TUCSON ARIZONA
FLOODPLAIN MANAGEMENT PLAN
5-YEAR UPDATE WORKSHOP #2 OF 2
RETROFITTING EXISTING AT-RISK SANITARY LINES
(2025)

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CITY OF TUCSON

DEPARTMENT OF TRANSPORTATION AND MOBILITY

DEPARTMENT OF TRANSPORTATION AND MOBILITY STORMWATER MANAGEMENT

- Tucson Floodplain & Erosion Hazard Management – General Overview (Review of Tucson FMP Goal, Hazards Assessment, & Action Items)
- Action Items Identified and Highlighted Subtasks

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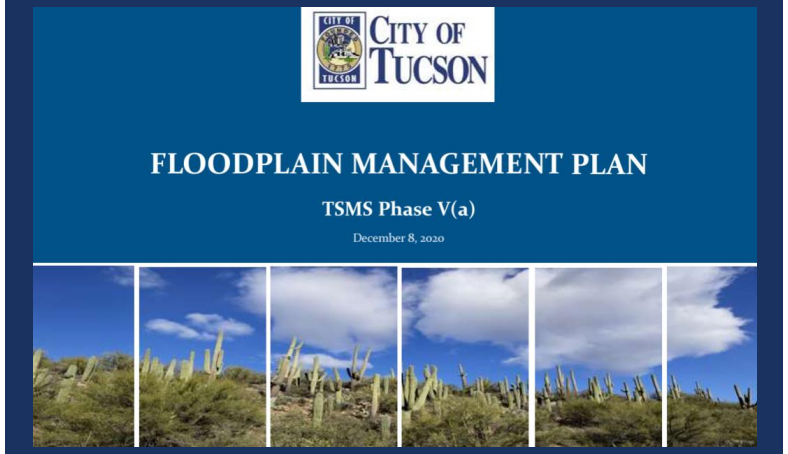
TUCSON STORMWATER MANAGEMENT STUDY

The Floodplain Management Plan is Phase V of TSMS



Plan Adoption and FMP Updates

ADOPTION BY TUCSON CITY COUNCIL

The Action Plan for the Floodplain Management Plan as adopted by Mayor and Council by formal resolution can serve as a floodplain and erosion hazard management reference tool for all City of Tucson departments and divisions.

FMP UPDATES

The FMP committee will continue to convene on a yearly basis to monitor and assess the action plan implementation process. The committee will continue to prepare an evaluation report to submit with Tucson's annual CRS recertification documentation. Per CRS guidelines, the report "must be submitted to the governing body, released to the media, and made available to the public."

In 2025, the Tucson FMP committee will convene for a formal FMP Update to review the 2020 FMP and to recommend updates by December 8, 2025, or five years after the plan was updated. CRS Cycle Visit by FEMA is scheduled for spring 2021. Following the initial 2020 update, the FMP evaluation and updates are to be scheduled to occur concurrently or before the community's normal 5-year CRS Cycle Visits for the review of the other CRS activities. As the Pima County Regional HMP was updated in 2017 and is expected to be updated in 2022, it would be beneficial if the FMP and CRS Cycle Visits synced up with the Pima County Regional HMP process so that the project lists in the FMP and HMP match. The formal 5-year FMP review cycle tasks should include at a minimum:

1. Convene the same committee that prepared the 2020 plan or one that meets the criteria identified in the CRS manual.
2. Hold a public meeting to review the updated report.
3. Review new studies and information that was completed after the FMP was created.
4. Review the hazard and problem assessments and update if necessary.
5. Review goals and update if necessary.
6. Review the action plan and update to account for actions that were completed, ones that are no longer necessary, and to add in new actions.
7. Prepare formal update for adoption by Tucson Mayor and Council.

Tucson TSMS 5-Year FMP Update

Stakeholder Meetings have been occurring since 2023 to discuss the 2025 5-year Update. Stakeholders identified a need to modernize TSMS. Although rainwater still runs downhill and the TSMS model had always had a conservative approach, there is still a need to modernize the Drainage Manual and improve ease of submittals by defining modeling parameters.

Other action items were identified in prior FMP Stakeholder meetings including sewerline hazards, flow diversion and obstructions, emergency flood/erosion response, and the need for more outreach.

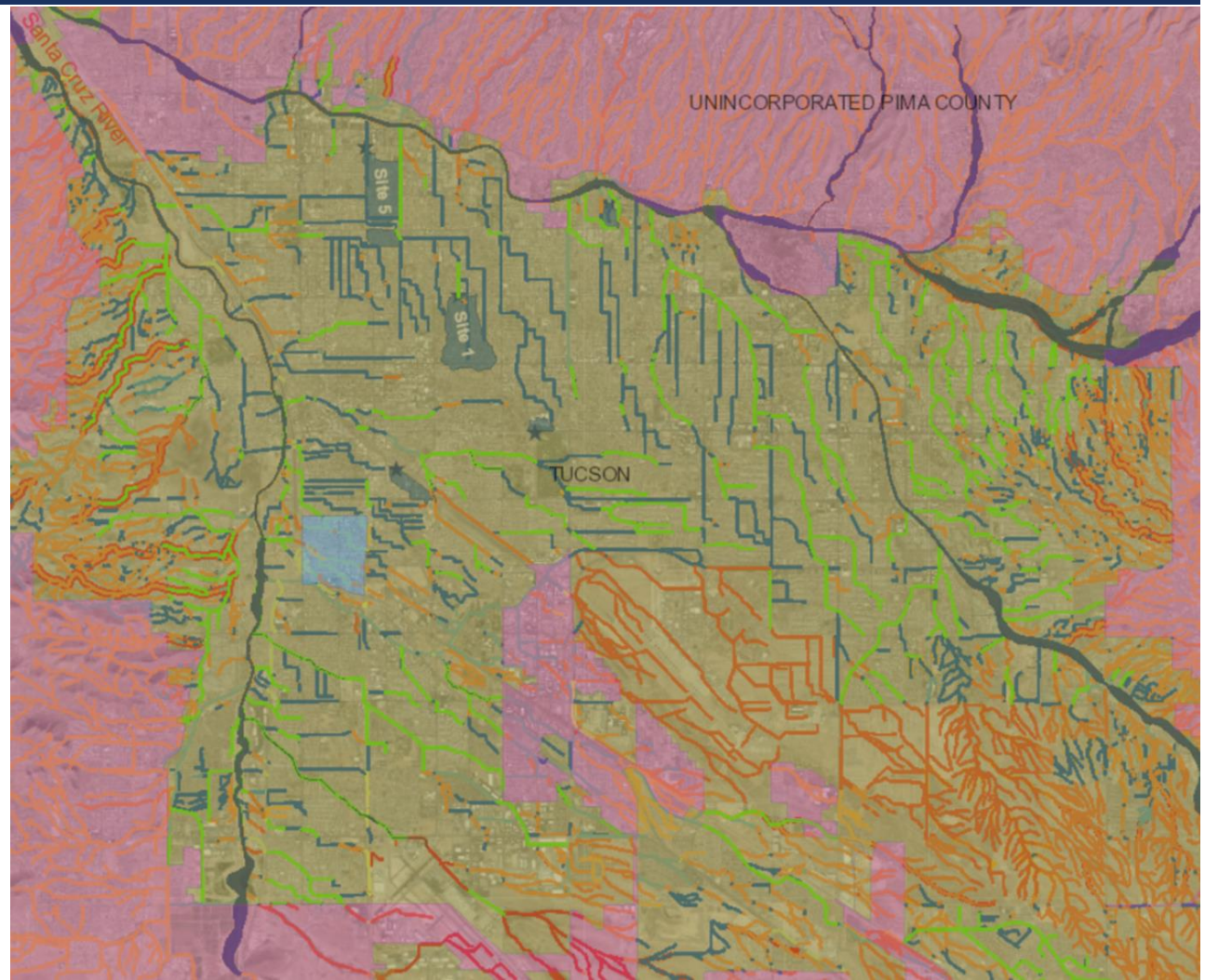


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Table 5. Action Plan

Problem Statement	Recommended Activity
Public Conveyance Infrastructure	Research high-risk dip crossing locations and look into replacing dip crossings with 100-year drainage structures. Areas of interest: 12th Av at Rodeo Watercourse, Betelgeux at Alamo Wash, Noesha dip crossing, and others. Increase public awareness of dip crossings hazards. Working with Tucson Fire Department, map all-weather access routes. Continue to update infrastructure map to track age and condition.
	Provide outreach to changes in Santa Cruz flood levels and erosion hazards.
	Map areas where barricades are used for low water crossing. Assess / expand Operation Splash & Operation Freeze. (DTM Engineer)
	Assure Utilities are obtaining required permits in floodplain and erosion hazard areas.
	Provide 100 yr conveyance structures. Prioritize watercourses based on City defined parameters of importance, w/ safe conveyance of floodwaters as top priority. Educate & implement projects that include sediment transport is a natural function. Consider inlet structure designs that allows flows from frequent storm events to bypass stormdrain so as to continue to feed downstream riparian areas.
Urban High Density	Improve systems for identifying locations along stormwater conveyance systems that are at high risk of erosion, by enhancing analysis of drainage complaint GIS data; routinely monitor at least annually, especially after major flow events. Identify and inventory high value riparian areas for protection, stewardship and enhancement, including those that provide quality habitat, tree canopy, intact ecosystems, functional natural drainage systems, and/or recreational opportunities. Assess & address barriers to GI/LID implementation. Conduct an assessment to review distribution of flood infrastructure efforts for equity of efforts for more vulnerable or low-income communities using the City's new Neighborhood Vulnerability Index or Title Six assessment.
	Improve procedures for routine maintenance to prevent and remove accumulation of debris; and provide public information on how to prevent clogging and obstruction of stormwater conveyance systems. Provide more outreach for flood status and insurance information to public. Incorporate outreach in various outlets (for example: radio in English, Spanish, T'Ohno Odham; billboards, transit stops/benches; wraps on buses; info/ads in buses/streetcar; K-12 school outreach programs). Continue to implement First Flush Retention requirement to keep first 0.3 – 0.6 inch of rainfall onsite of new development.
	Include Stormwater Management Plan policy to update every 5 - 10 yrs or as reasonable to address population migration and annexations.
	Continue to update outreach material to owners of floodprone property & send annually. Outreach should recommend flood insurance, how to protect contents, and promote flood response plan
	Coordinate with ecologist/biologists ramification of standing water in natural resource areas and implement. t acceptable sustainable mitigation practices. Mitigation practices developed with ecologists/biologists should be transparent with information available and accessible on-line; providing teaching/outreach opportunity to inform public of practices. Continue to implement Green Infrastructure Fund to identify & maintain existing LID, & construct new ones.
	Assure procedures comply with MS4 permit requirements. "Only Rain In the Drain". Look at how to lessen clogging or conveyance issues for homeless' blankets. Floodplain Administration will review clogging factors, compare to other arid climate cities.

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Tucson Floodplain Management Plan 5-year Action Item Update for TSMS Subtask - Working Groups:

1) Creating Online App / GUI for the Tucson Drainage Manual

2) Software Parameter Requirements for City of Tucson Drainage Submittals

3) Retrofitting Existing At-Risk Sanitary Lines

4) Human Access Controls for Stormdrain Systems

5) M.E.O.W. - Maintain, Enhance, Outreach for Watercourses

6) Describing Scenarios for Flood & Erosion Emergency Response Exercises

7) Outreach Suggestions for Demystifying Tucson Drainage Regulations

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Retrofitting of Sanitary Systems

Today's Agenda:

- Continue discussing impacts to City of Tucson from SSO's
- Discussing criteria for retrofitting old sewer infrastructure
- Going over protocols and SOP's for responding to private SSO's, responding to vulnerable public sanitary systems, and notification to City of Tucson. Determining staff that is needed from county and city to set up a meeting to discuss procedures and if needed potential IGA.
- FMP exercises

Tucson TSMS 5-Year FMP Action Item Update
-
Retrofitting Sanitary Sewer

Workshop 3) Retrofitting Existing At-Risk Sanitary Lines

[TSMS Subtask: Phase V.b.iii]

Purpose: is to increase resiliency and reduce hazard risks for exposed sanitary sewerlines in stormdrain areas.

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Sanitary Sewer Outfalls (SSO's) – Impact to the City of Tucson

Sanitary Sewer Outfalls – impact to the City of Tucson

Sanitary Sewer Systems – impact to the City of Tucson

SSO's have increased since infrastructure is deteriorating over time due to older infrastructure, some infrastructure built prior to floodplain regulations, and since COVID-19, putting a strain on county and city resources.

City of Tucson Stormwater Management is not a wastewater service, so the city relies on county for SSO response.

The SSO's create potential environmental hazards to the city's watercourses and underground aquifers.

City of Tucson Floodplain Regulations Pertaining to Sewer Systems

Tucson Code Sec. 26-8(2)b: All public utilities and facilities such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood and erosion damage. Septic systems, whether public or privately owned, shall not be located in such a way as to avoid impairment to them or contamination from them during flooding. Unprotected excavations shall not be permitted so close to any floodplain crossings, utility structures or facilities as to cause or have the potential to cause an adverse effect on such crossings, utilities or similar facilities.

Tucson Code Sec. 26-11.2(f)(3): The proposed water supply, sanitary sewer systems and waste disposal systems of any development and the ability of these systems to prevent disease, contamination and unsanitary conditions due to flooding and/or erosion.

Tucson Code Sec. Sec. 26-12(d)(11): The costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, water system and streets and bridges.

Criteria for Safe Retrofitting of Sanitary Systems

The criteria used to evaluate acceptable design for retrofitting sanitary systems includes:

Assuring no adverse impacts to neighbouring property and takes into account watercourse designation.

Retrofitting of Sanitary Systems - No Adverse Impact Considerations:

No Adverse Impact Considerations:

- ✓ Design does not increase regulatory flood water surface elevations to levels that cause overtopping, no freeboard, or other safety issue.
- ✓ Design does not substantially change the energy grade line or acts as a grade control structure that would cause potential flooding upstream or elsewhere.
- ✓ Design does not increase scour or erosion hazard potential.
- ✓ Design provides for long-term solution (50-year life preferred)
- ✓ Design provides aesthetic aspects to address riparian floodplain designations. Previous retrofitting included coloured concrete to be used that matches the existing embankment terrain colour.

THOUGHTS AND IDEAS?

Please attend the second part (2 of 2) City of Tucson Floodplain Management Plan Working Group Meetings (TSMS Phase Vbiii) for follow-up to Retrofitting Sanitary Sewer infrastructure within the City of Tucson Watercourses and further discuss FMP.

Next Meeting:
Public Works Building
4th Floor – Medium Conference Room
Tuesday
May 13, 2025
9:00-11:00 AM

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