



DATE: March 20, 2019

TO: Pima County Transportation Advisory Committee

FROM: Suzanne Shields, .E.
Director

SUBJECT: Bank Protection and Associated Improvements

This memorandum is in response to the informational request from Pima County Transportation Advisory Committee (PCTAC) member Albert Letzkus, requesting Section 404 Permit requirements for bank protection as it pertains to the requirement for bike paths and/or The Loop.

BACKGROUND – FLOOD CONTROL DISTRICTS IN ARIZONA

In the 1970s, Arizona experienced statewide devastating flooding during an unusually active period of Pacific Ocean El Niño events. The state legislature established county flood control districts as special taxing districts to fund flood control improvements throughout Arizona. While these are countywide governing agencies, flood control districts are separate from the County and are separate political subdivisions governed by the Arizona Revised Statutes, Title 48 Special Taxing Districts, Chapter 21, §48-3601-3650. Current statutes allow funding for acquisition and preservation of natural floodplains and flood control structural improvements including associated incidental improvements for groundwater recharge and recreational corridors as part of the construction of a flood control facility.

CREATION

The October 1983 flood was the largest flood of record in the Tucson area. The flood and erosion damage that occurred was the most severe along the Santa Cruz River with extensive damage along the Rillito Creek and other major watercourses as well. The estimated damage to public infrastructure and utilities was \$64 million. During the flood and in its aftermath, the ability to complete emergency actions and subsequent repairs was hampered by the lack of access to the riverbanks and river channel.

Following the flood, Pima County developed the *Flood Repair and Flood Hazard Mitigation Program* (Program). Elements of the Program included design standards to protect bridges, properties and essential utility functions as well as for reliable access to the river banks and river bottoms. These standards require 50 feet of right-of-way along the top of the bank protection, safety features including handrails access ramps into the river channel, sufficient clearance under bridges, paved access along the banks, and, wherever possible, restoration of the banks with native landscaping for passive recreation. As approved by the Board of Supervisors and the Bond Committee for the 1984 Bonds, these standards became the start of the effort for regional flood and erosion protection, utility corridor maintenance routes, and for emergency responders.

Over time, the bank protection and river park standards have changed. Many of these changes are for compliance with regulations to protect cultural resources and environmental requirements including providing landscaping designs to meet mitigation requirements associated with the Clean Water Act.

CLEAN WATER ACT

Just as the Pima County Regional Flood Control District (District) began constructing flood damage repairs in 1984, the U.S. Army Corps of Engineers' (Corps) authority for the Clean Water Act, Section 404 Dredged and Fill in Waters of the U.S. expanded to include ephemeral streams. The District worked the Corps' Los Angeles District Office to develop mitigation strategies for the needed flood repair projects including planting native vegetation along the riverbanks to replace vegetation and habitat lost through the construction of bank protection. Over time as regulations under Section 404 have changed, the reestablishment of vegetation and habitat along the river overbank remains the primary mitigation method approved by the Corps.

COSTS AND FUNDING

Costs associated with developing and constructing the river park system is a very small portion of the cost of bank protection projects as much of the river park infrastructure are already requirements for bank protection.

In today's dollars, installation of a basic one-mile segment of paved Loop pathway is as little as \$110,000 per mile.

It is important to keep in mind that nearly all of The Loop paved pathways, installed by the District, are primarily there to serve as the maintenance access route for the District to perform necessary maintenance activities in the abutting regional watercourses, and access for the utility companies such as sewers along the riverbanks.

With the addition of a small amount of striping and signing—an incremental cost of approximately \$8,000 per mile—the District is able to cost effectively convert these paved pathways into recreational facilities.

Many segments of The Loop have been installed as a component of much larger regional flood control, flood protection and environmental restoration projects. The minor Loop related improvements included in these larger projects make up only about 3% of the overall cost of these larger projects.

As the District has constructed projects over the last 35 years, they have also ensured that projects preserved and restored vegetation and included designated soft trail elements passive recreation such as hiking and equestrian uses. When combined, these linear paved pathways, soft trails and vegetative corridors form segments that have become known as linear parks. Funding for these improvements have come from a variety of sources including federal funds, voter approved bonds, private development and THE District's tax levy funds.

Over the last decade, particularly after the 2006 flood, the District has aggressively worked towards completing necessary flood and erosion control improvements along the major watercourses, which

Pima County Transportation Advisory Committee
Bank Protection and Associated Improvements

March 20, 2018

Page 3

has helped in connecting previously discontinuous linear park segments into an overall system.

Today, The Loop is a linear multi-use facility that traverses the entirety of the Rillito River and significant segments of the Santa Cruz River, the Pantano, Julian and the Cañada del Oro washes.

Costs for individual flood and erosion control projects can vary greatly depending on specific site conditions. Site conditions that impact costs may include, but are not limited to, land value for right-of-way; remediation work where former landfills are encountered; cultural resources; utilities; and tributary drainage. These costs would be incurred regardless of whether or not The Loop pathway was included as an element of the project.

SS/tj

- c: C. H. Huckelberry, County Administrator
- Carmine DeBonis, Deputy County Administrator – Public Works
- Chris Cawein, Director – Natural Resources, Parks and Recreation
- Eric Shepp, P.E., Deputy Director – Regional Flood Control District
- Andy Dinauer, P.E., Division Manager – Regional Flood Control District