

Monsoon Flood Season Preparations

May 27, 2025





Objectives for Tonight



- Monsoon forecast from the National Weather Service
- Update on Spruce Wash Suite of Projects
- Status of other stormwater drainage improvements
- Monsoon preparations





NWS Flagstaff

Monsoon Outlook 2025

Leaning toward warmer and wetter than normal.





Supporting and Summary Information

Primary factor: Inverse correlation between drier Winters and wetter Monsoon season across the Southwest. (*We've had a drier than normal Winter, which encourages a wetter than normal Monsoon*).

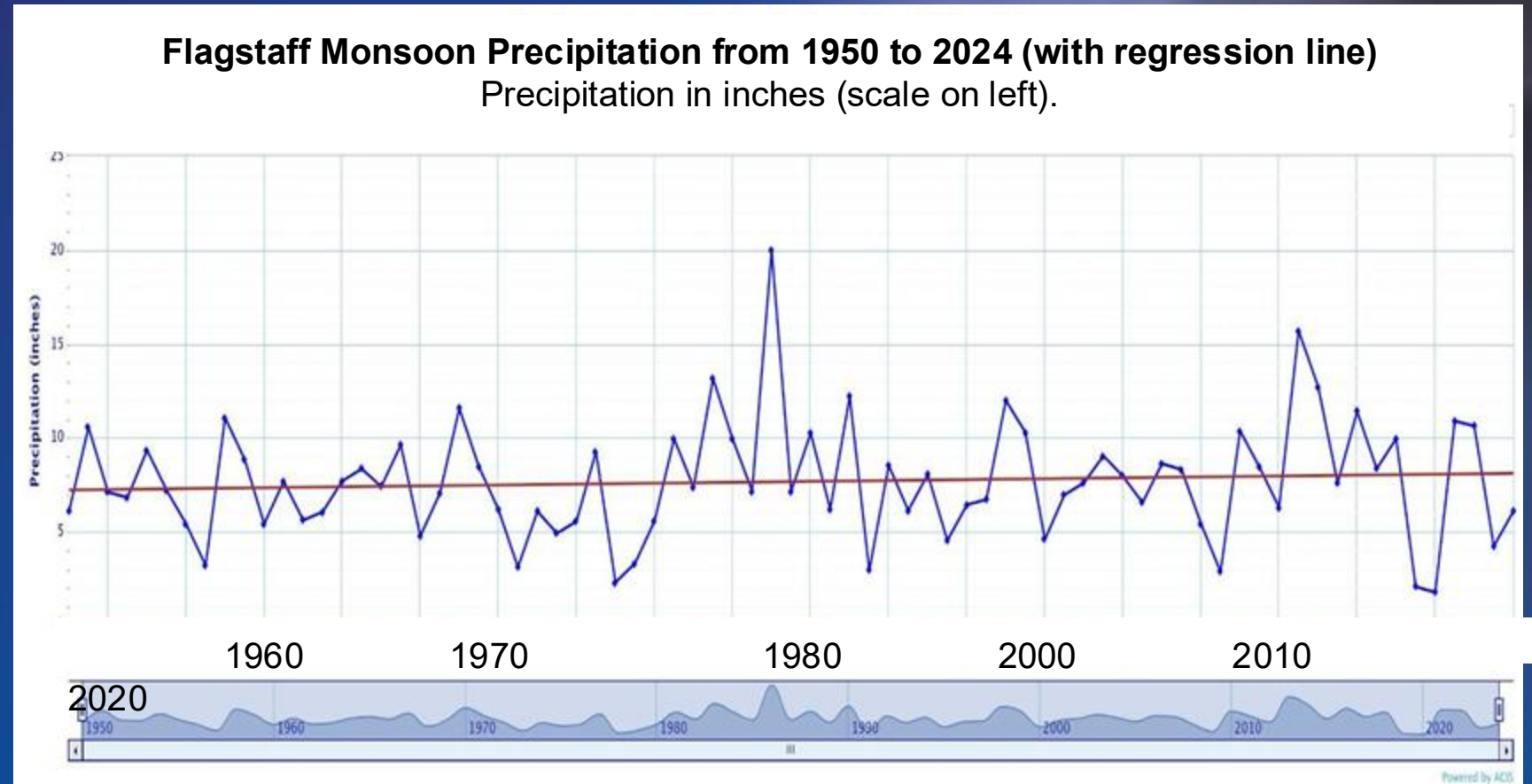
While our local monsoon rainfall is trending wetter due to climate change, 4 of the past 6 have been below normal precipitation.

With above normal precipitation more likely this year, impacts may appear more intense than usual (based on recent 'drier' monsoon season).

An 'early start' to the monsoon isn't a certainty.

Flagstaff Monsoon Precipitation (1950 - 2024)

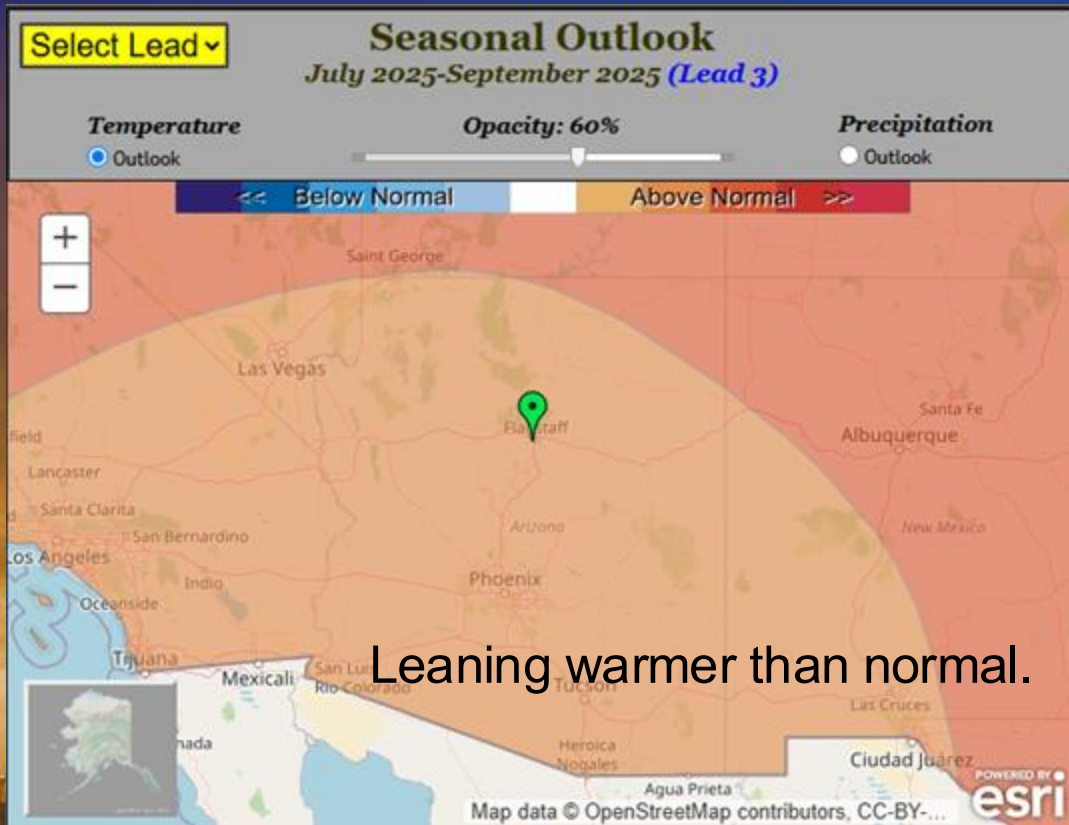
- While highly variable, monsoon season precipitation is increasing in Flagstaff.
- Even though 4 of the past 6 years have had below average monsoon rainfall.
- An enhanced monsoon season is more likely, and may 'seem' more intense due to recent drought years.



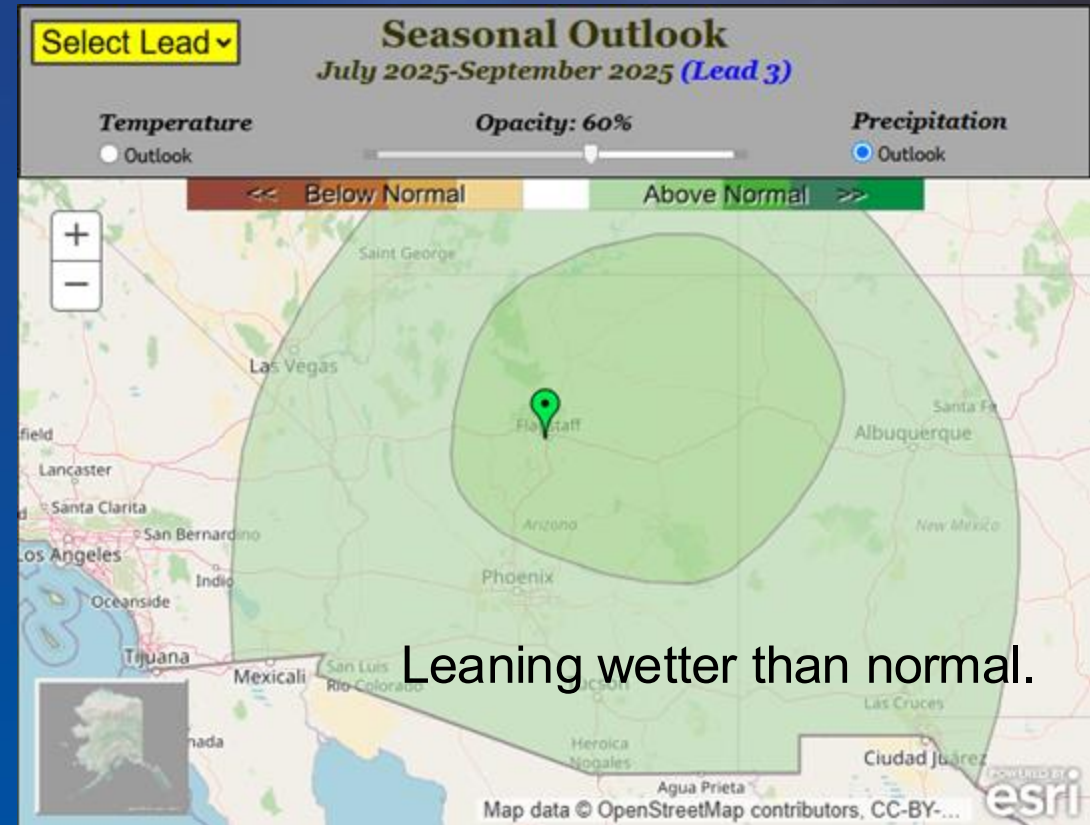
Climate Prediction Center Outlooks

Flagstaff - 67% chance of near or above-normal rainfall

Temperature Outlook



Rainfall Outlook

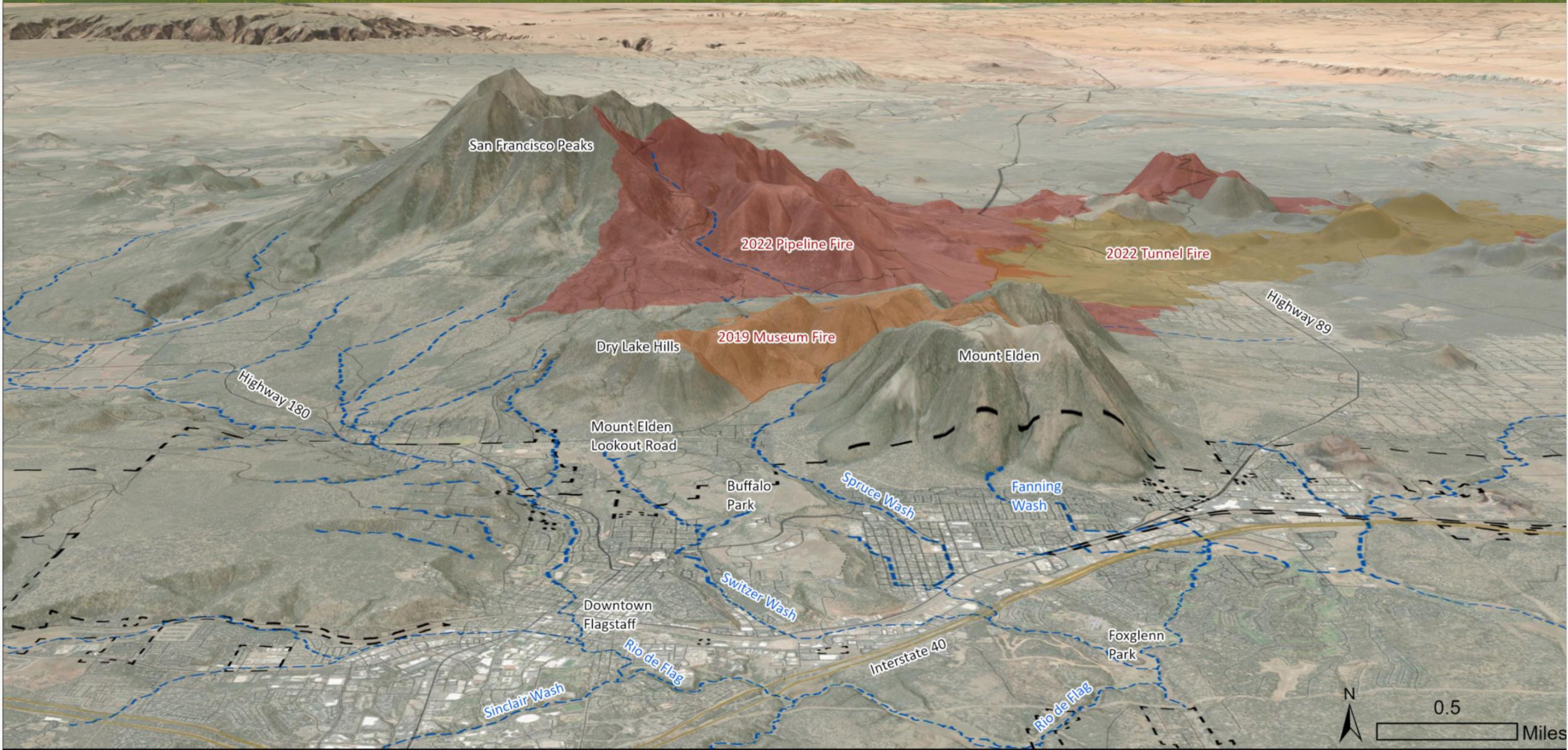


Spruce Wash





Overall Map





Spruce Wash Schedule

NOV 2022
**PROP 441
PASSES**

**THANK YOU
FLAGSTAFF!**

NOV 2022 -
ONGOING
**STUDY,
PLANNING,
DESIGN &
PRECON**

APR 2024
**COMPLETED:
GRANDVIEW
UTILITIES &
WEDGE
CLEARING**

OCT 2024
**COMPLETED:
GRANDVIEW
STREET
WEDGE
UTILITIES**



2024 **CONSTRUCT:**
BEGIN LV-Cedar
Channel

BEGIN Wedge
Stormdrain

Linda Vista
Crossing

2025 **CONSTRUCT:**
LV-Cedar Channel
Wedge Stormdrain
& Basin

Cedar Xing

Dortha-Arroyo
Seco Channel

Killip Inlet & Outlet

2026 **CONSTRUCT:**
Final Cleanup and
Close-Out





Suite of Projects



Key Flood Projects

2. "The Wedge" Detention Basin
3. Linda Vista Drive Crossing
4. Cedar Avenue to Linda Vista Drive Channel
5. Cedar Avenue Crossing
6. Arroyo Seco Drive to Dortha Avenue Channel
7. Arroyo Seco Drive Inlet
8. Killip Basins Outlet
9. Killip Basins Inlet

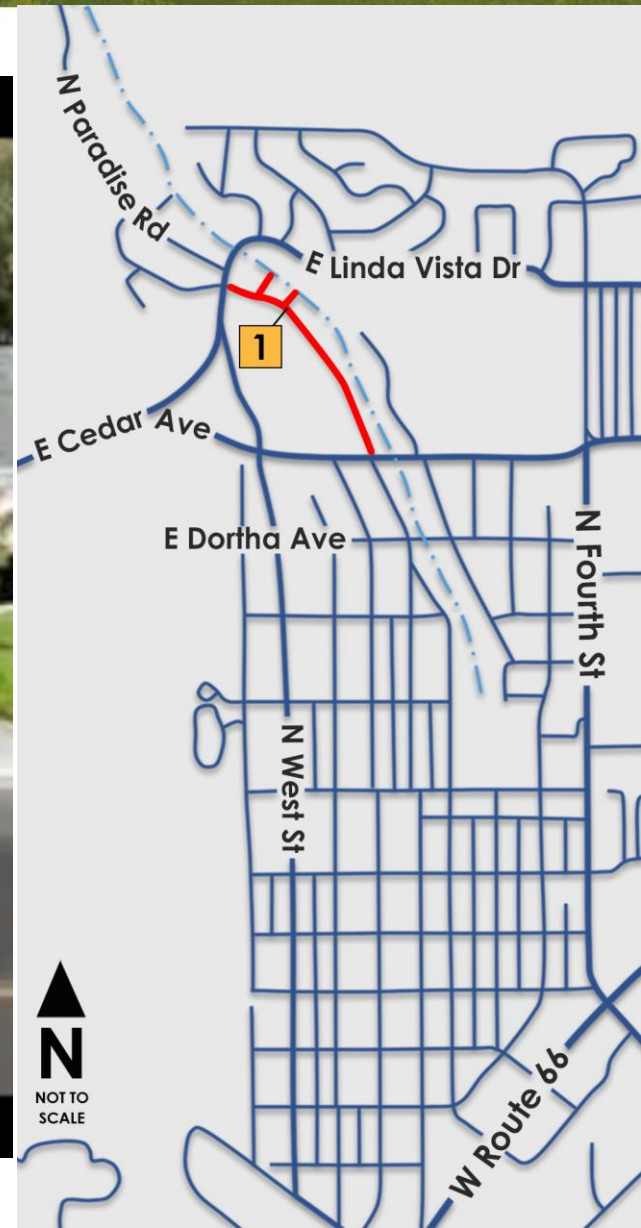
Completed Key Flood Projects

1. Grandview Drive Reconstruction
-  Spruce Wash Channel Improvements Project (Cedar Avenue to Dortha Avenue)
-  Spruce Wash Channel Improvements Project (Dortha Avenue Inlet)
-  Killip School Regional Detention Basins Project
-  Park Way Basins



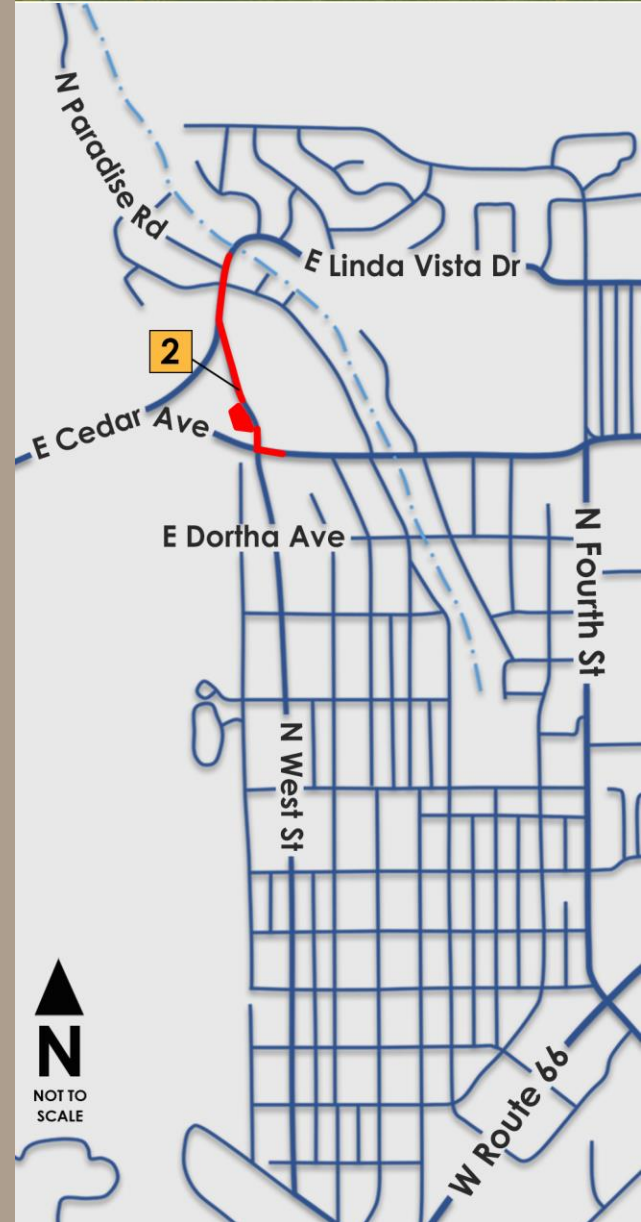
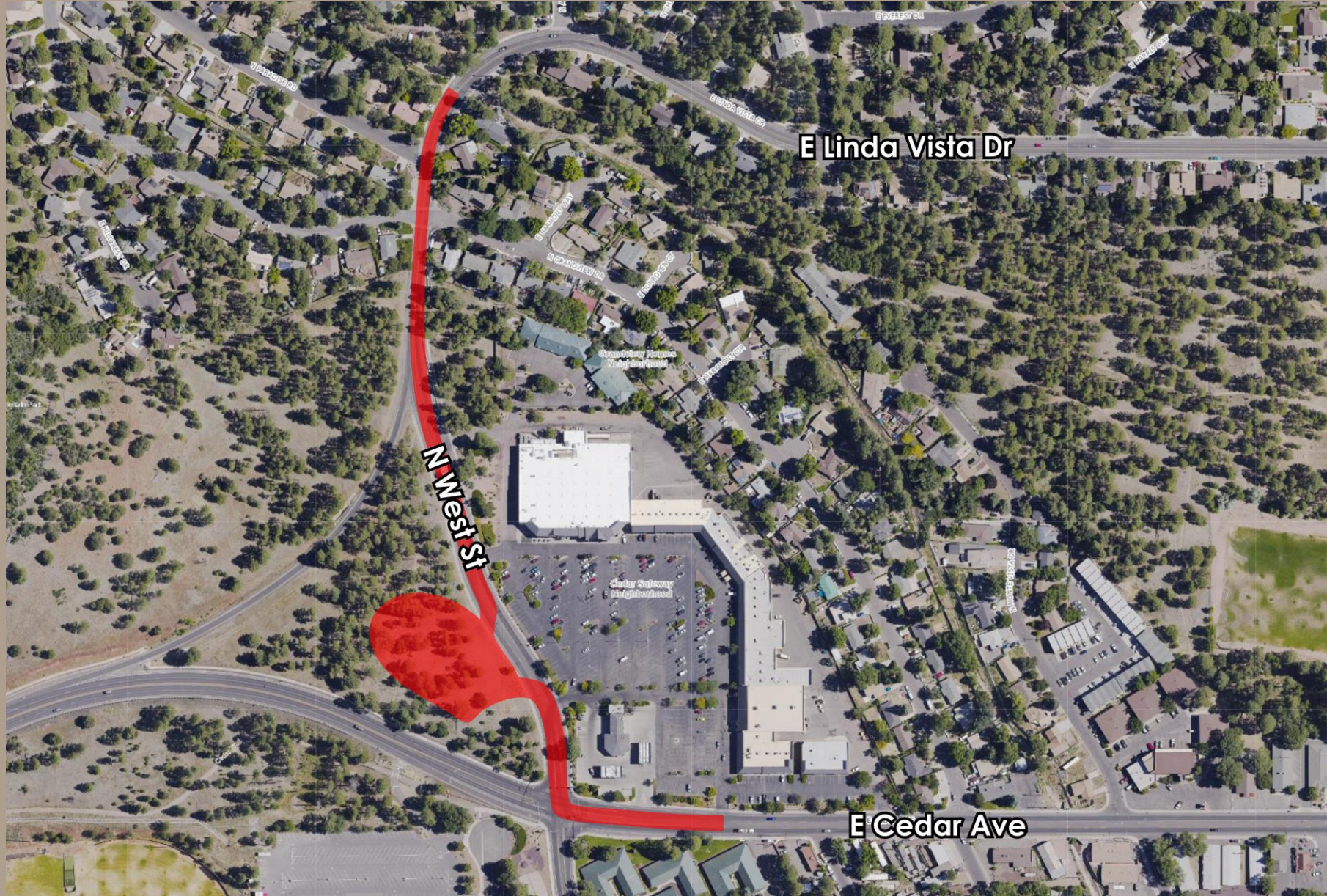


Grandview Drive Reconstruction- Complete



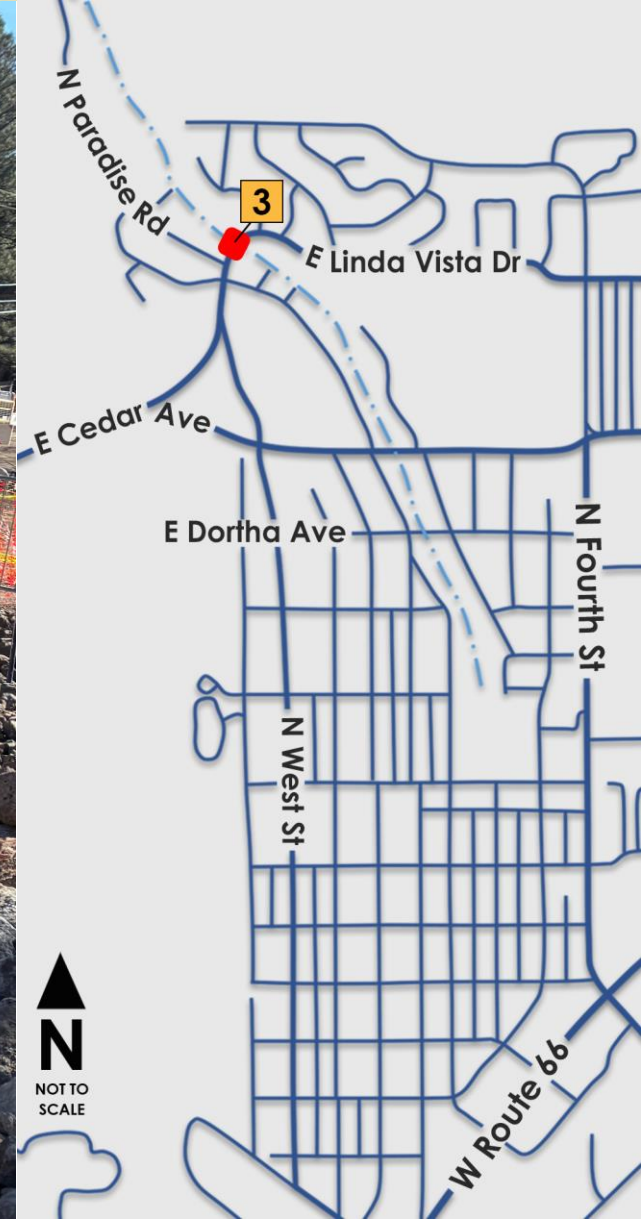


"The Wedge" Detention Basin



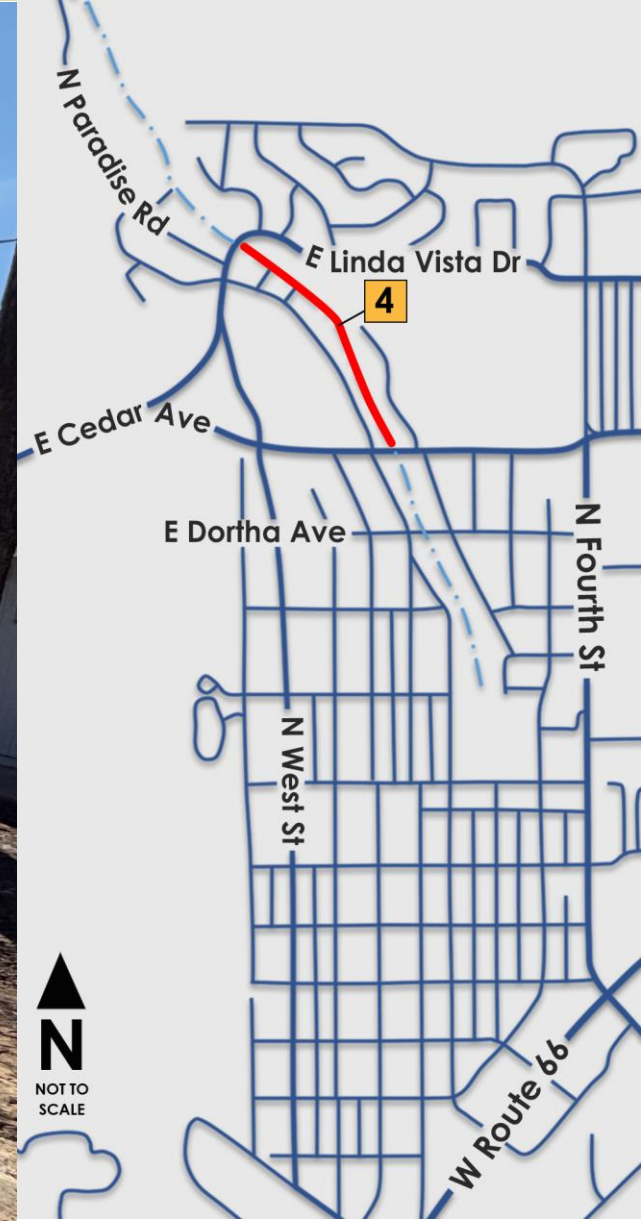


Linda Vista Crossing





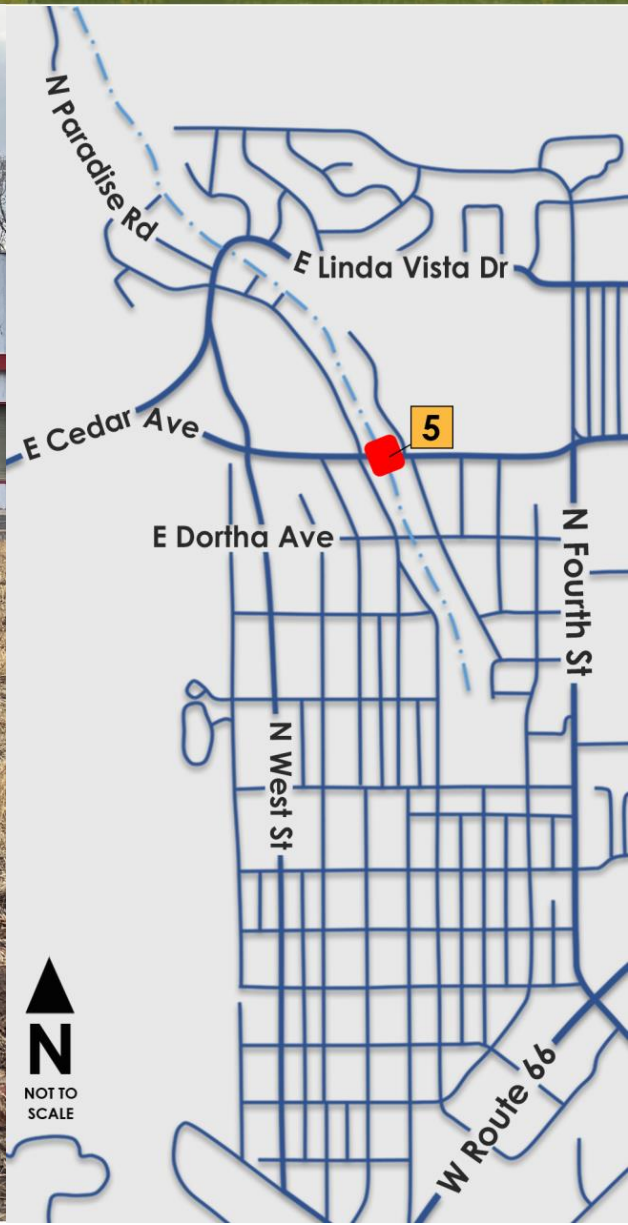
Linda Vista to Cedar Channel





Cedar Avenue Crossing

Current Conditions

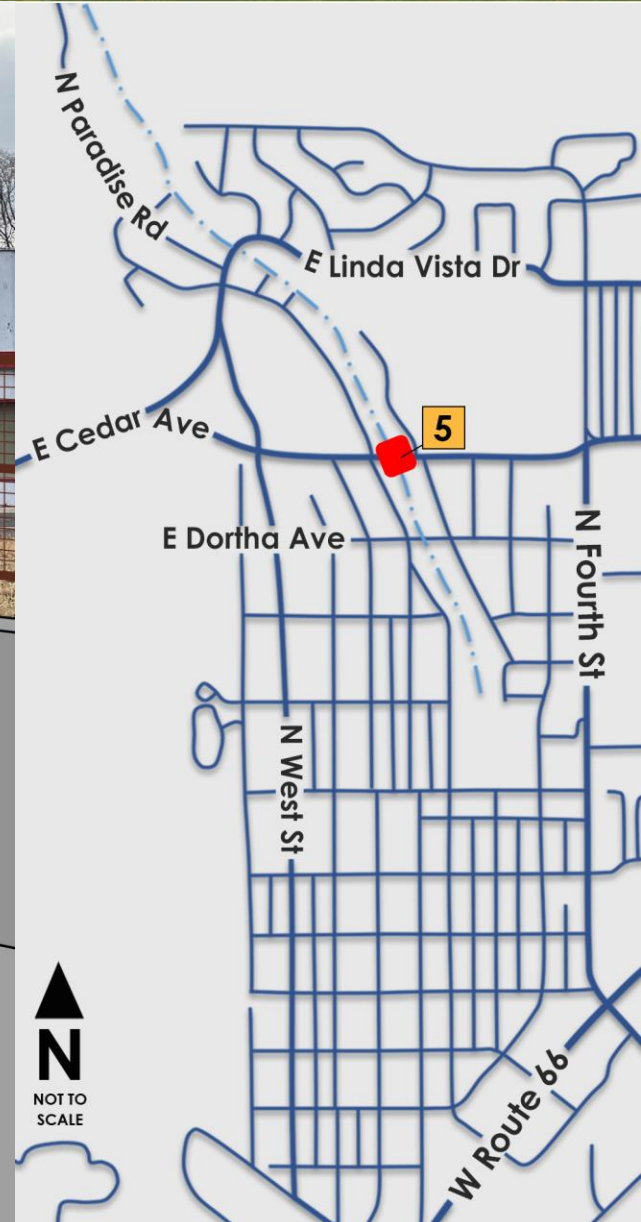




Cedar Avenue Crossing

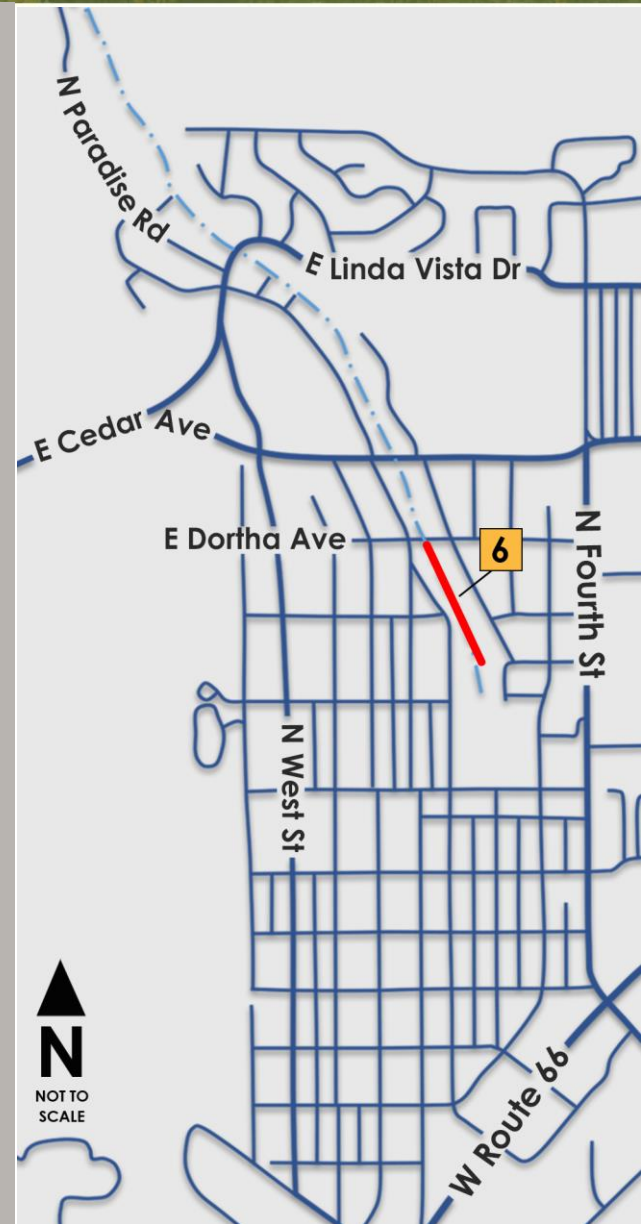
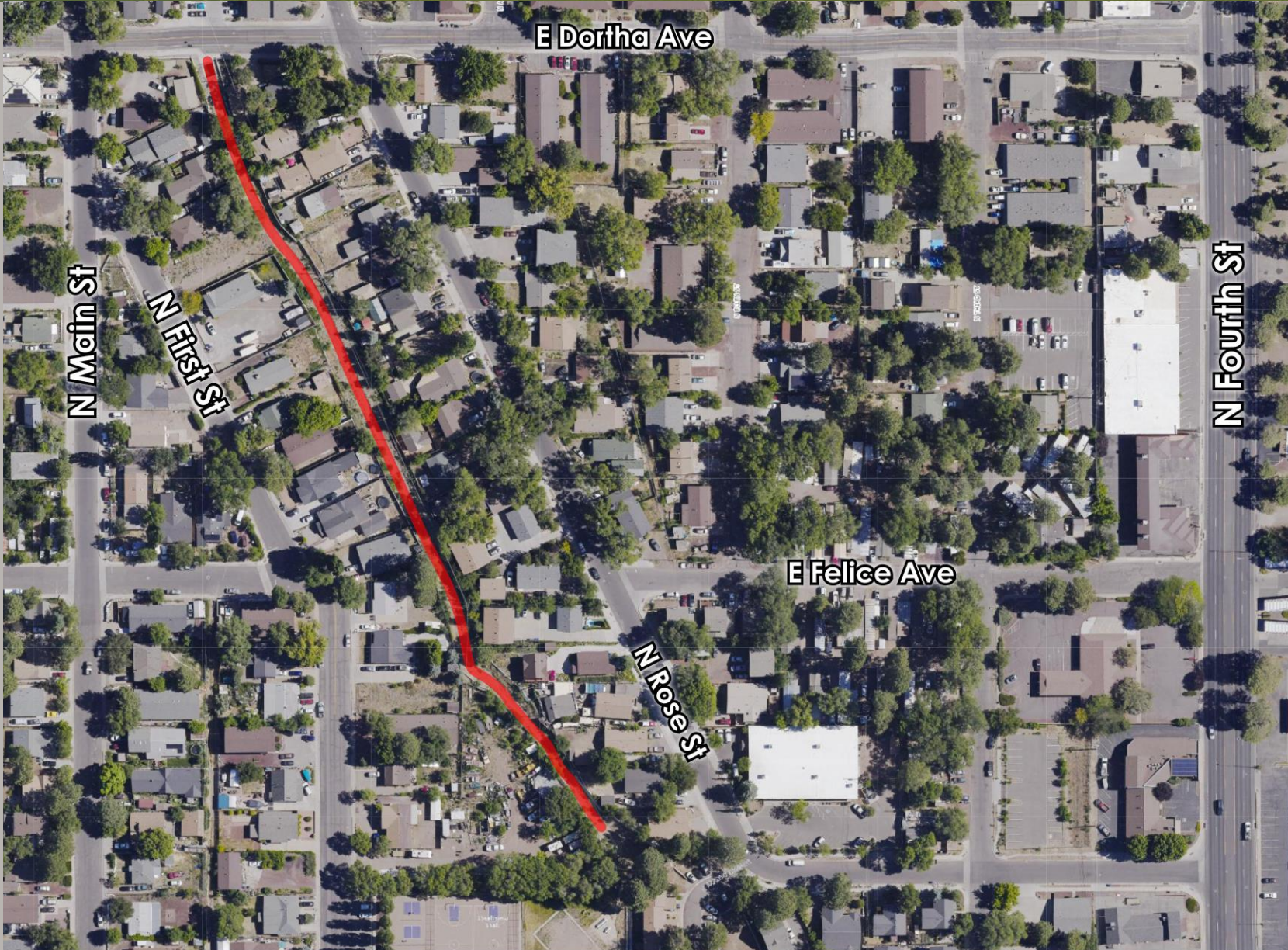


Future Improvements



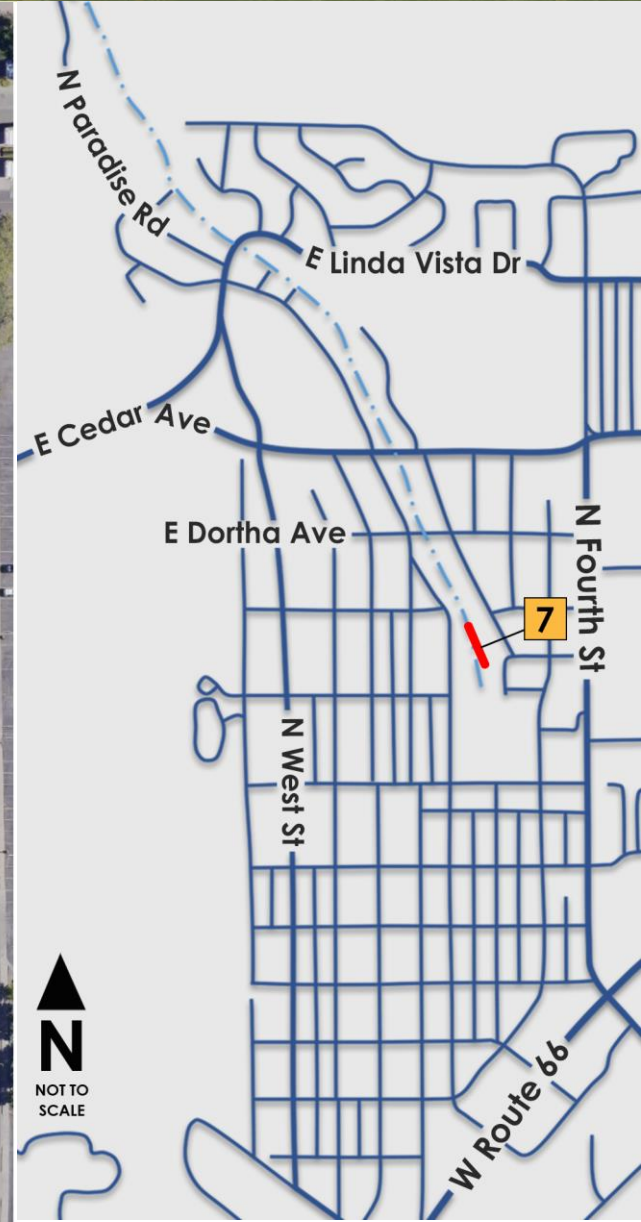
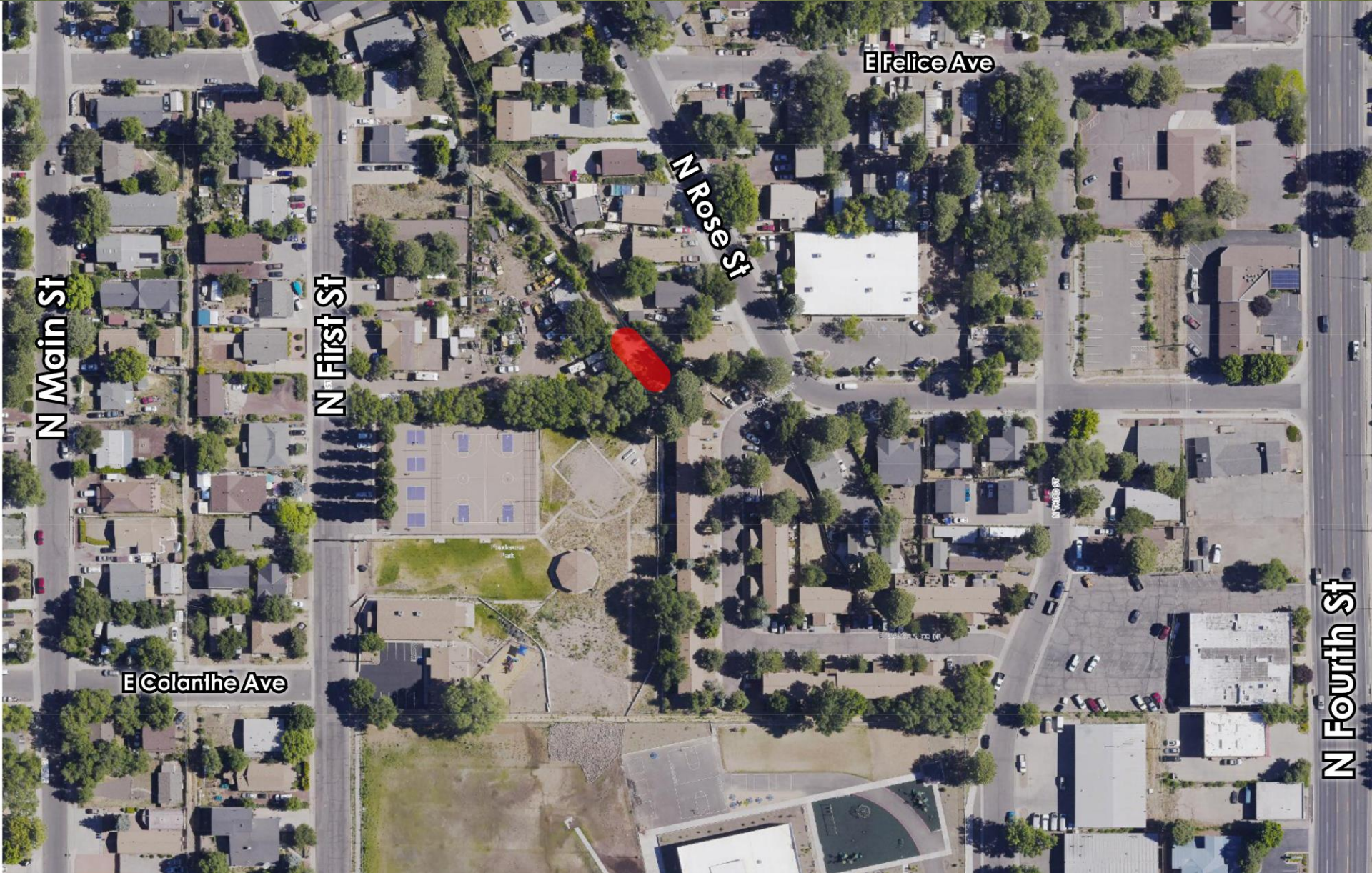


Arroyo Seco to Dortha Channel



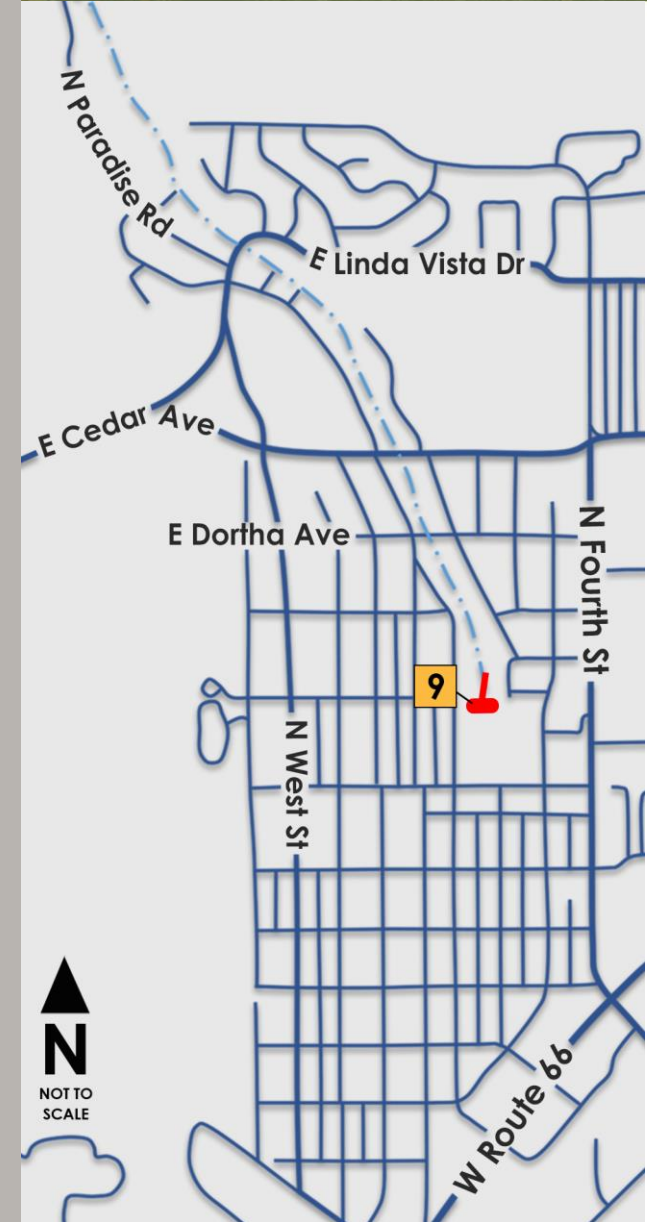


Arroyo Seco Drive Inlet





Killip Basins Inlet

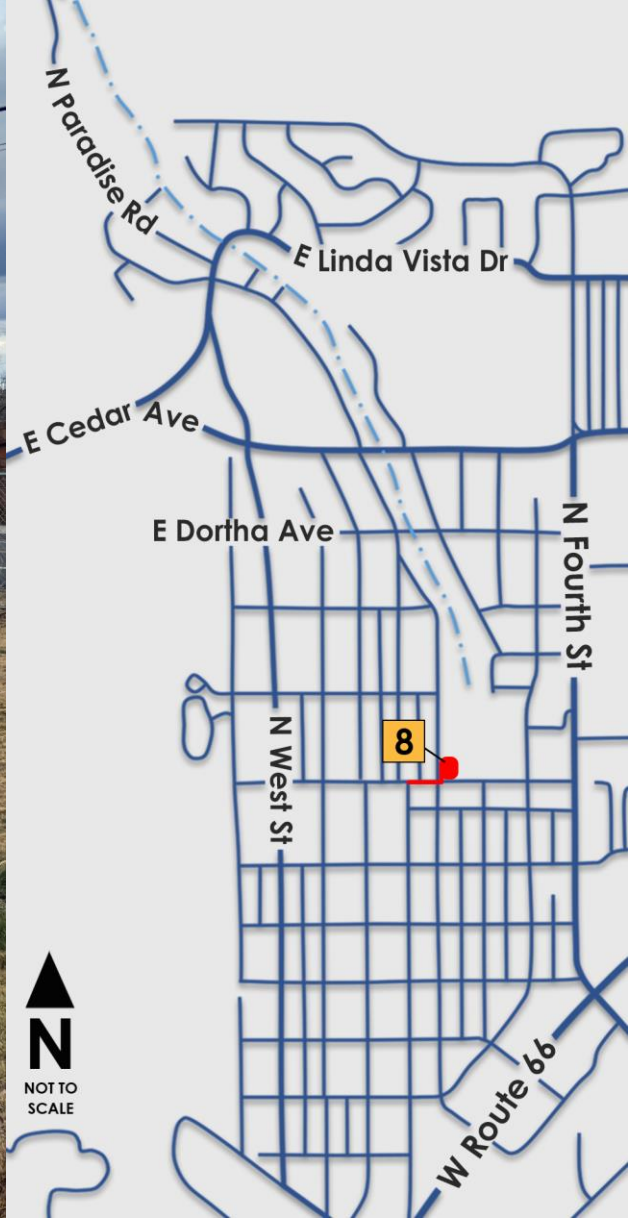




Killip Basins Outlet



Future Improvements

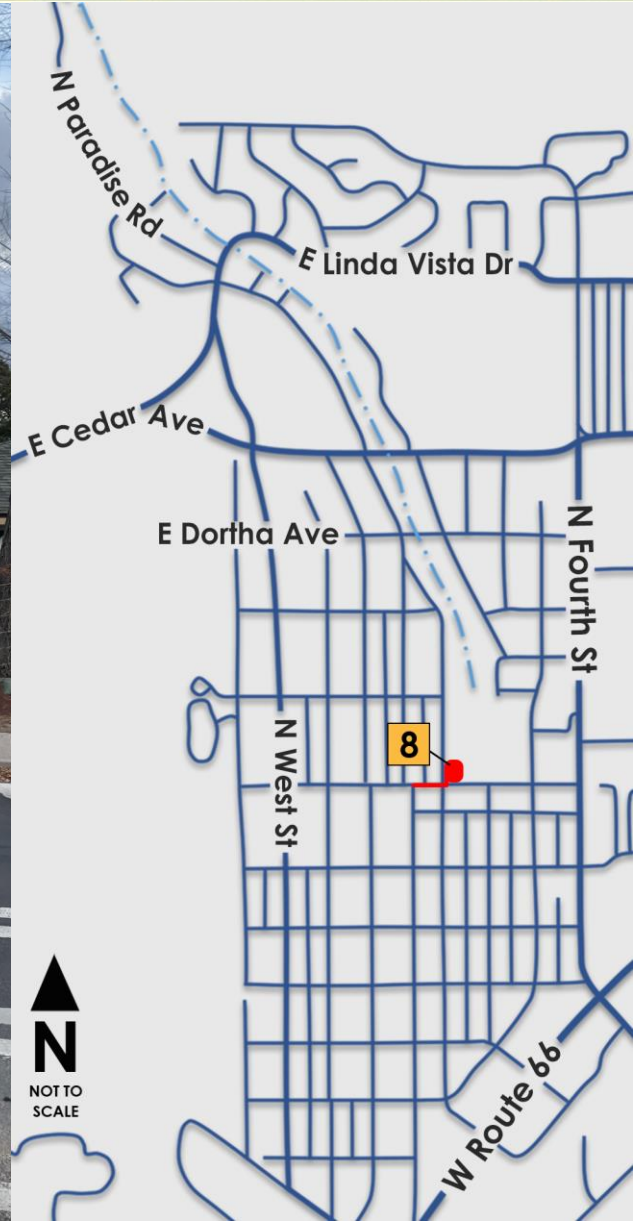




Killip Basins Outlet

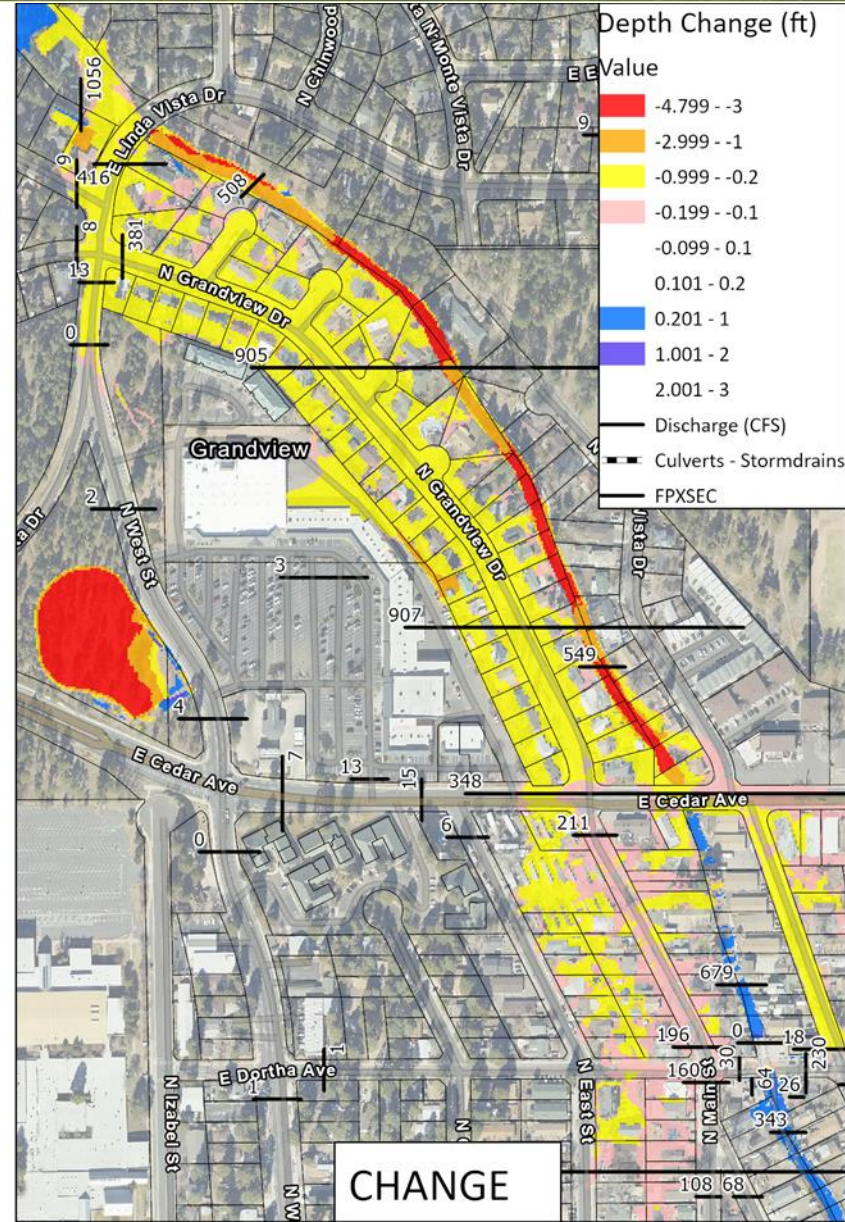
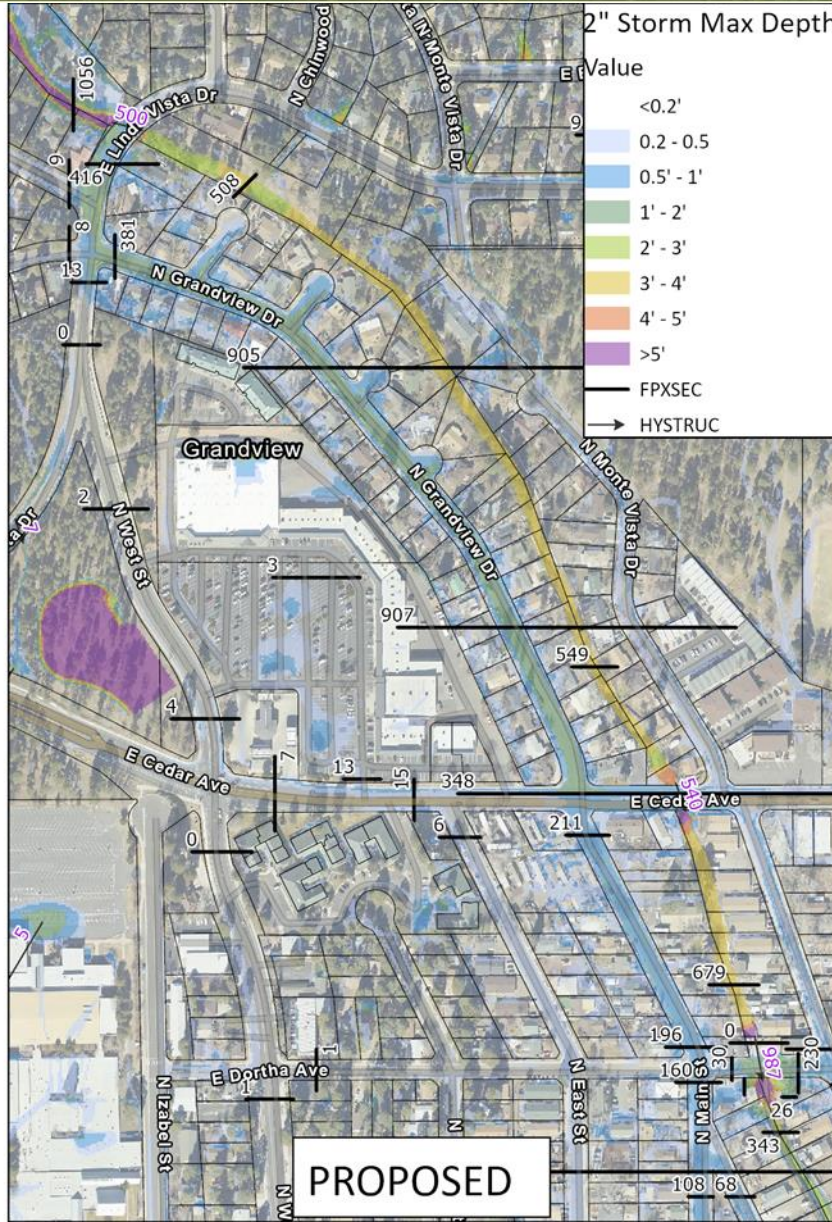


Future Improvements



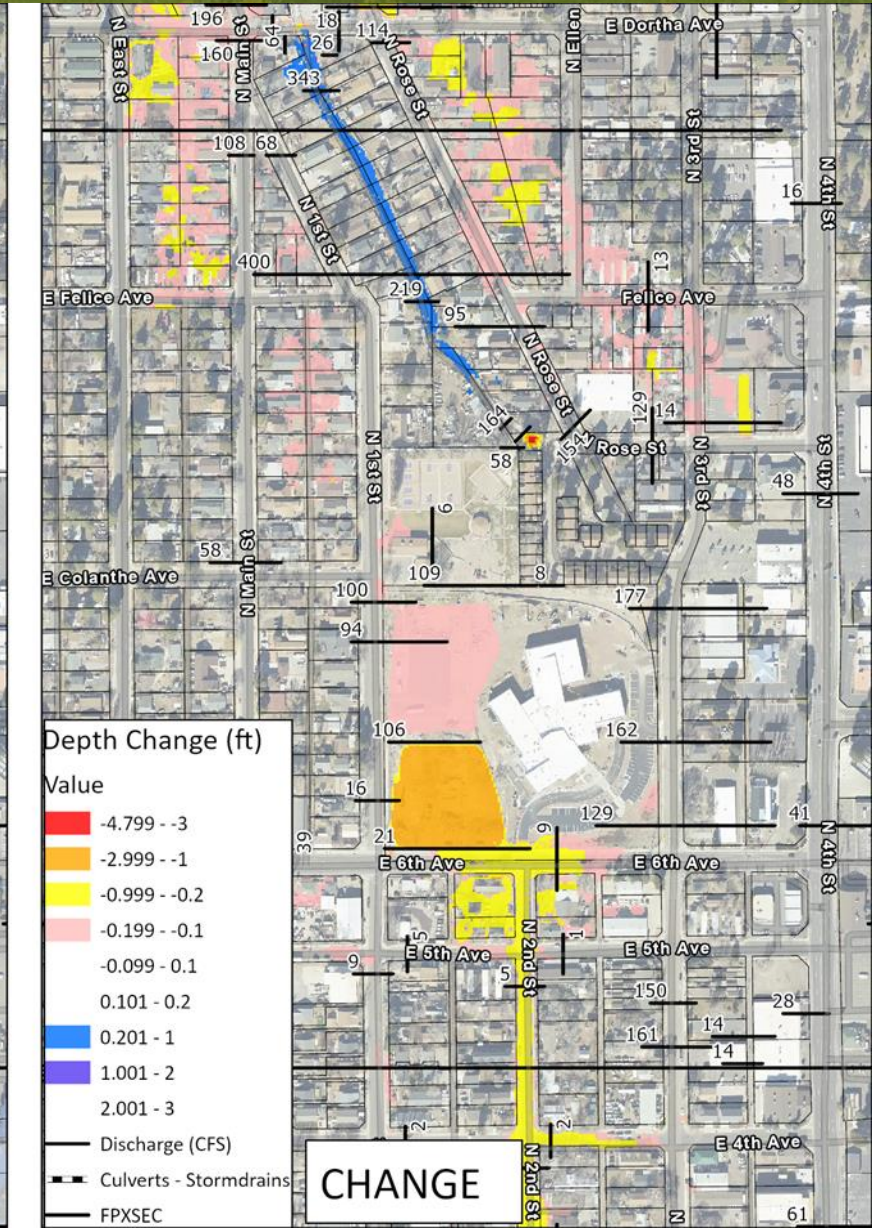
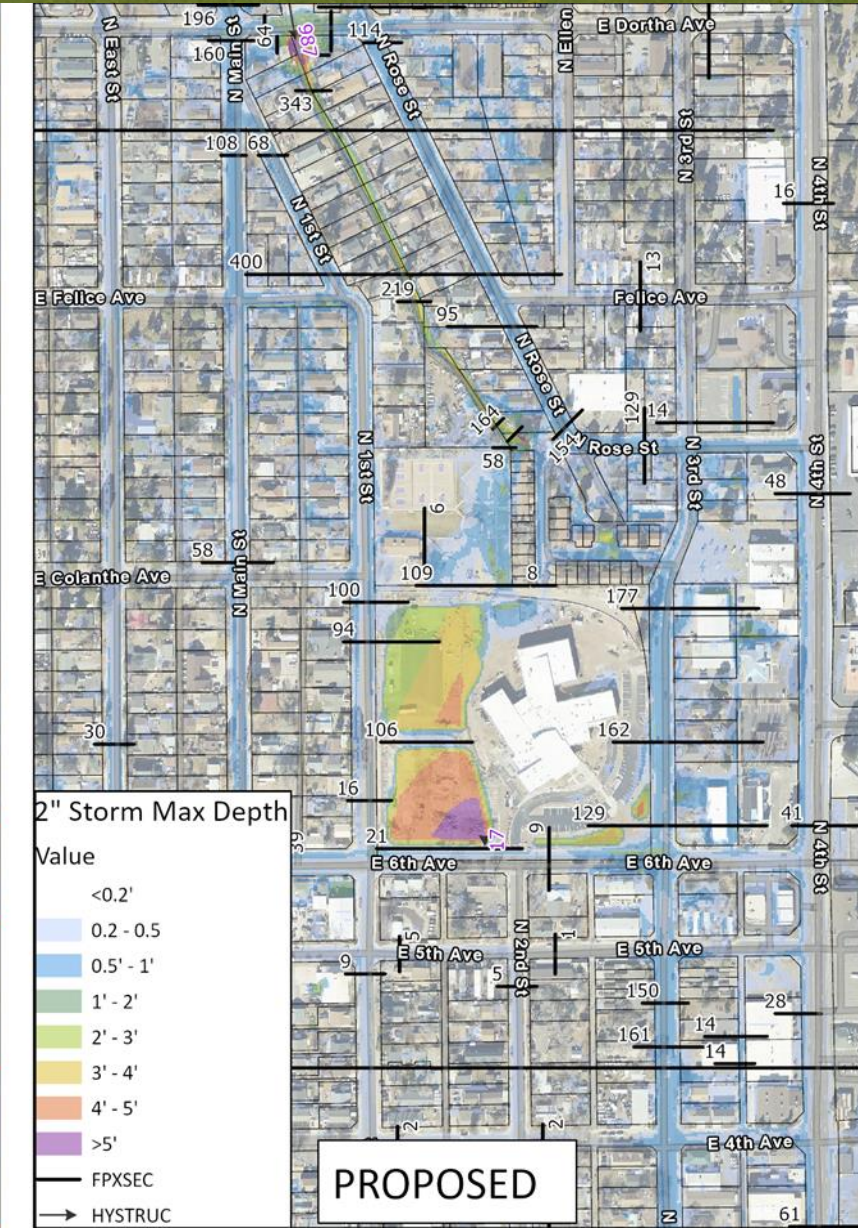
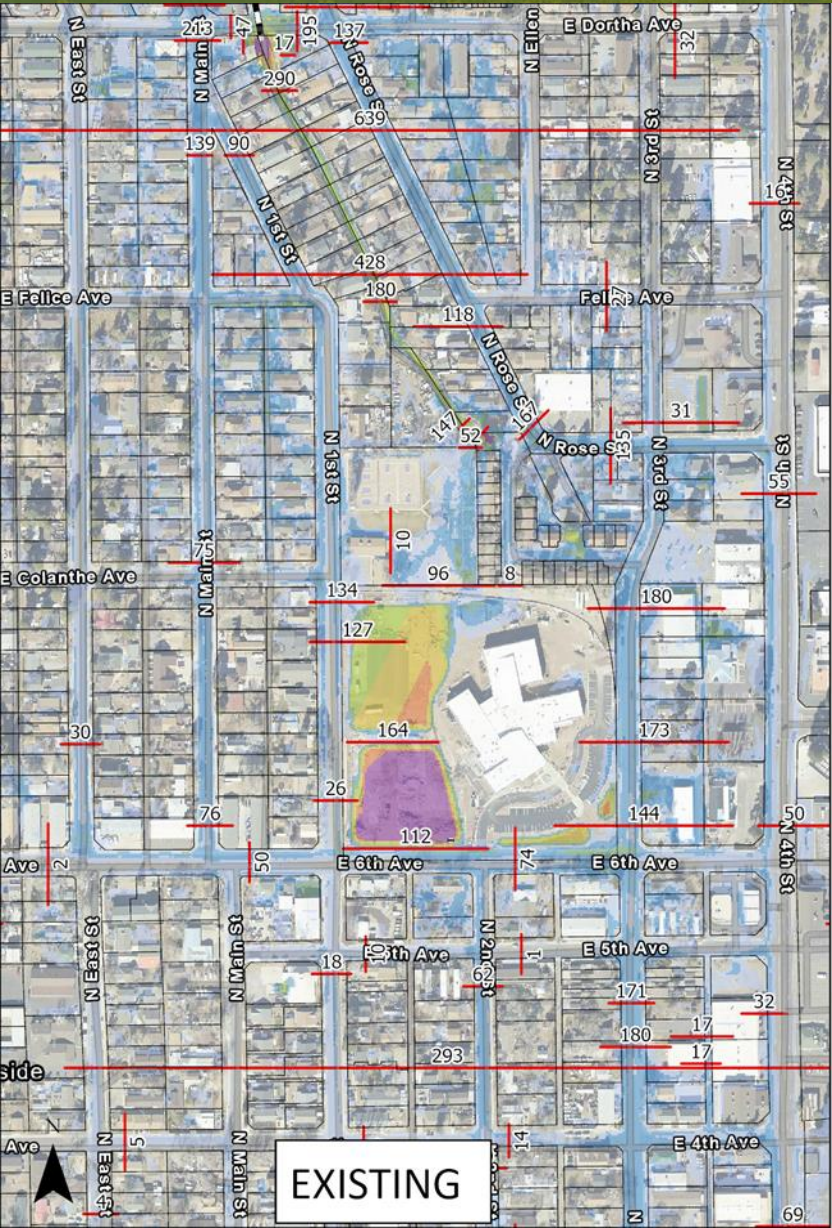


Interim Conditions Maps



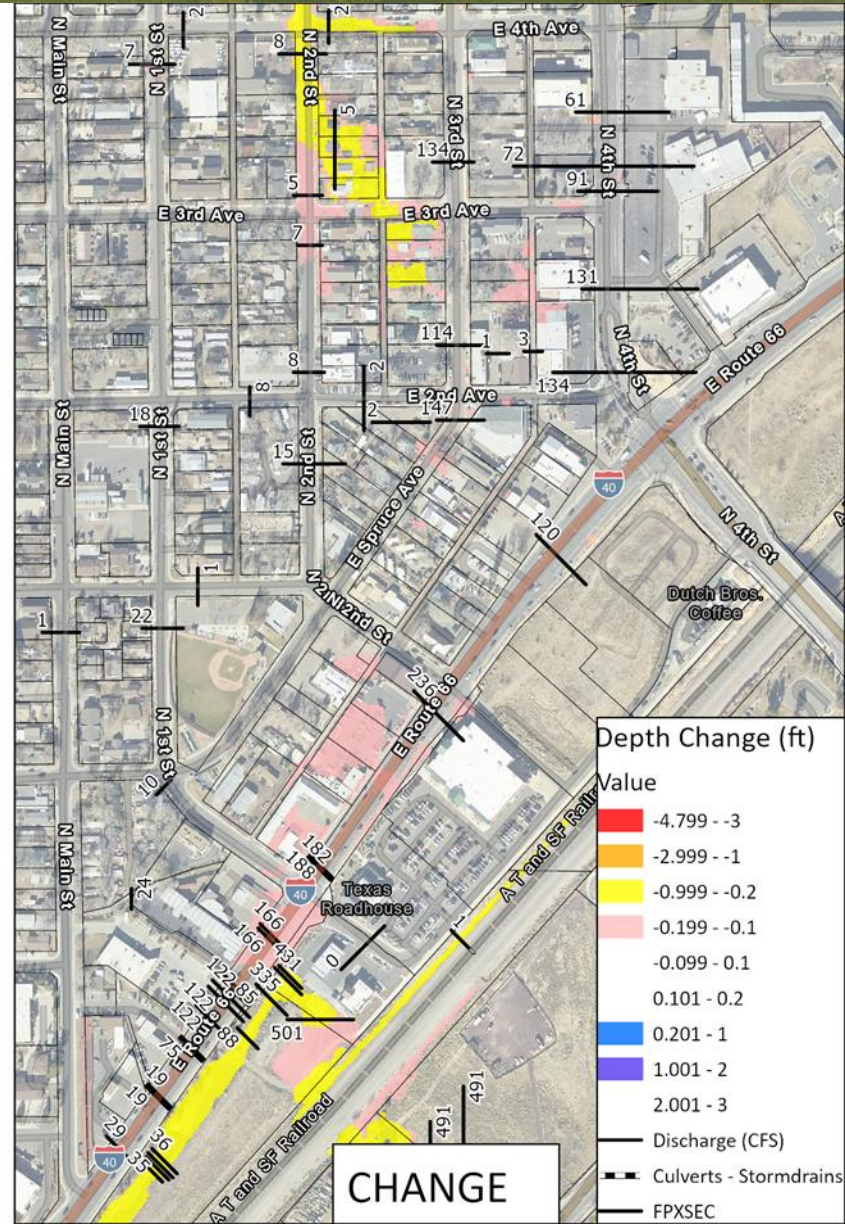
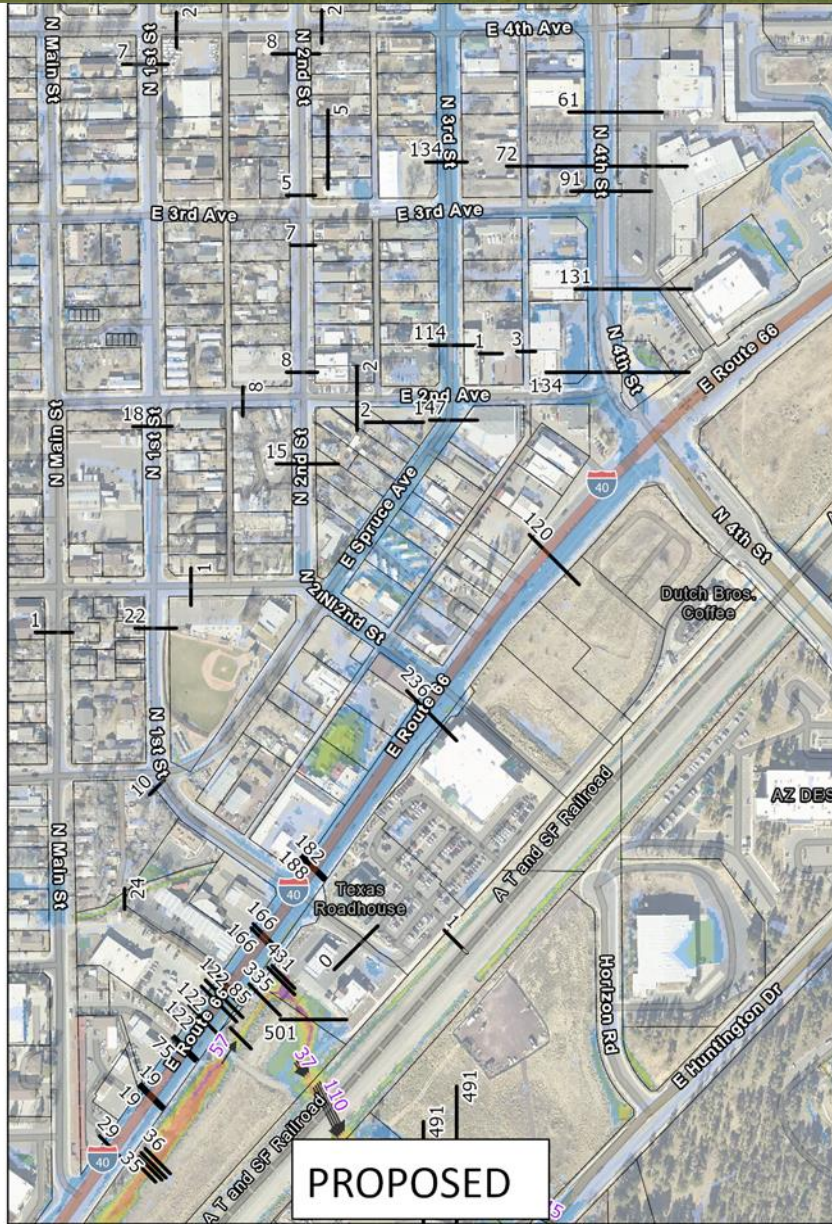
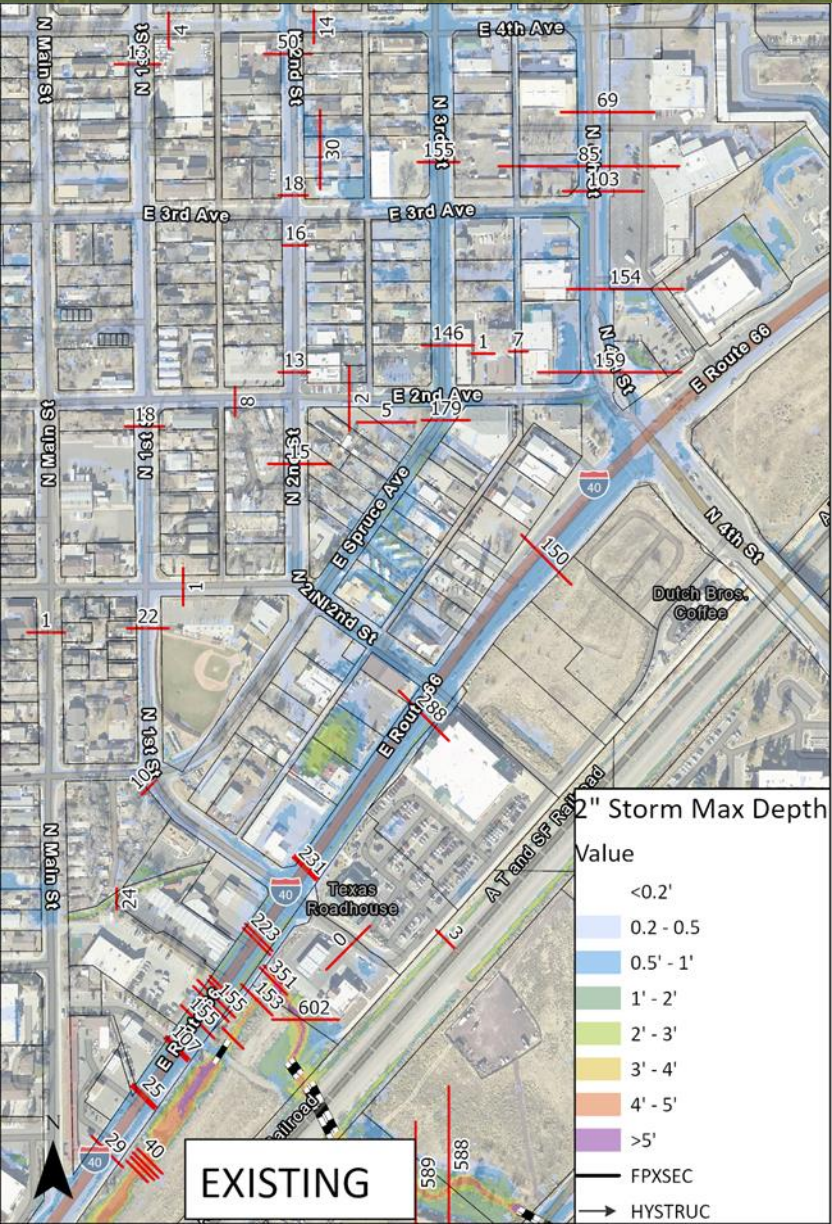


Interim Conditions Maps



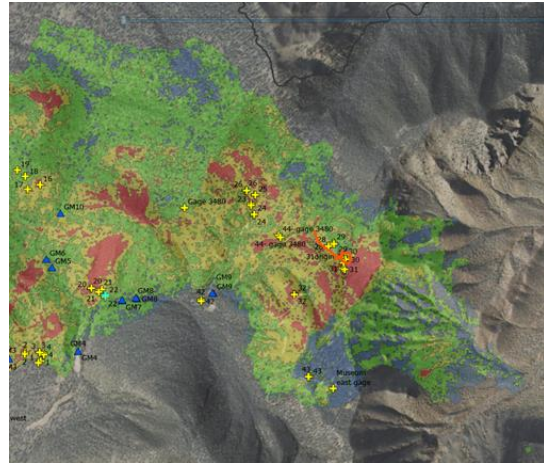


Interim Conditions Maps





State of the Watershed



2025 Placeholder Pic

November 2022



July 2023

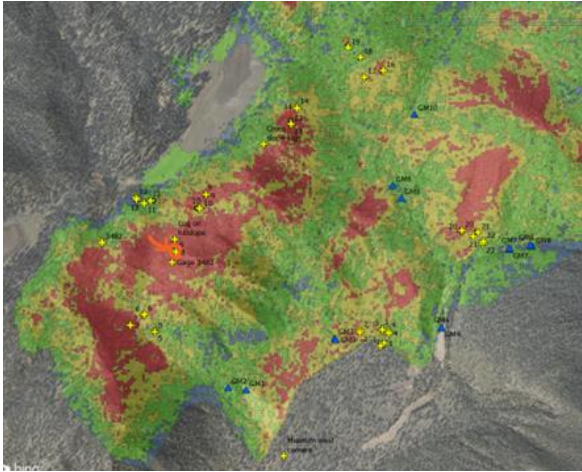


June 2024



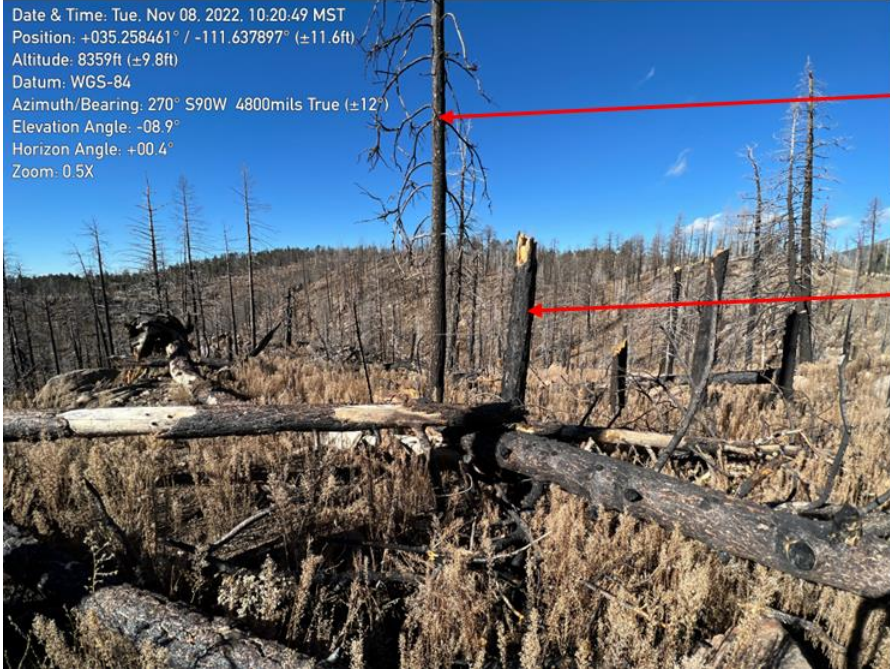


State of the Watershed



2025 Placeholder Pic

November 2022



May 2023

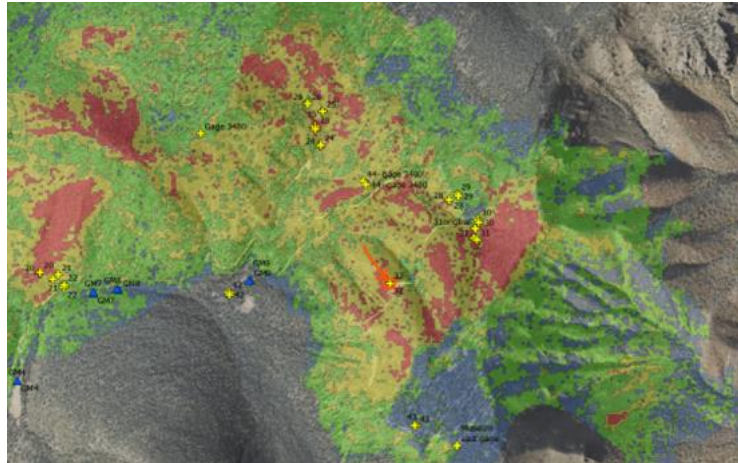


May 2024





State of the Watershed



2025 Placeholder Pic

November 2022



July 2023



June 2024





Meet In the Steets

- Residents north of Cedar
 - Wednesday, June 25
 - 5:30 – 7 PM
 - Corner of Grandview and Linda Vista
- Residents south of Cedar
 - Thursday, June 26
 - 5:30 – 7 PM
 - Ponderosa Park





Sandbag Guidance & Resources

- Sandbags should only be used to protect the primary residence
- Self fill station located Thorpe Park
 - Near the pond/ end of Aztec St.
- Assistance is available for those with functional needs.
 - Please call **928-213-2102** to schedule assistance.



Schultz Creek

(2022 Pipeline Fire)

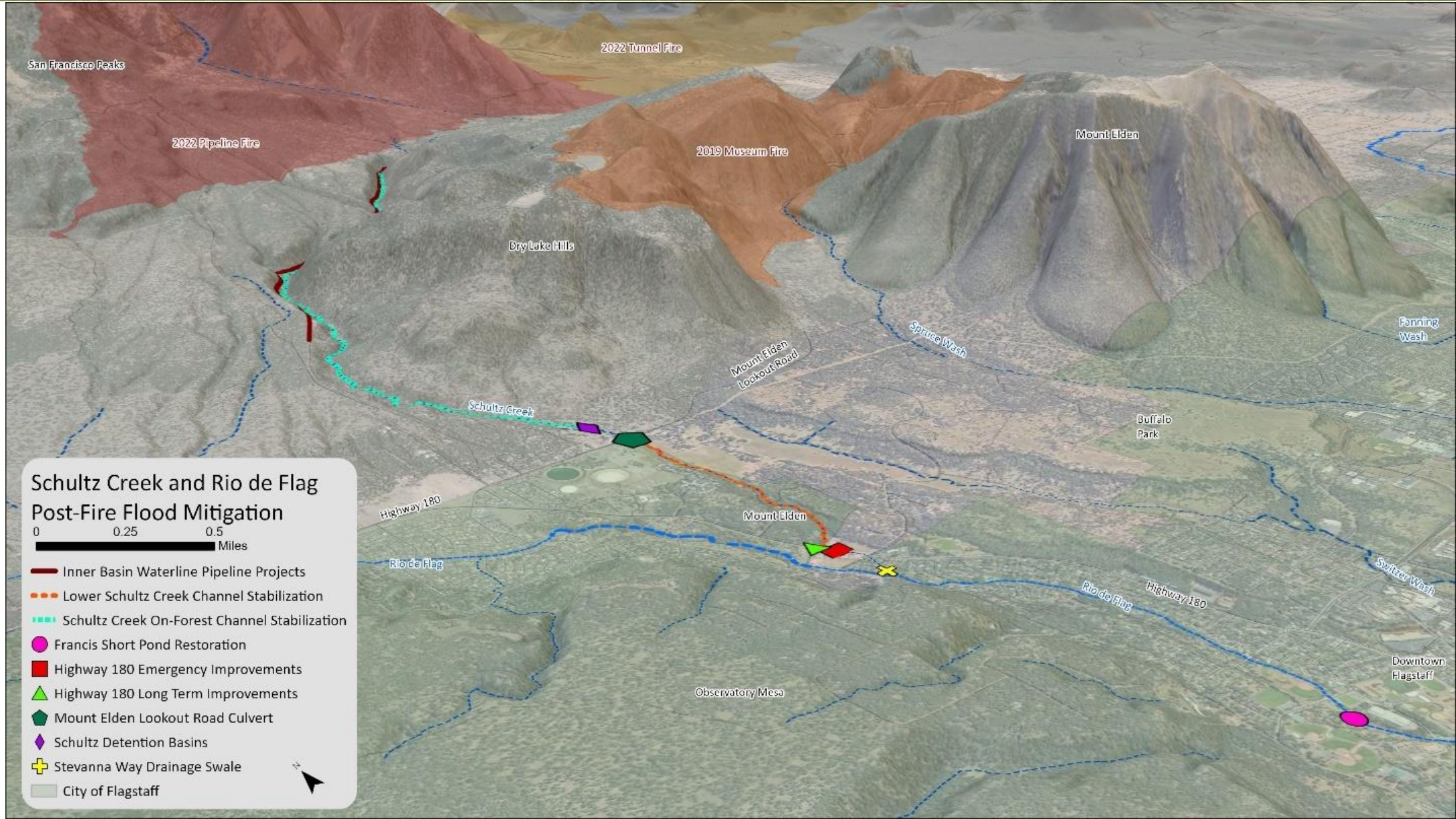




Completely Mitigated



Monitoring
through
2025





Schultz Flood Basins



AUGUST 19, 2022



SEPTEMBER 6, 2022



OCTOBER 27, 2022



APRIL 13, 2023

- ✔ \$2.4 million funded by the Emergency Watershed Protection Program, organized by the U.S. Department of Agriculture's Natural Resources Conservation Service
- ✔ \$768,000 funded by Arizona Department of Forestry and Fire Management
- ✔ City of Flagstaff completed the project less than 5 months after the initiation of the Pipeline Fire and basins were fully utilized in the spring 2023 snowmelt season, less than 6 months after construction



Schultz Channel Stabilization





Schultz Creek Long Term Mitigation



Highway 180 culvert

- ~\$7M cost
- Fully funded by state legislature/ S.B. 1720



2025 Stormwater Conveyance System Maintenance





2025 YTD Maintenance Program Overview



- Approximately 4.1 miles of open channel completed.
- Over 150 bags of litter collected
- Countless truckloads of slash and other vegetation removed
- Enhanced preventative maintenance funded by the 2023 Stormwater Utility rate adjustment





Open Channels



Rio de Flag upstream of Beal
(Before)



Rio de Flag upstream of Beal
(After)



Open Channels



Rio de Flag upstream of Thorpe Dr
(Before)



Rio de Flag upstream of Thorpe Dr
(After)



Open Channels



Rio de Flag channel cleared between Crescent Drive and Thorpe Park (Coconino Estates neighborhood).



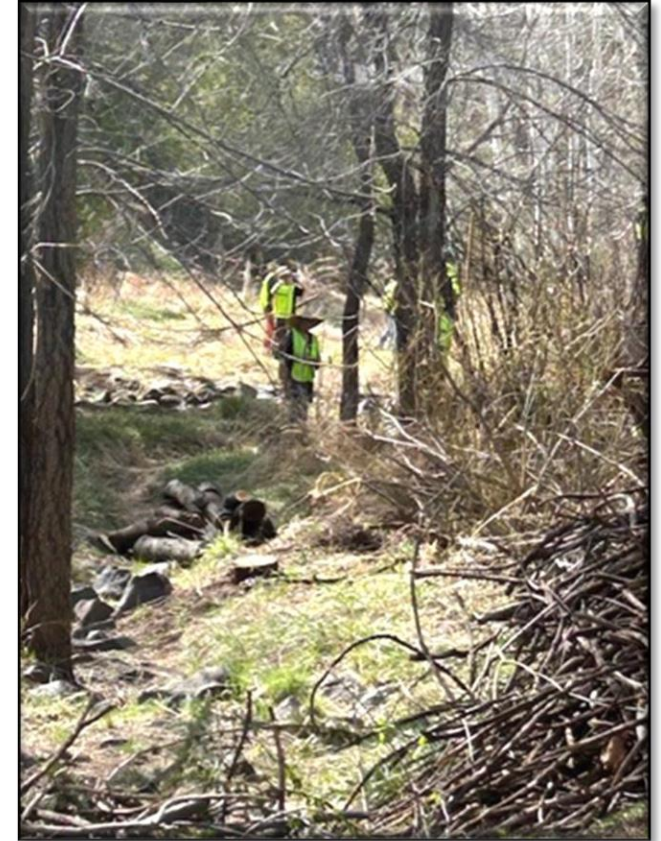
Open Channels



One of the ACE crews



ACE crew in action



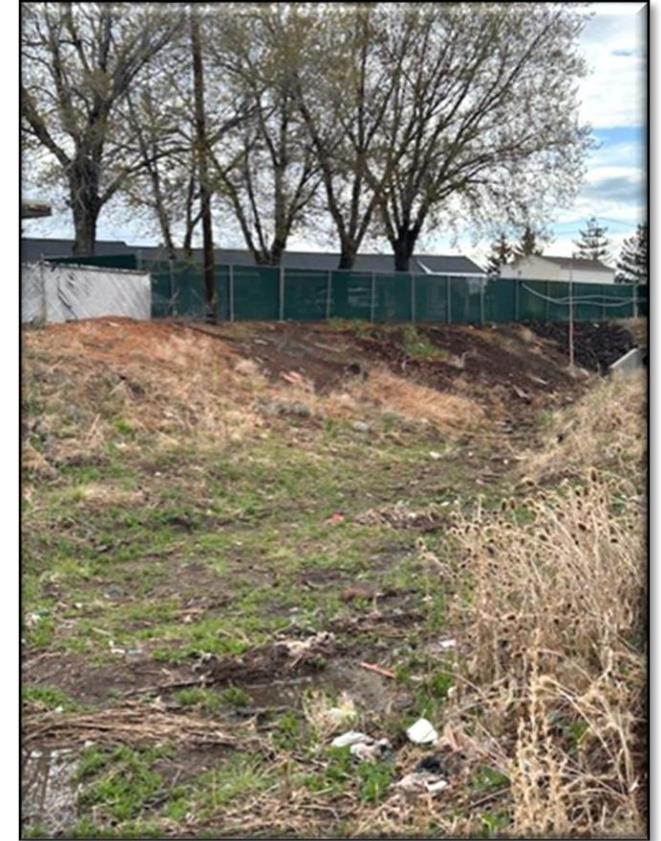
NAU volunteers



Open Channels



Teasels in Switzer Canyon Wash (Before)



Teasels in Switzer Canyon Wash (After)



Stormwater conveyance preventative maintenance



The storm pipe network is ready for monsoon season.

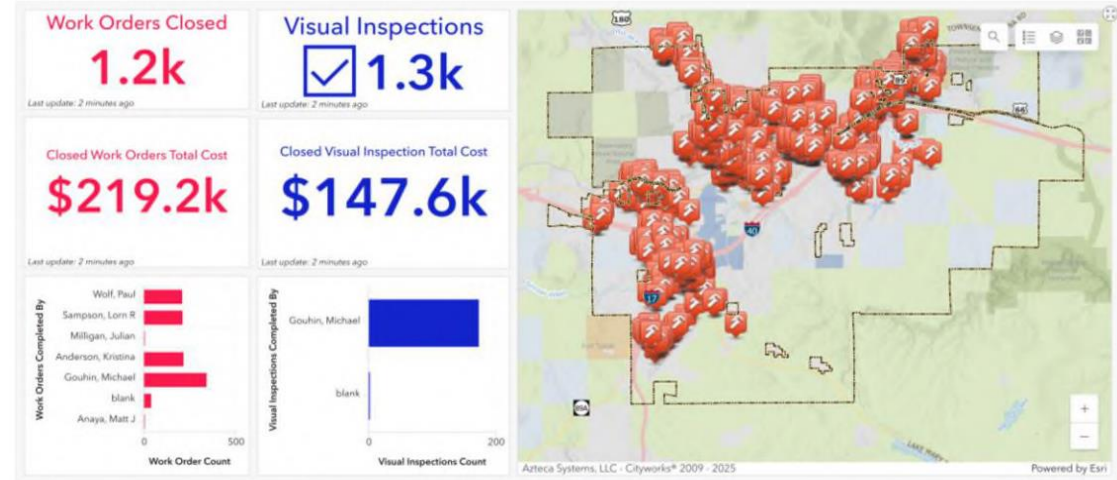
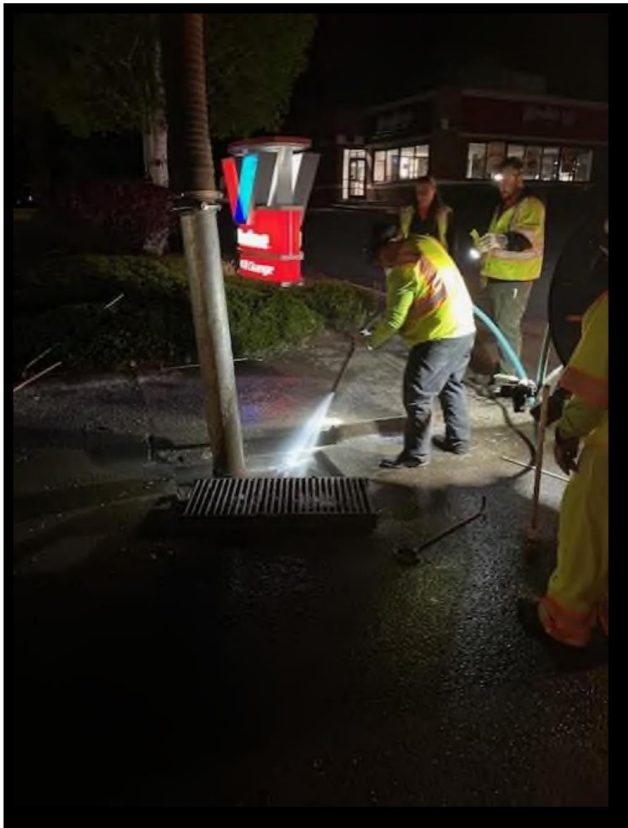


Figure 6. Secondary conveyance system dashboard and work orders in 2024 (red icon).

System	Work Order Count	Percent of Work Orders	Cost
Catch Basins	2,408	98.4%	\$351,325.29
Culvert Inlet	2	0.1%	\$ 1,510.58
Culvert Outlet	2	0.1%	\$ 1,188.44
Manhole	2	0.1%	\$ -
Pipe Inlet	4	0.2%	\$ 1,554.31
Scupper	22	0.9%	\$ 5,343.31
Storm Basin	1	0.0%	\$ 2,465.36
Storm Channel	3	0.1%	\$ 4,419.61
Storm Pipe	3	0.1%	\$ 2,071.06
	2,447	100.0%	\$369,877.95

Table 2. 2024 secondary conveyance activities.

More information on the Stormwater Maintenance webpage: <https://www.flagstaff.az.gov/4404/Stormwater-Maintenance>



2025-2026 Drainage Improvements

- Other City Stormwater drainage improvements scheduled for this upcoming fiscal year include:
 - **Meade Lane Drainage Improvement**
 - At final design with final FEMA review in fall - planned for early 2026.
 - **Santa Fe Ave Drain Lateral**
 - Scheduled for early 2026.
 - **Fanning Wash Channel Improvements**
 - In design
 - Multiple bundles of spot improvements for local drainage concerns.

2025 Monsoon Season Preparations





Emergency Management

- June 5 - Museum Sirens testing
- All residents should familiarize themselves with the City of Flagstaff Public Safety All Hazards Evacuation Map and sign up for alerts

EVACUATION MAP

READY, SET, GO

COCONINO.AZ.GOV/EVACMAP

EMERGENCY NOTIFICATIONS

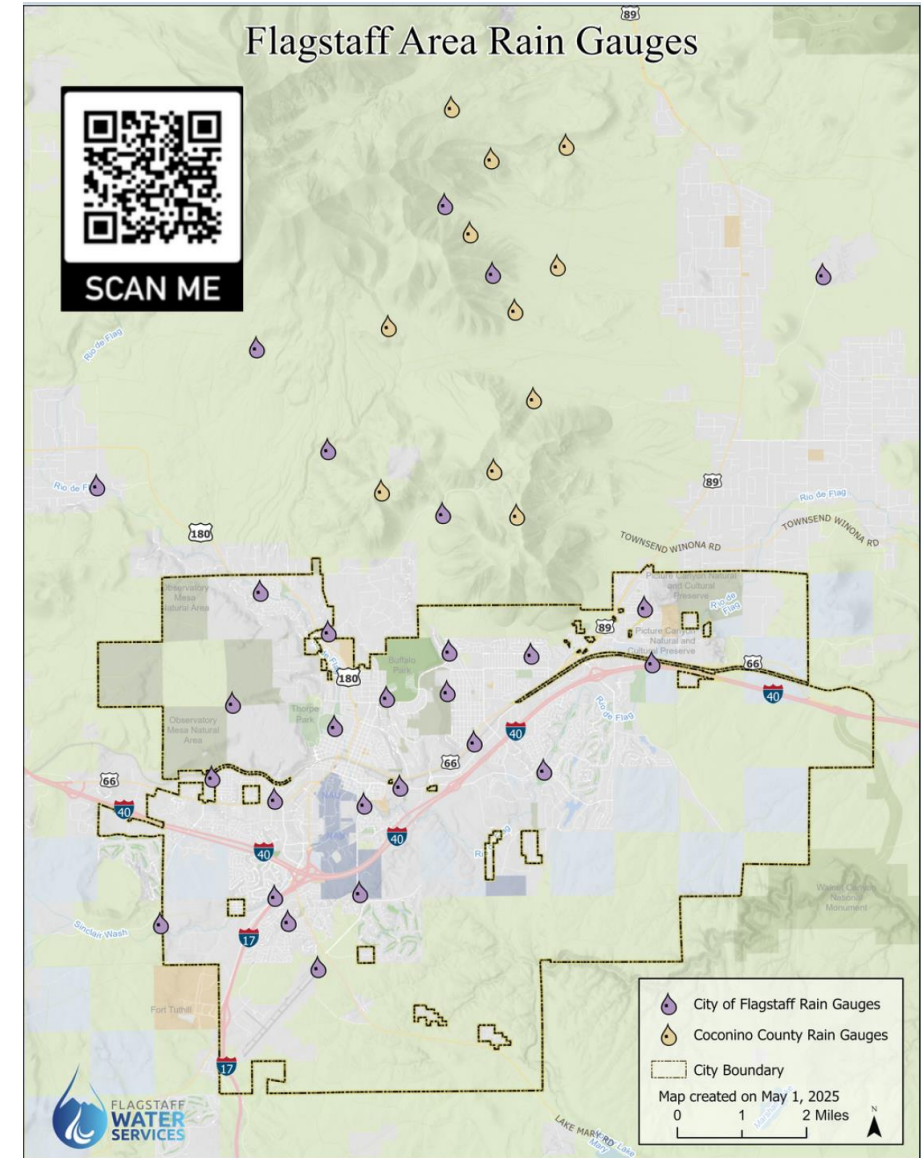
COCONINO.AZ.GOV/READY



Early alert network



- The Stormwater Section maintains 27 early alert rain and stream gauges
- Real-time access through: <https://rain.flagstaffaz.gov/jefmap/>
- Annually maintained and ready for this monsoon season.





Purchase flood insurance

- Visit [fema.gov/flood-insurance](https://www.fema.gov/flood-insurance)
- Needs to be renewed annually
- Most homeowner's insurance does not cover flood damage
- Flood insurance is a separate policy that can cover buildings, the contents in a building, or both.
- Flagstaff residents get a 25% discount automatically applied on NFIP policies





Flood prevention grants

- Visit flagstaff.az.gov/floodproof
- Property owners and renters can apply for grant funding for materials to protect their home
- Apply online or in person for a grant up to \$7,500 (options for upfront funding)
- Funding can be used to purchase **flood gates** for windows or doors, **sealants** for foundations, and **temporary flood barriers**
- Applications are processed on a rolling basis, utilizing a first-come, first-served approach, while funding lasts



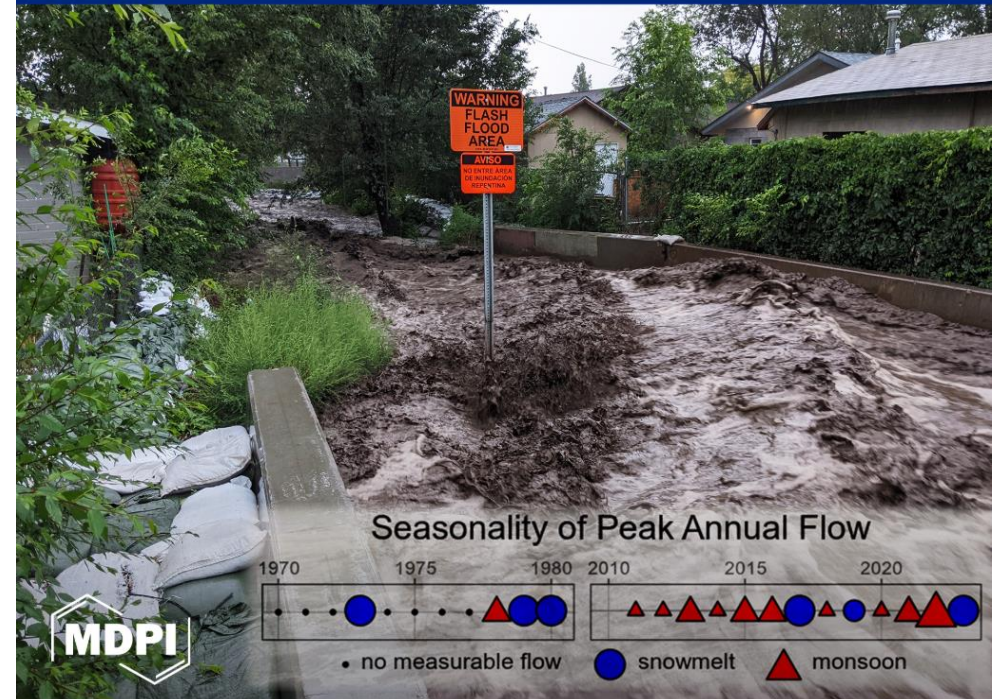


State of the Science

- Local and national science is indicating an increase in flood threat for Flagstaff into the future.
- We are at the forefront of the science here in Flagstaff with research by City staff, NAU, AZGS, and others.
- For more information on studies, please contact the Stormwater Section after this presentation.

Changed Seasonality of Ephemeral Channel Peak Flows at Flagstaff, Arizona, USA

Volume 11 · Issue 8 August 2024



Questions?

