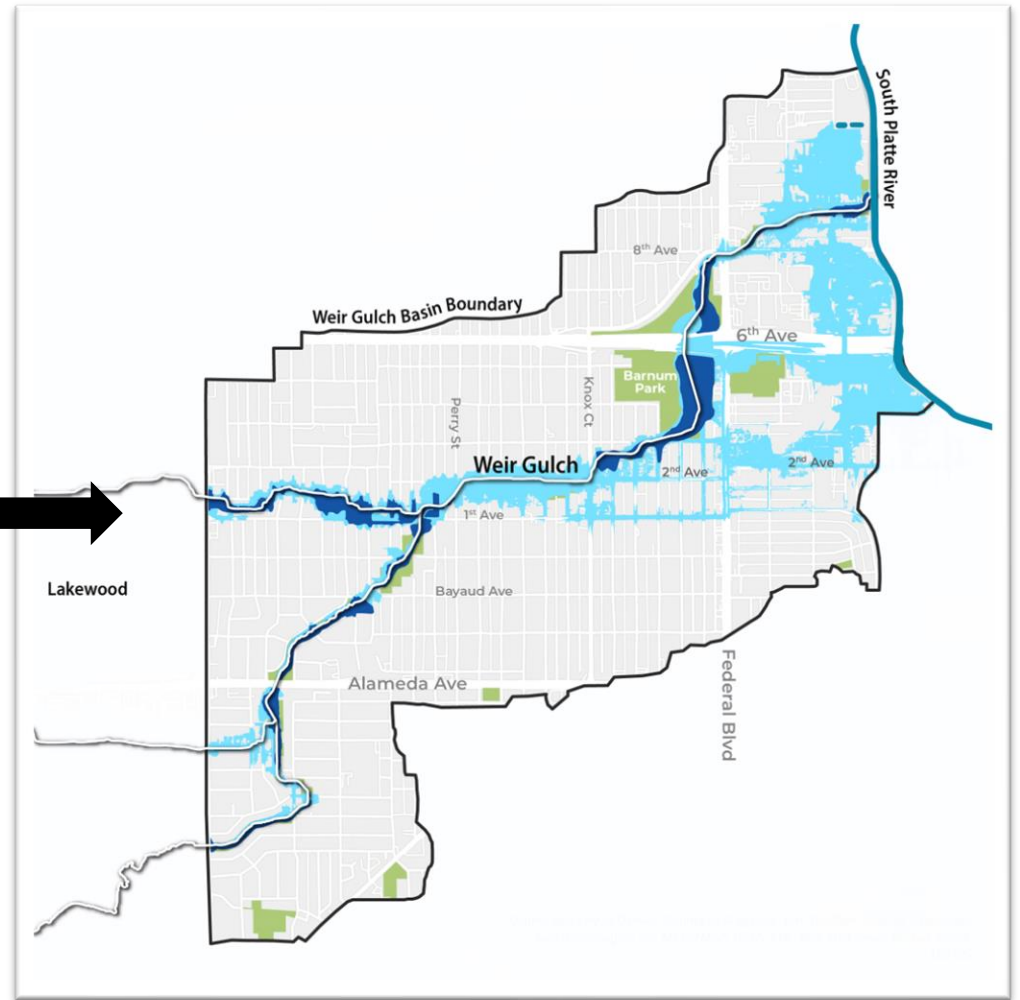
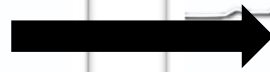
# Drainage Pipes







**1972**



**2024**

# Contributing Factors: Historic Land Use

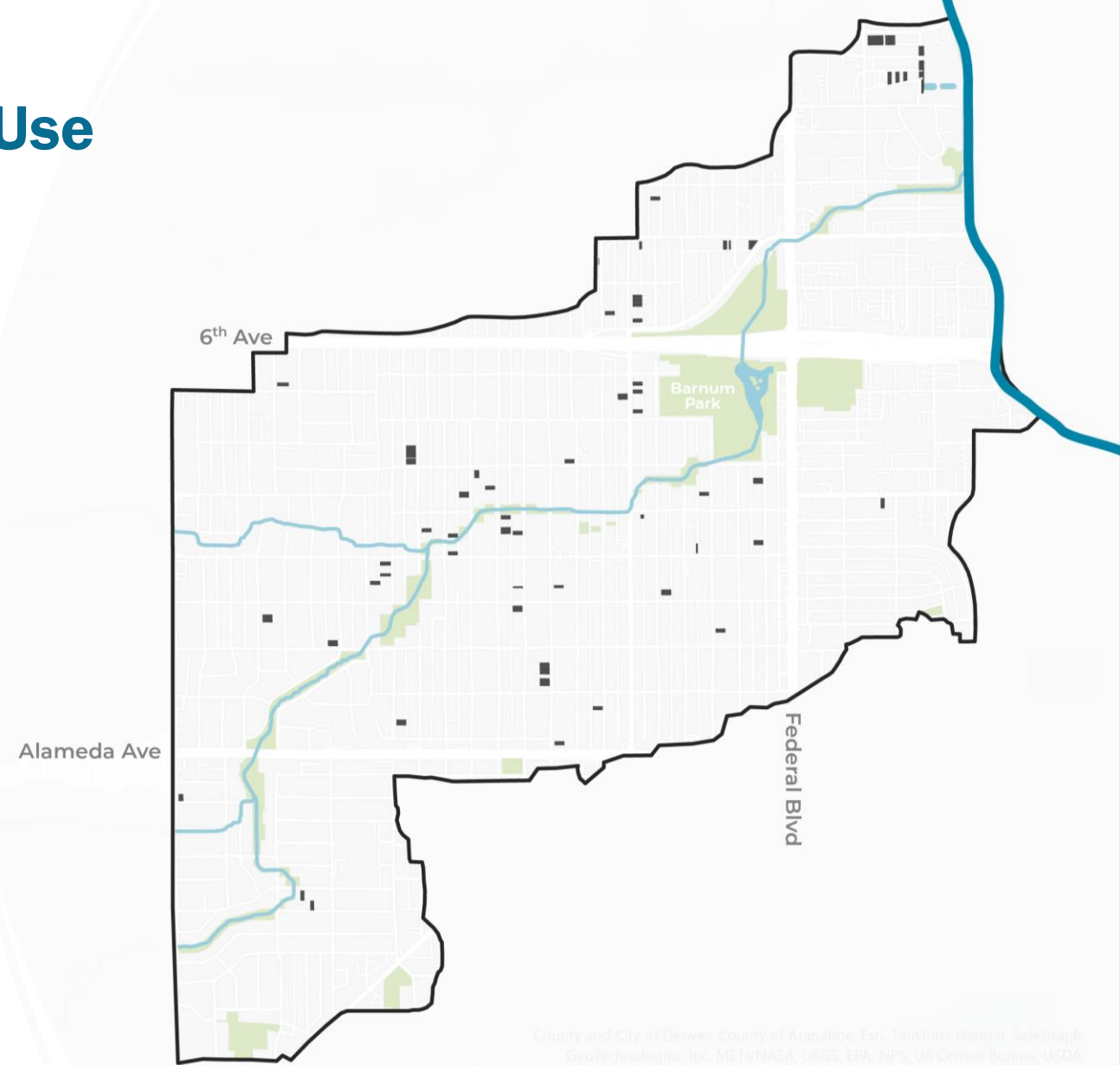
## Parcel Development Pre-1900's



**Pre-1860s South Platte River natural condition**



**Early 1900s - Agricultural Uses**



# Parcel Development by 1930

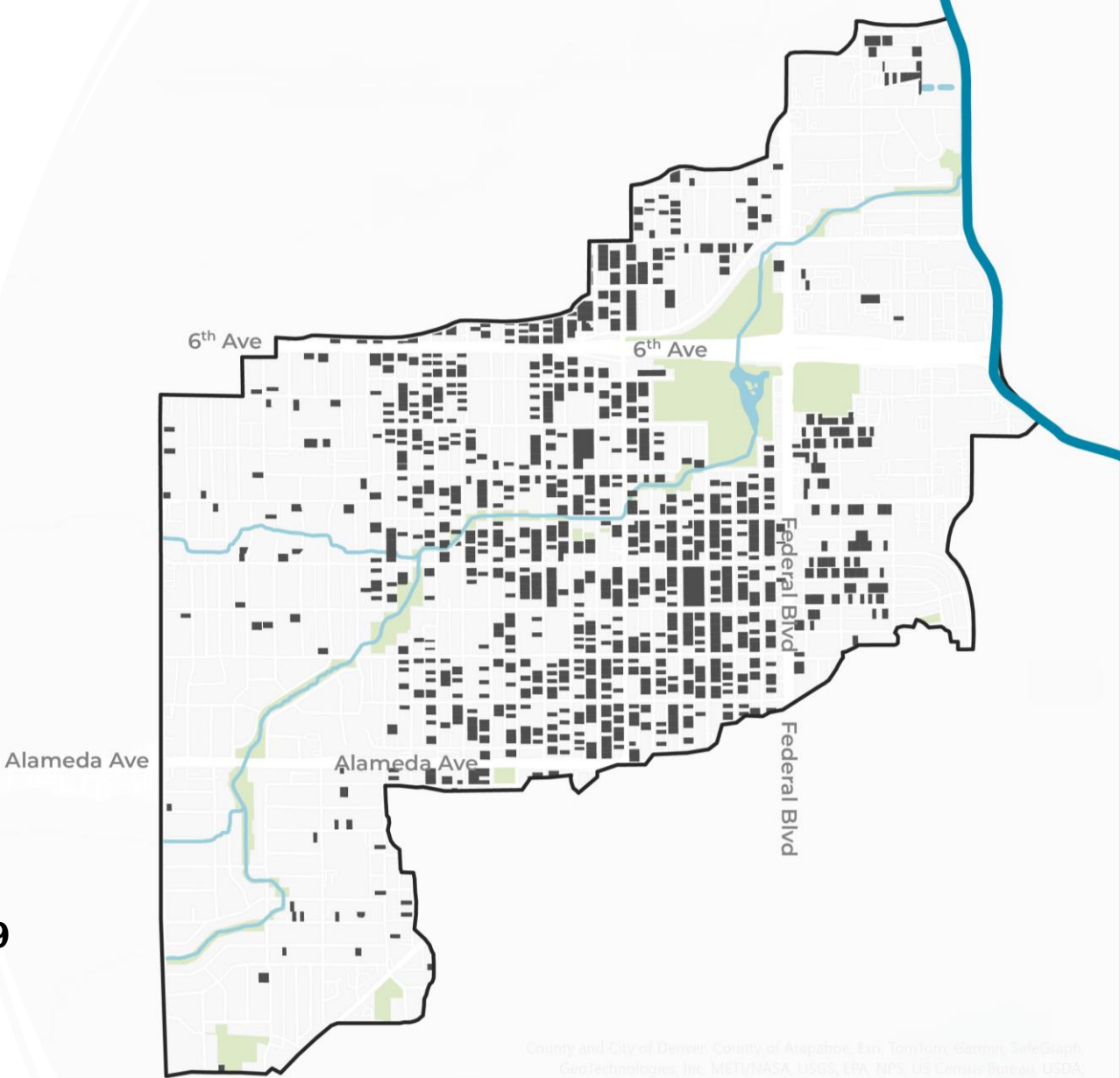
Increasing infrastructure and service brings neighborhood growth to the westside.



**1911 Alameda Bridge**



**Streetcar heading to Barnum Neighborhood, pictured in 1949**



County and City of Denver, County of Arapahoe, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, 2019



# Parcel Development by 1960

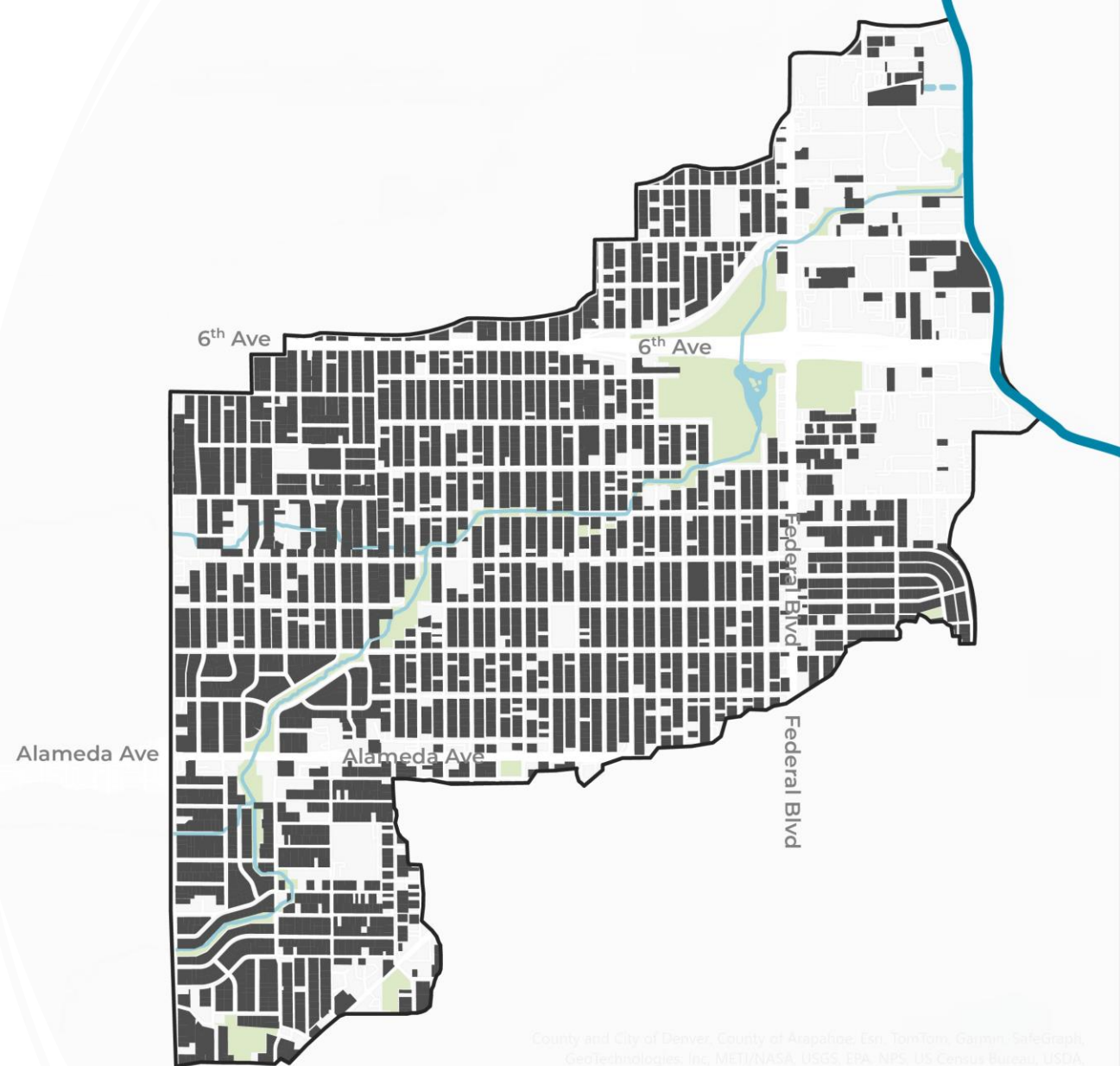
## Post-World War II Boom



**WWII Denver Ordnance Plant drove employment on the Westside**



**1950's Housing increased**



County and City of Denver, County of Arapahoe, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, © 2021

# Parcel Development by 1970

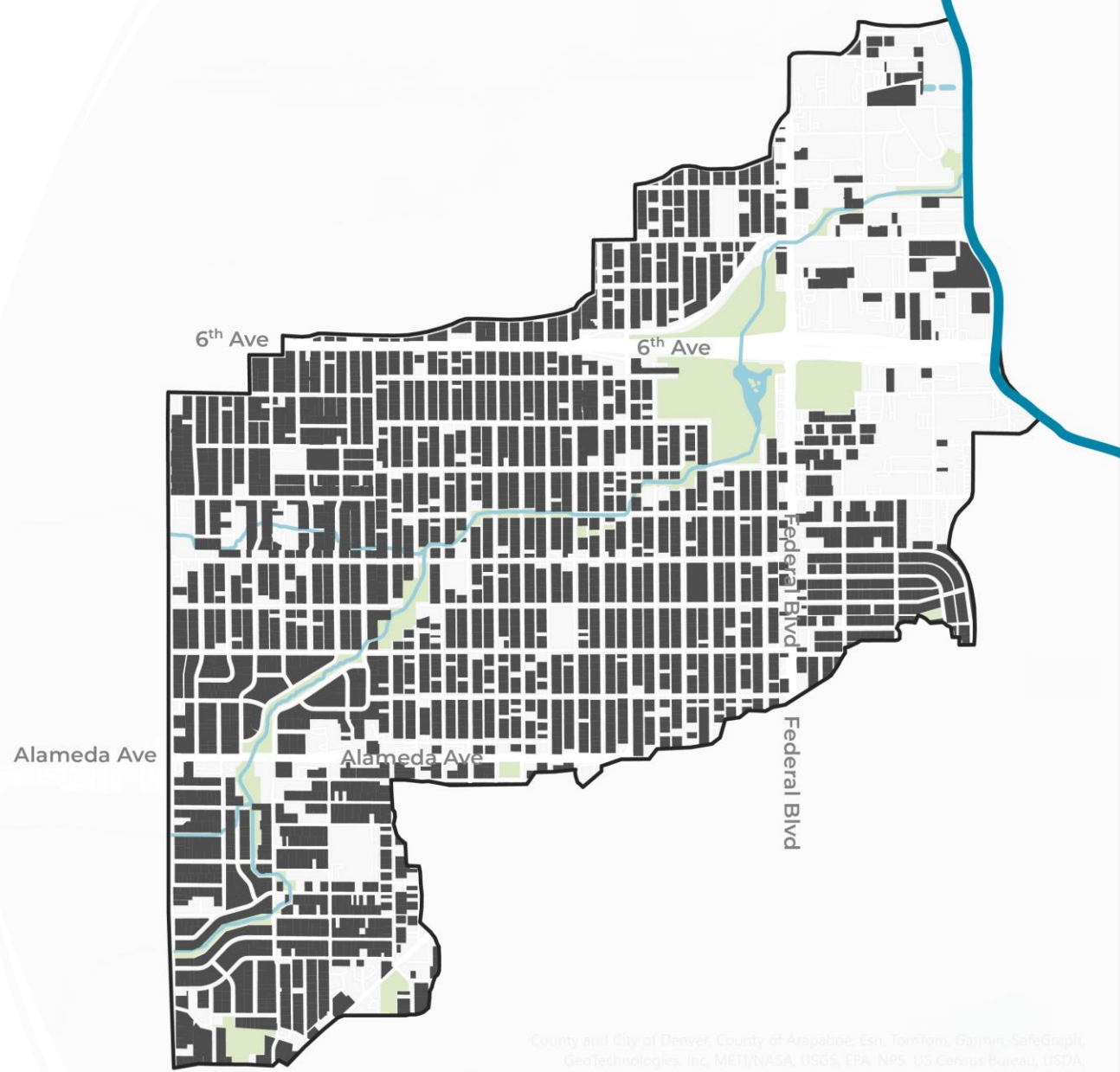
I-25 borders river and west side neighborhoods. After the flood of 1965, highway was realigned through eastern edge of Valverde neighborhood and river.



**Construction of I-25  
(1948)**



**Flood of 1965**



County and City of Denver, County of Arapahoe, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, © 2023



# Development Today

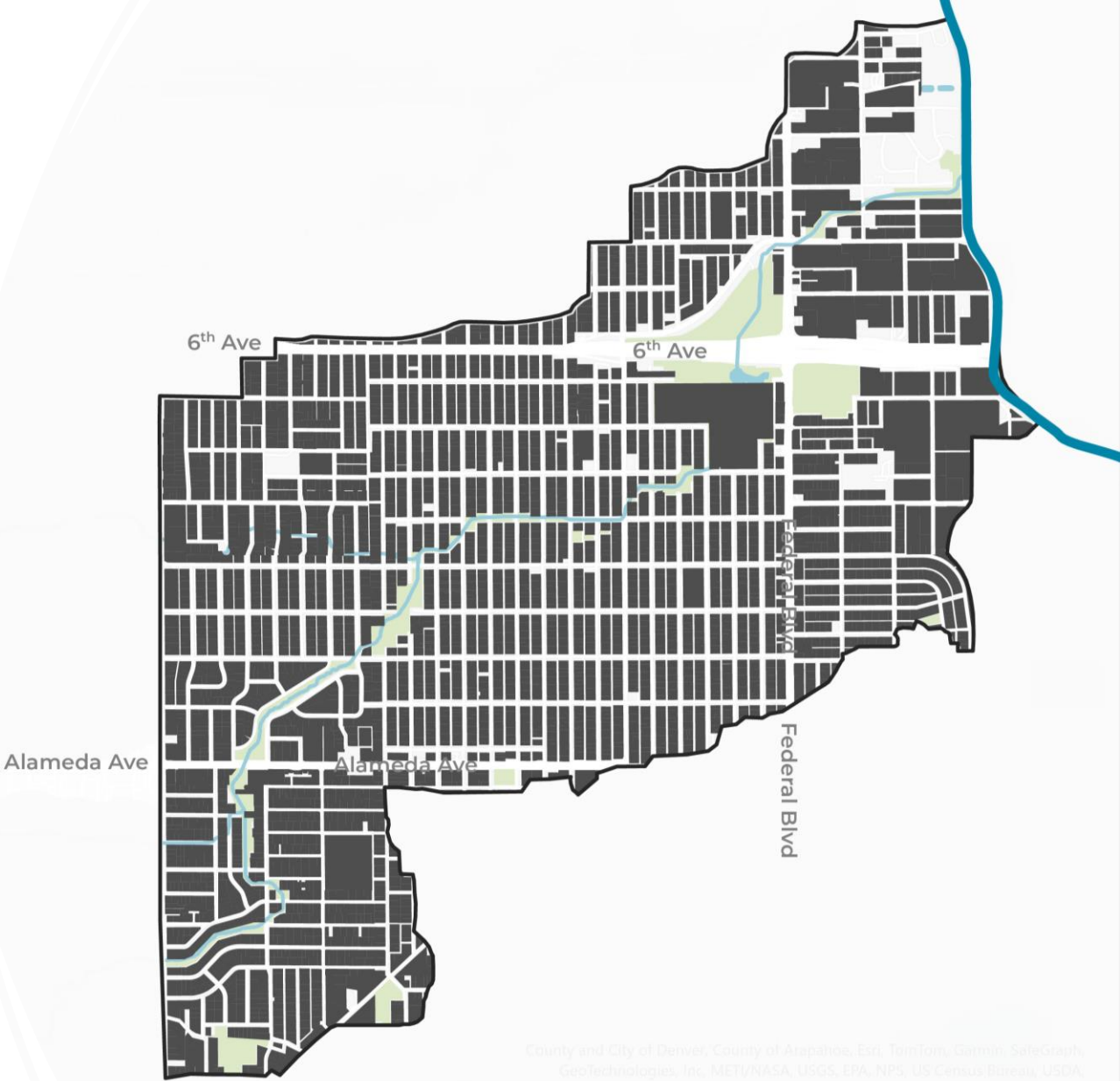
Large parcel industrial uses edging I-25 and 6<sup>th</sup> Avenue, and establishing barrier to neighborhoods west of Federal Blvd.



**Alameda Bridge today**



**Weir Gulch meets South Platte River in Sun Valley**



County and City of Denver; County of Arapahoe, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, etc.

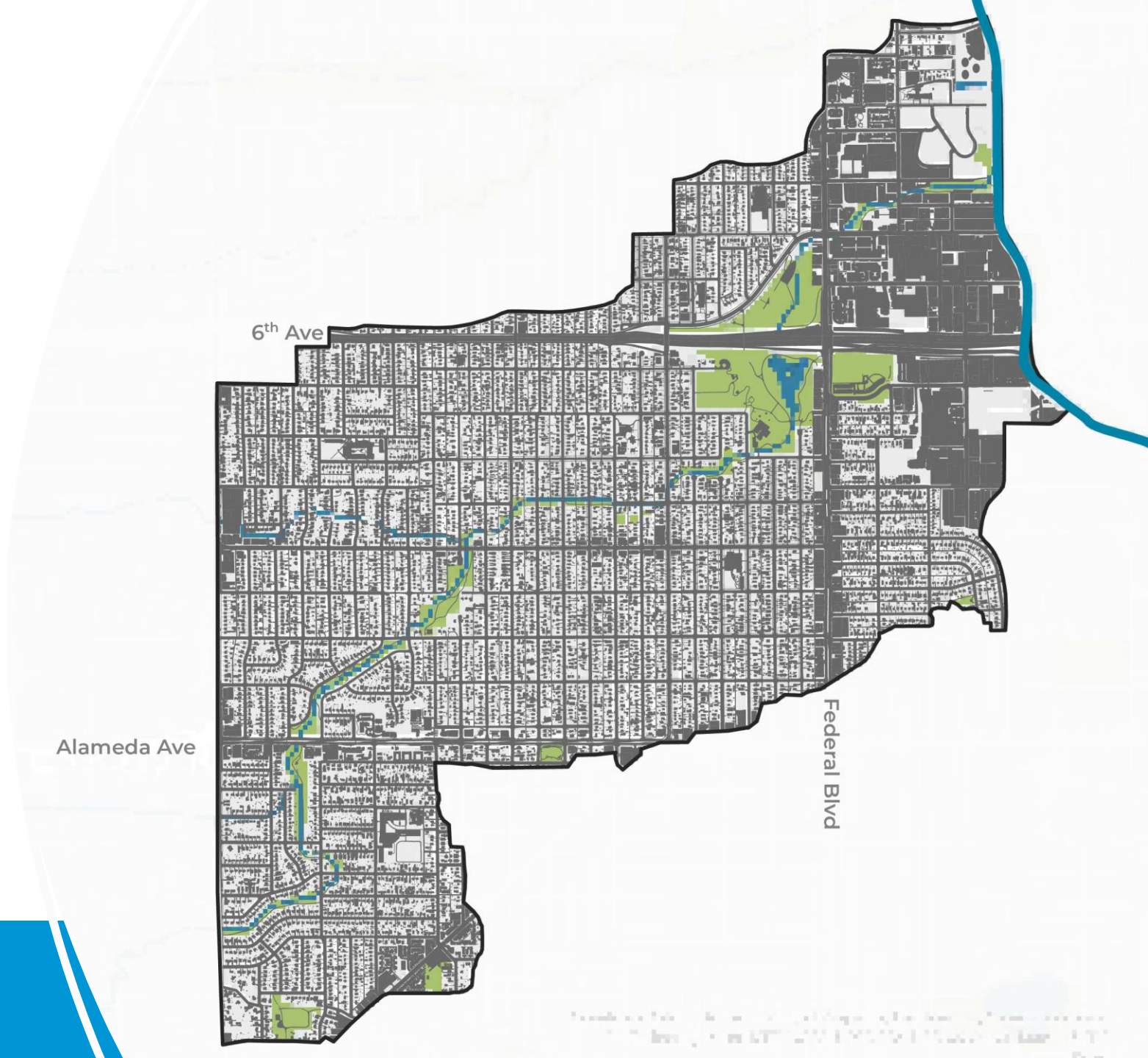


# Impervious Surface

Impervious surfaces include streets, sidewalks, rooftops, parking lots, and driveways

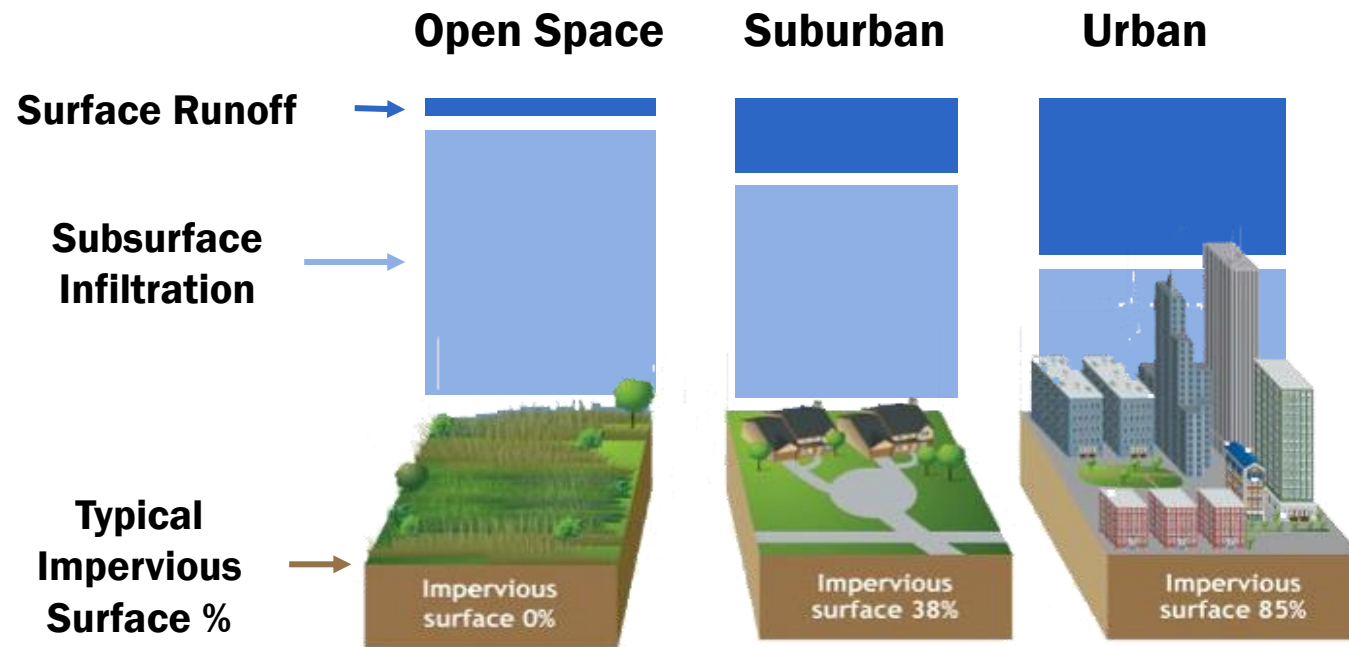


**930 Acres - 61% of the Basin**



# Surface Runoff and Infiltration

Greater impervious surface reduces the opportunity for infiltration and increases stormwater runoff

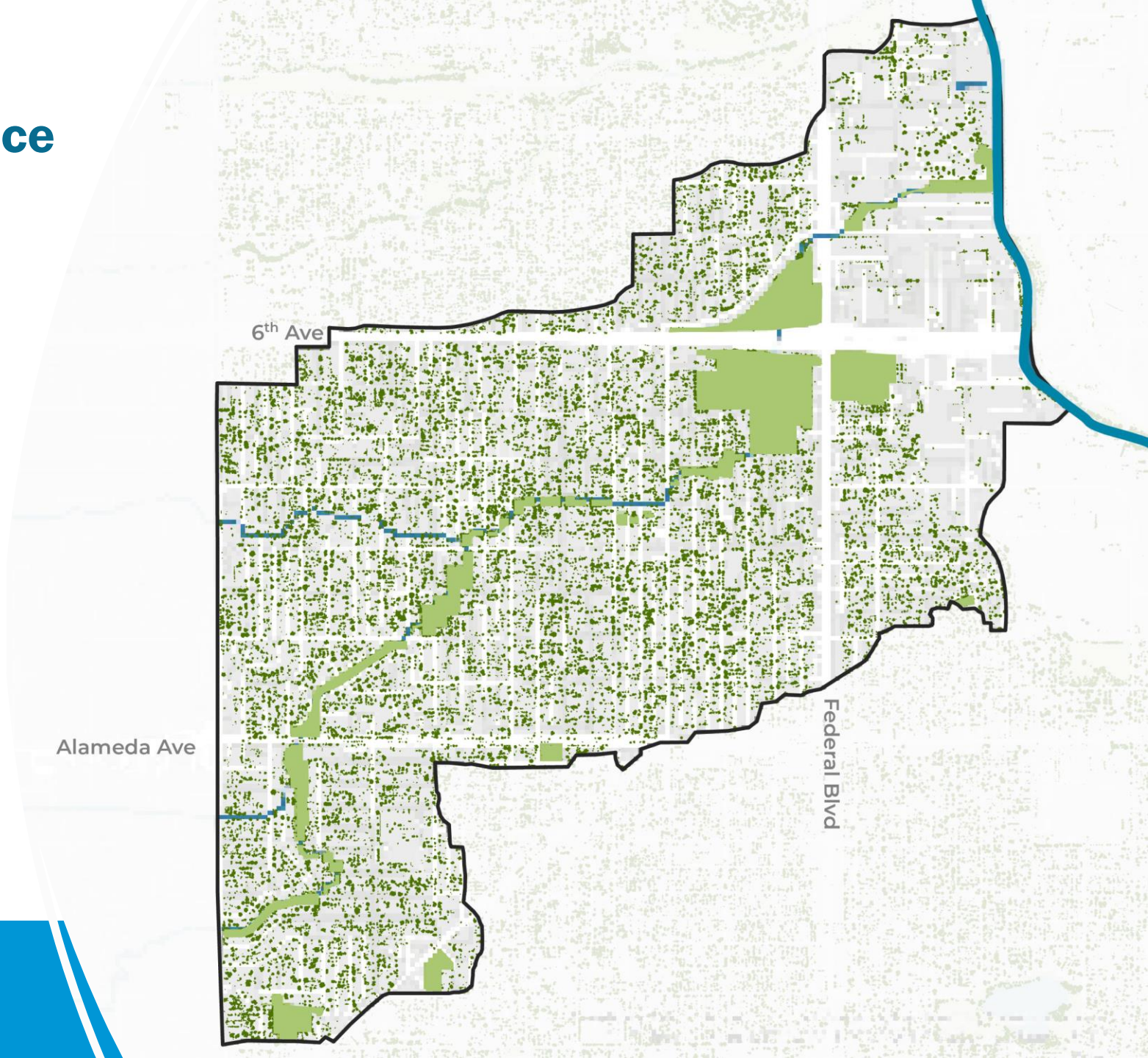




# Tree Canopy & Park Space

257 Acres of Tree Canopy  
126 Acres of Park Space

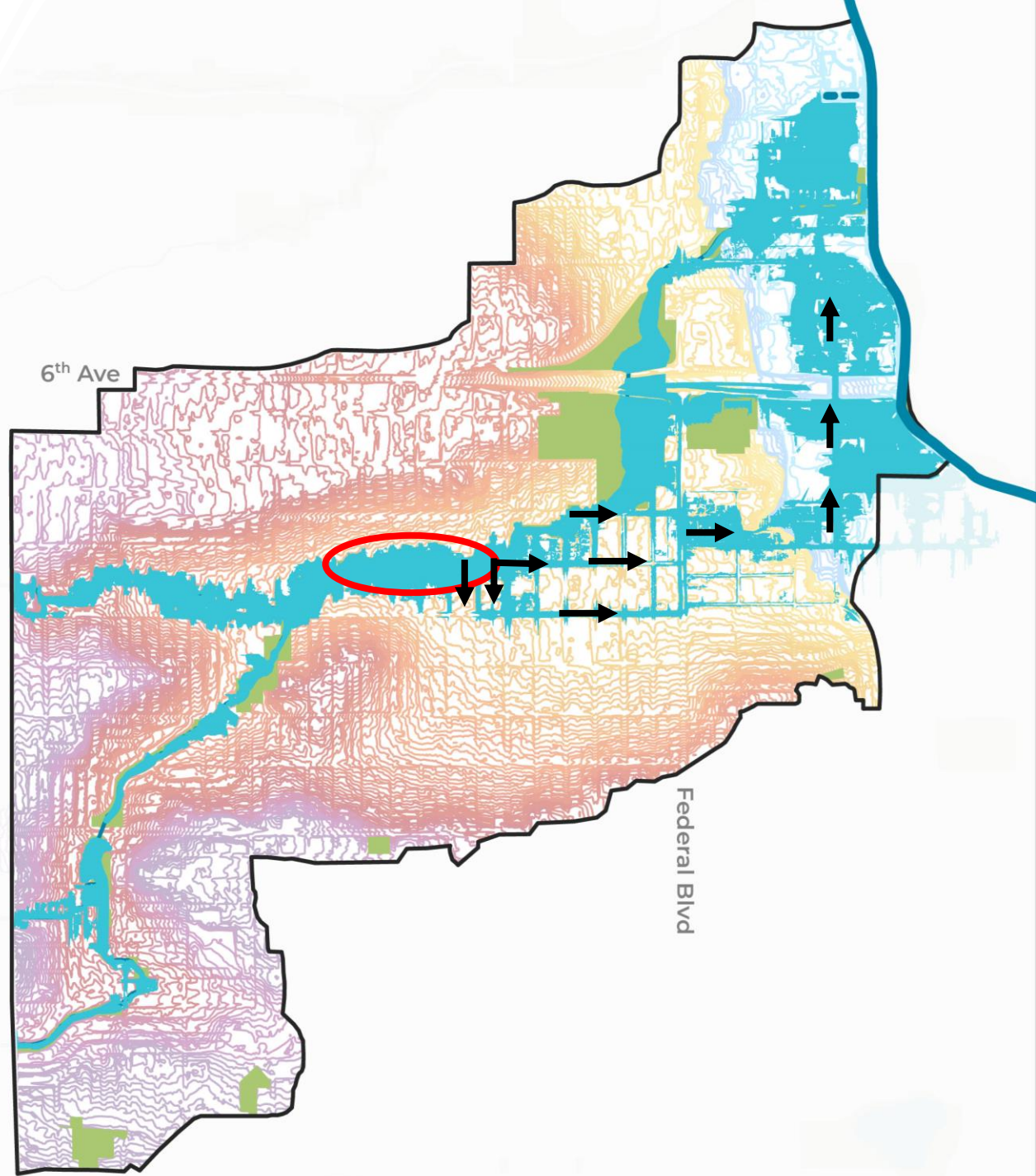
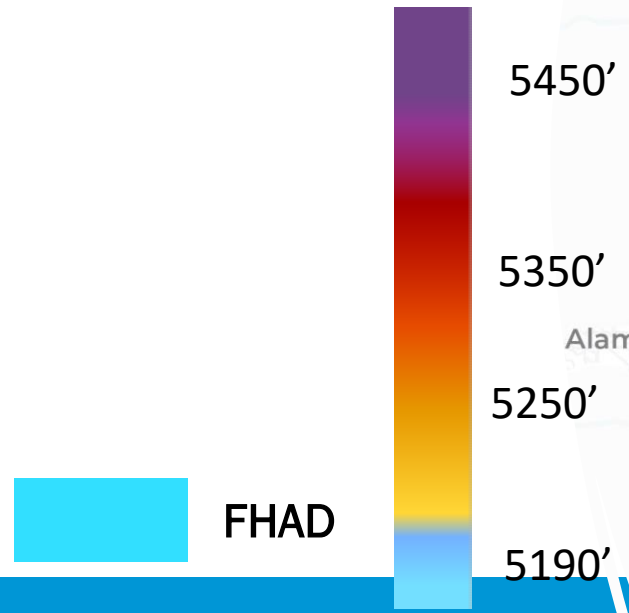
**383 Combined Acres -25%**





# New Modeling, Topography, Infrastructure and Land Use

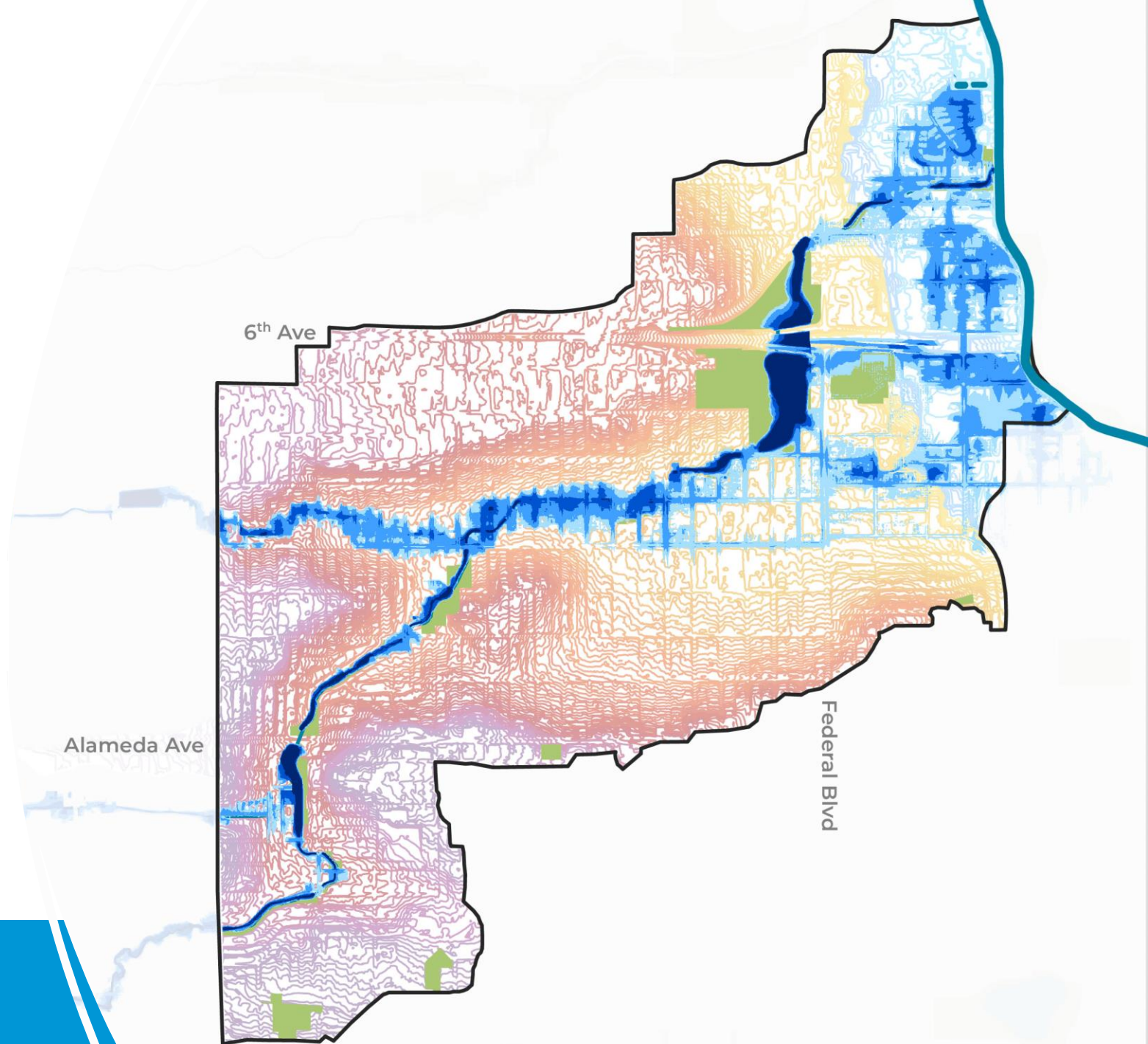
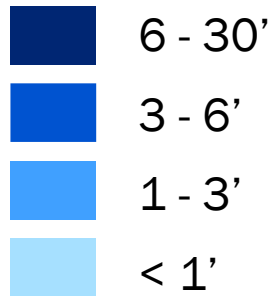
Increased runoff and the **undersized culvert** conveying drainage from North Perry Street to North Knox Court is one cause.



# Severity of the Outcomes

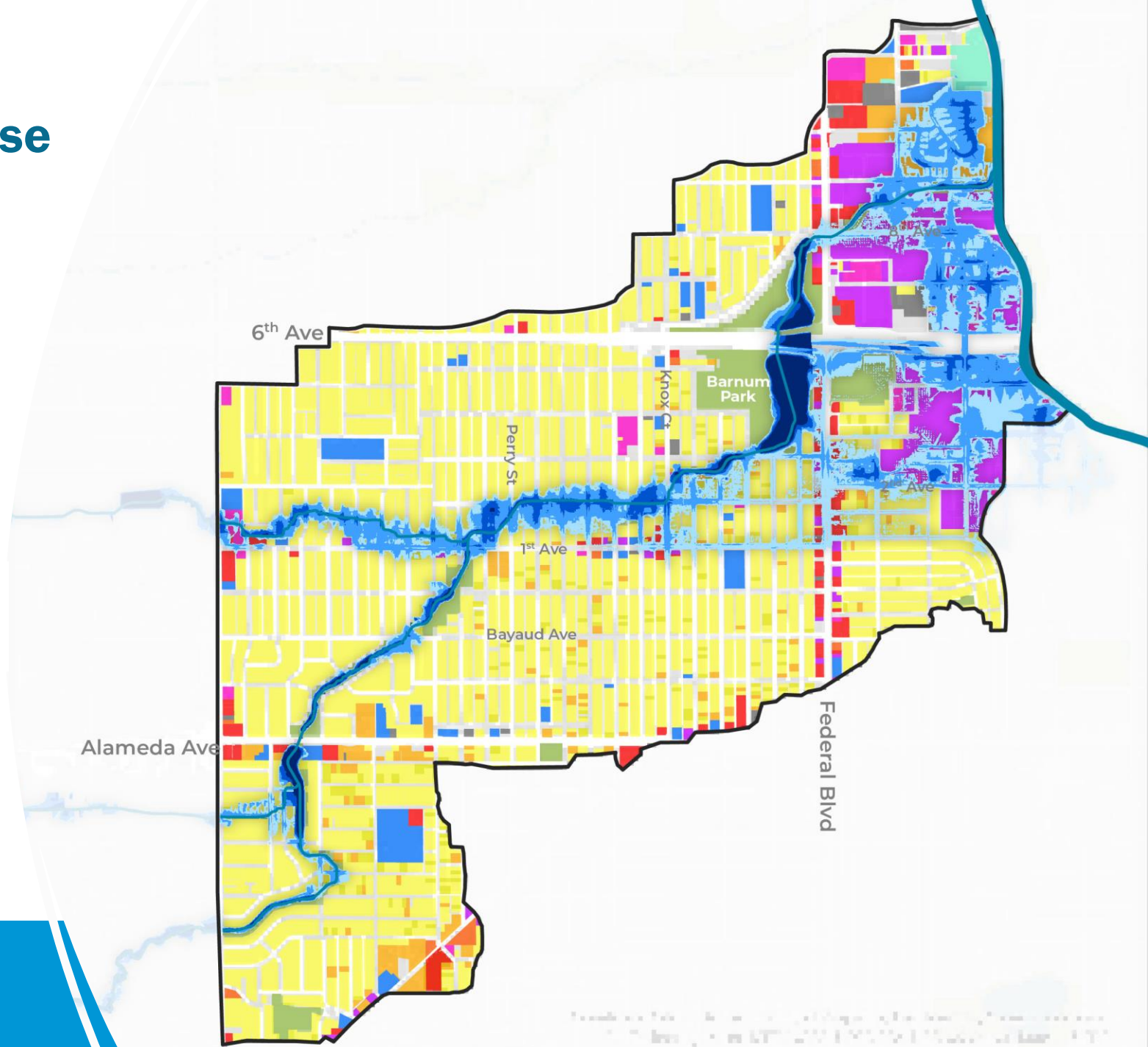
Overflows settle in the low-lying industrial areas between Sun Valley and Valverde

## Inundation Depths





# Flood Depth and Land Use





# How Do We Move Forward?

# Building Awareness & Understanding



GREY  
INFRASTRUCTURE



GREEN  
INFRASTRUCTURE



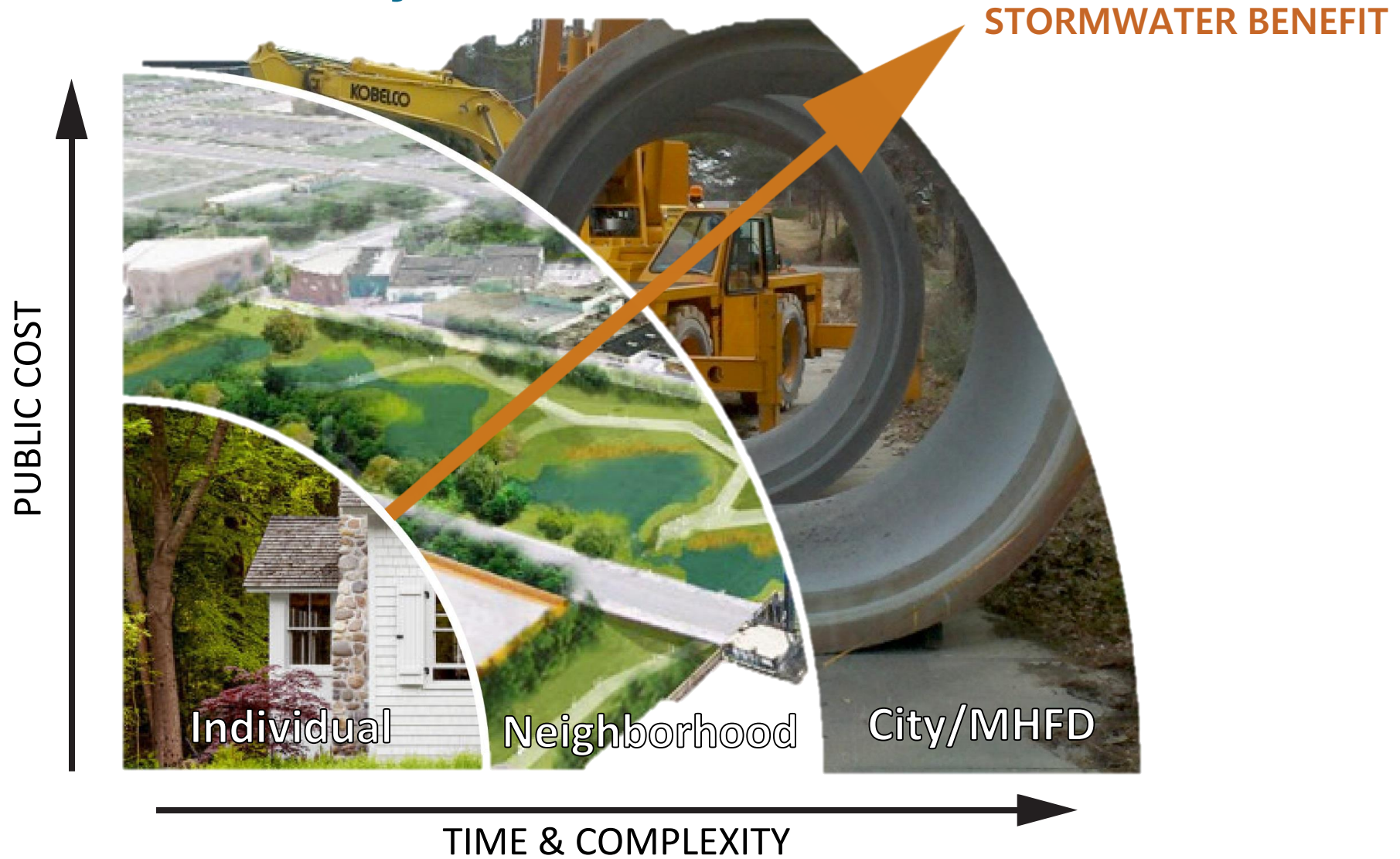
FOUNDATION WITH  
COMMUNITY



FUTURE PLANNING

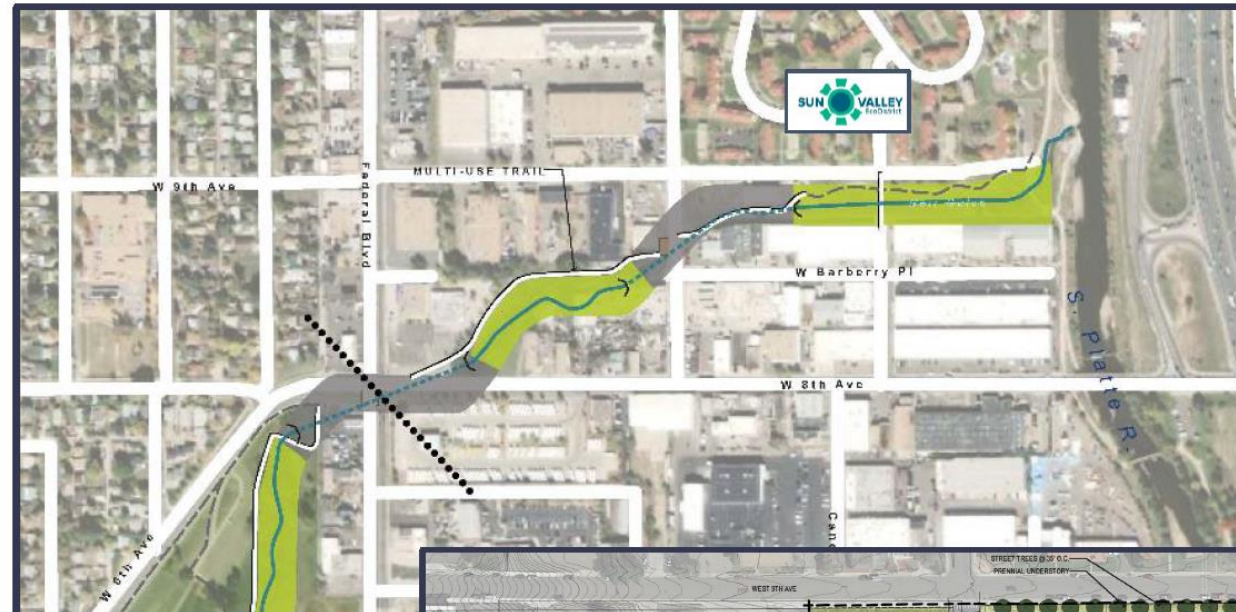


# We all Have a Role to Play





# Weir Gulch – Phase I Improvements: SPR to 8<sup>th</sup> Ave



- Complementary Projects**
- Sun Valley EcoDistrict**
    - Lowest income neighborhood in Denver
    - Received \$30M HUD grant
  - Weir Gulch Channel Improvements**
    - Currently Under Design
    - Includes widening channel and elements of Urban Waterways

**LEGEND**

**CHANNEL**

- Open Channel
- Channel in Culvert

**GULCH ACCESS**

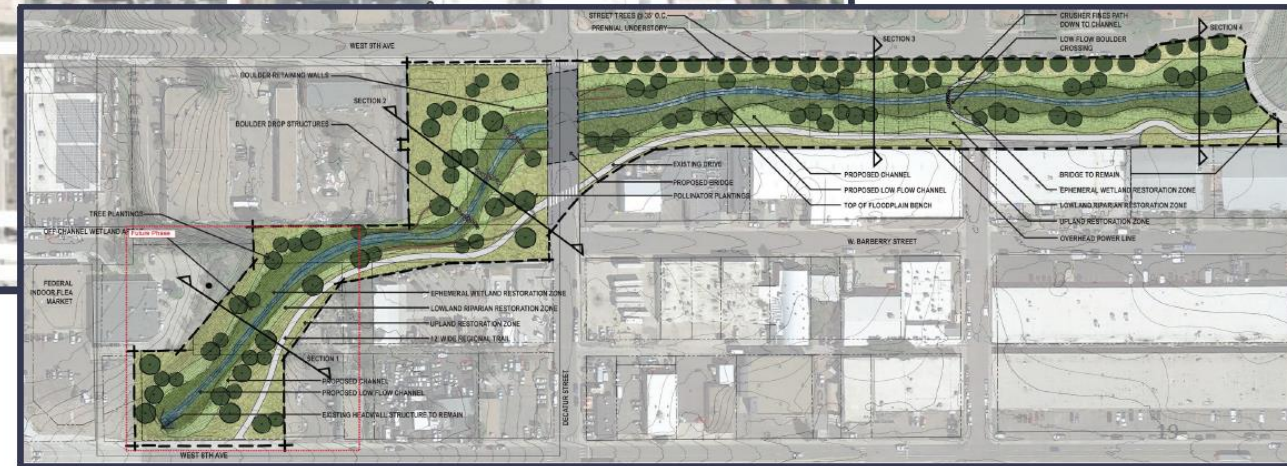
- Street Connections

**TRAILS**

- Regional Trail
- Existing Trail to Remain
- Low Flow Crossing

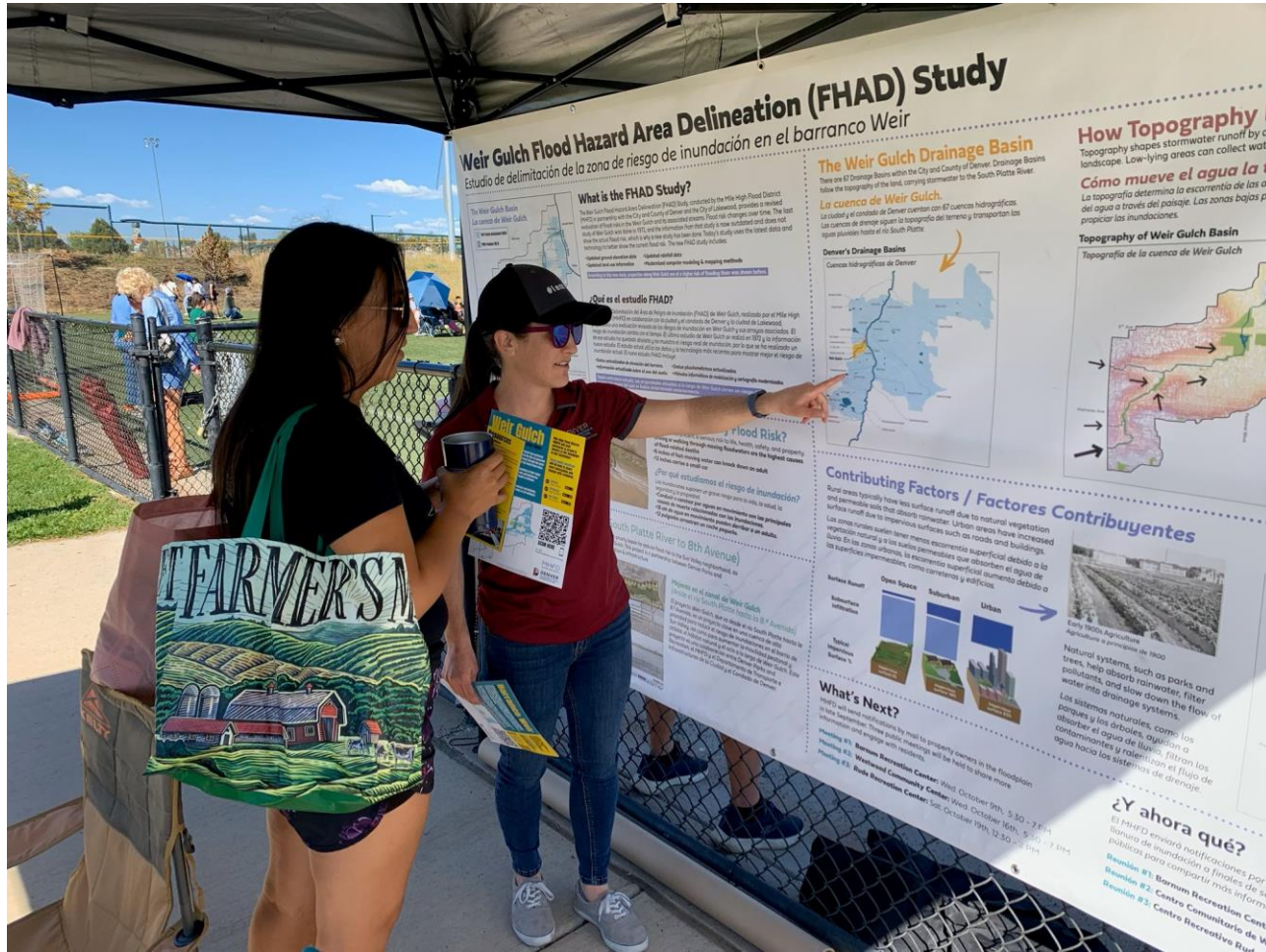
**ROADS**

- New Roads
- Vehicular Bridge





# Build Awareness at the Neighborhood Level





# Individual Level: Home & Business Owner Floodproofing



Understand the Risk



Take Action to Protect



# Understand Risk and Protect Your Property

## Find Your Flood Risk



Explore MHFD's online map to see if your house is in a floodplain

[MHFD.org/FloodMap](https://mhfd.org/FloodMap)

## Explore FEMA Resources



### [Steps to Prepare for Flooding](#)

Take steps to protect your home, family, and financial security



### [Prepare Now for Flood after Fire](#)

Prepare for flood after fire season



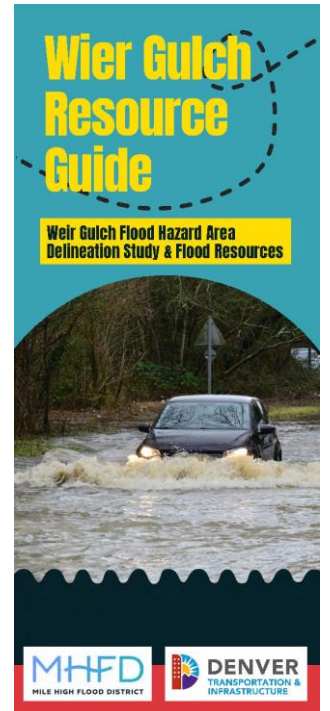
### [How to Reduce Your Costs](#)

Lowering your flood risk can lower your costs. Learn more about mitigation strategies and related discounts.

[FloodSmart.gov](https://FloodSmart.gov)

## Protect Your Property

- Consider Flood Insurance
- Keep trash out of drainage channels so water can flow
- Ensure water flows away from your house
- Construct barrier around window wells
- Find more tips in the Weir Gulch Resource Brochure! (Link below)



[MHFD.org/WeirGulch-FHAD](https://MHFD.org/WeirGulch-FHAD)

## Be Aware!

- If you're approached by anyone outside of the City and County of Denver or MHFD to discuss potential flood projects or changes to your property - **be cautious and check with us!**
- Support Your Neighbors
  - Strengthen neighborhood communication to share flood risk information and city contacts.



# Talk with us Tonight!

Visit Mile High Flood District's Weir Gulch webpage.

Scan the QR Code

[MHFD.org/Weir-Gulch-FHAD](https://MHFD.org/Weir-Gulch-FHAD)

