

Custer County-Miles City (CCMC) Regional Flood Protection Project

Building a Solution to Protect Our Future

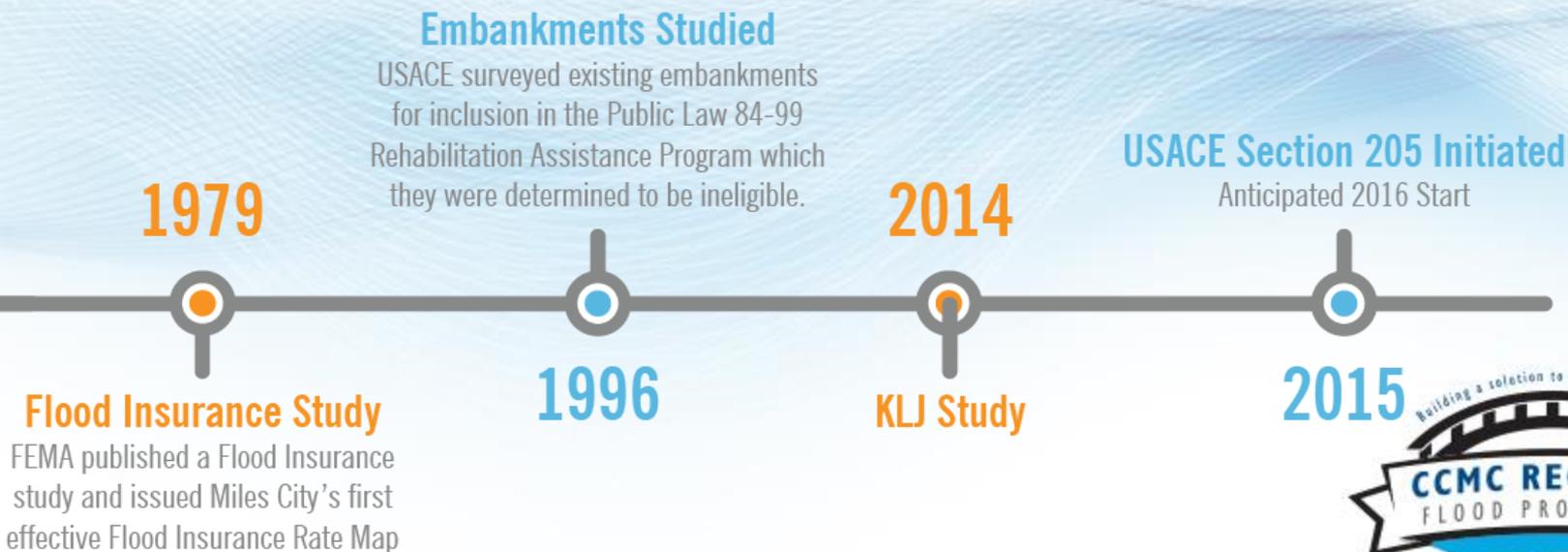
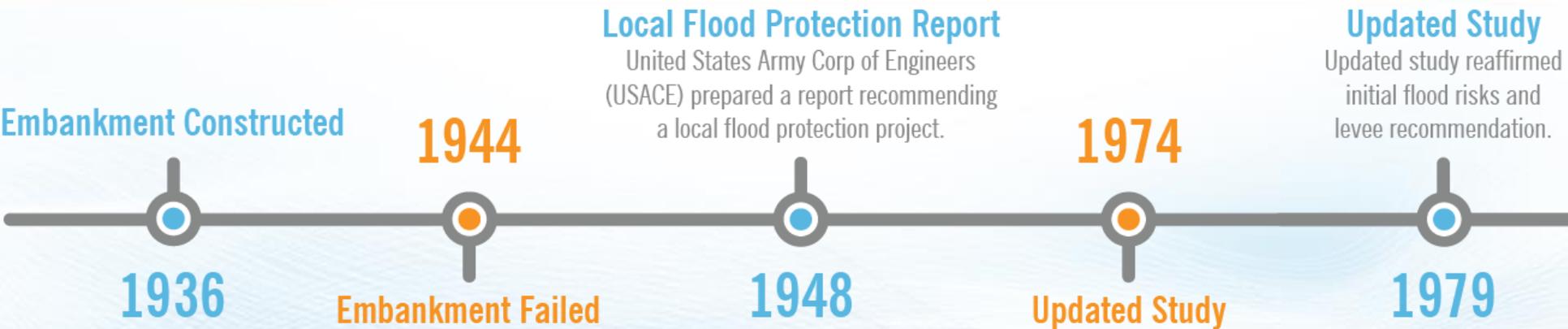
March 16, 2016

Sam Malenovsky, City of Miles City

Carl Jackson, KLJ



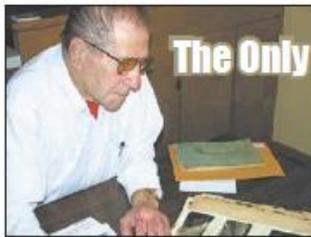
CCMC Historically Speaking



History: Early Floods



History: 1944 Flood



By Robin Schneider,
The North Platte Telegraph
1/29/2005

Earl Tagge looks at pictures in his scrapbook of Miles City, Mont., in 1944. Tagge, along with a pilot and crew of eight, used 250-pound bombs launched from a WWII B-17 Flying Fortress to clear an ice jam on the Yellowstone River, saving the town from flooding.

On a cold March morning in 1944, Miles City, Mont., Mayor L.S. Keye put out an urgent and unique request through the governor's office: Send in the bombers. What would happen next would be reported as the only aerial bombing of a community during wartime on U.S. soil, a mission that would involve North Platte resident Earl Tagge.

On March 21, the residents of Miles City, located where the Tongue River enters the mighty Yellowstone River, awoke to find their quaint little town in danger of being completely submerged under frozen water. Ice jams were backing up on the Yellowstone River, and the flow from the Tongue River raised the ice packs even higher until the rivers overflowed their banks.

The reading at the city's pumping plant was reported as being 16.3 feet on Tuesday morning, according to the day's issue of The Miles City Star. Normal flow for that time of year was usually in the 4.3-foot range. Freezing water and large chunks of ice were filling the town, forcing people to evacuate their homes. Keye called in explosives experts from a nearby town to drop several 50-pound homemade bombs on the frozen Yellowstone River in an effort to break up the ice, but to no avail. Keye's only other option was to contact the military in hopes they could find a solution.

Back in Rapid City, S.D., 20-year-old Army Air Force Staff Sergeant Earl Tagge was sitting in his barracks marking time following training for high-altitude bombing and gunnery practice. He was scheduled to ship out to New Guinea in a matter of days.

The Only Bombing of the Continental U.S.



When officers approached the troops asking for volunteers to aid in the unusual mission, Tagge accepted and was quickly at work fusing and loading the 250-pound bombs onto the World War II B-17 Flying Fortress.

Within a matter of hours, Tagge, along with pilot Richard F. Ezzard and a crew of eight, flew the B-17 in the middle of a blizzard headed for Miles City. "We had to fly by instruments for about the first half hour because we couldn't see out of the cockpit," Tagge said. The original plan was for the group to take the bombs to Miles City, where they would be transferred to a dive-bomber, who would then drop the bombs.

"After we landed in Miles City, the ceiling was too low, it was 1,000 feet. They changed the plan and we dropped the bombs," Tagge said. Ezzard had planned on dropping the bombs at an altitude of 10,000 feet, but was unable to get that high because of cloud cover. Instead, Ezzard was forced to fly at 2,600 feet.

At 7:30 p.m., the crew, with the addition of a local man who knew the area well, went back up to begin the mission. The crew could see from the air that the Yellowstone River was jammed for at least two miles on each side of the river's bend. After a few initial passes, the crew released a test bomb.

"It seemed to go in the right place, but you couldn't really tell it did anything," Tagge said. The crew made two more passes over the river, dropping six bombs on each pass. Hundreds of onlookers stood by holding their collective breath in suspense, waiting for the inevitable loud blasts they had assumed would come from the bombs. "People thought they would make a lot of noise," Tagge said. "We had them triggered to detonate underwater."

What happened instead was a tornado-like effect that swirled upward, carrying mud, water and ice 150 feet into the air, as reported in the Miles City Star. Within an hour, Tagge said, the ice loosened up and the water began to flow down. The mayor and several other dignitaries stood on the Seventh Street Bridge, watching the improving flow.

"There were big pieces of ice hitting the bridge," Tagge said, with a chuckle. "I guess it was pretty shaky, and they got off it real fast." The reading at the pumping plant on Wednesday morning was 6.3 feet, a drop of 10 feet from the previous day.

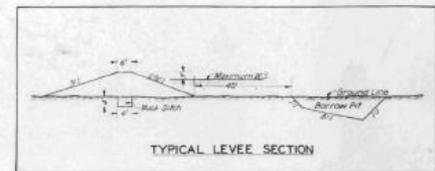
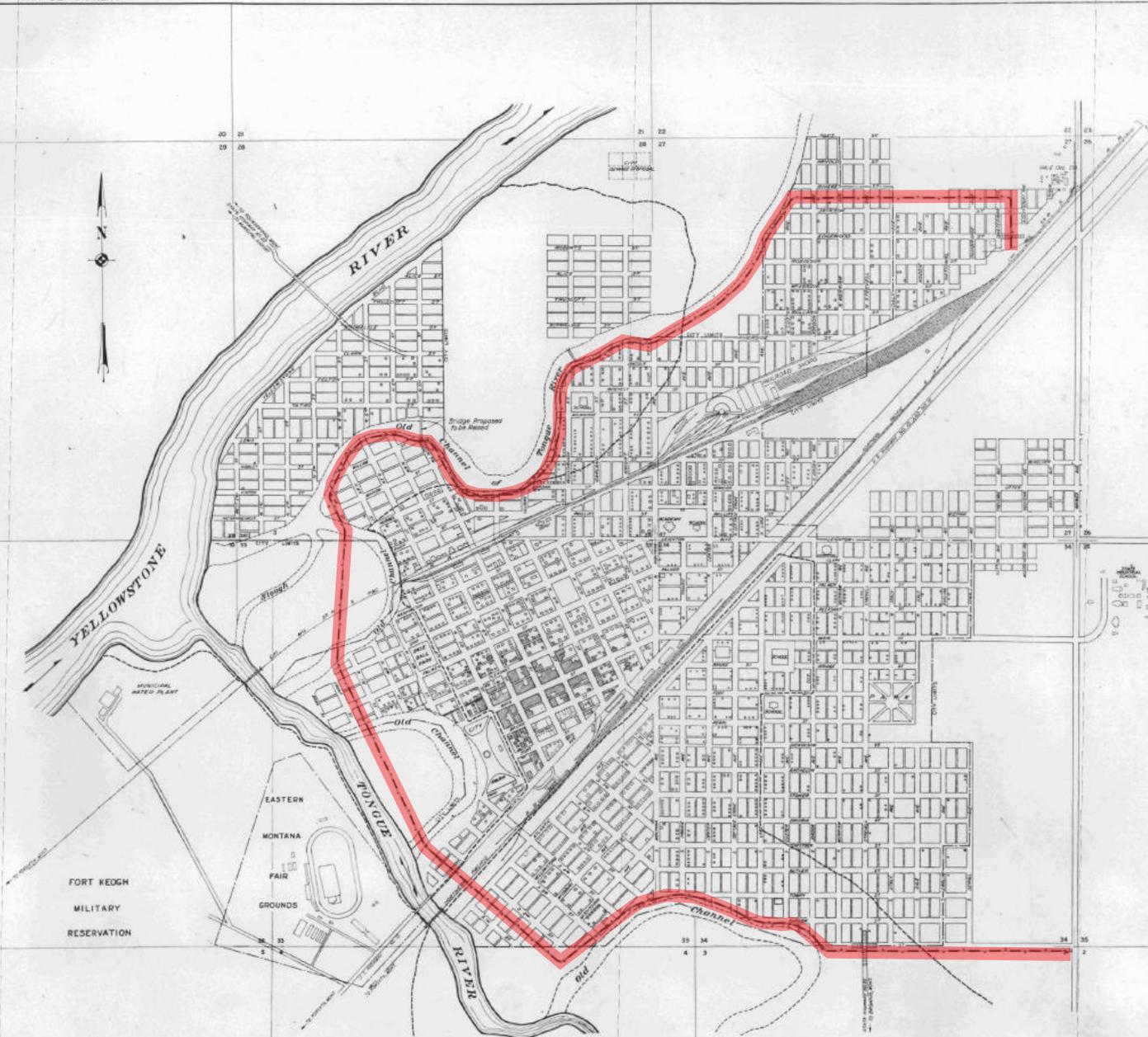
The crew was put up in a local hotel for the night and fed steak dinners in appreciation for their efforts. The next day, as the crew began their flight home to Rapid City, Ezzard flew over Miles City at 50 feet, tipping his wings from side to side, a gesture that everything was well. ■



1932 Report on Yellowstone River

WAR DEPARTMENT

CORPS OF ENGINEERS, U. S. ARMY



-LEGEND-

Proposed Levee —————

Existing Street Proposed to be Raised ————

Highwater Line, March 7, 1929 ————

MISSOURI RIVER AND TRIBUTARIES
FLOOD CONTROL - IRRIGATION - NAVIGATION - POWER
YELLOWSTONE RIVER
FLOOD PROTECTION PLAN
MILES CITY, MONTANA

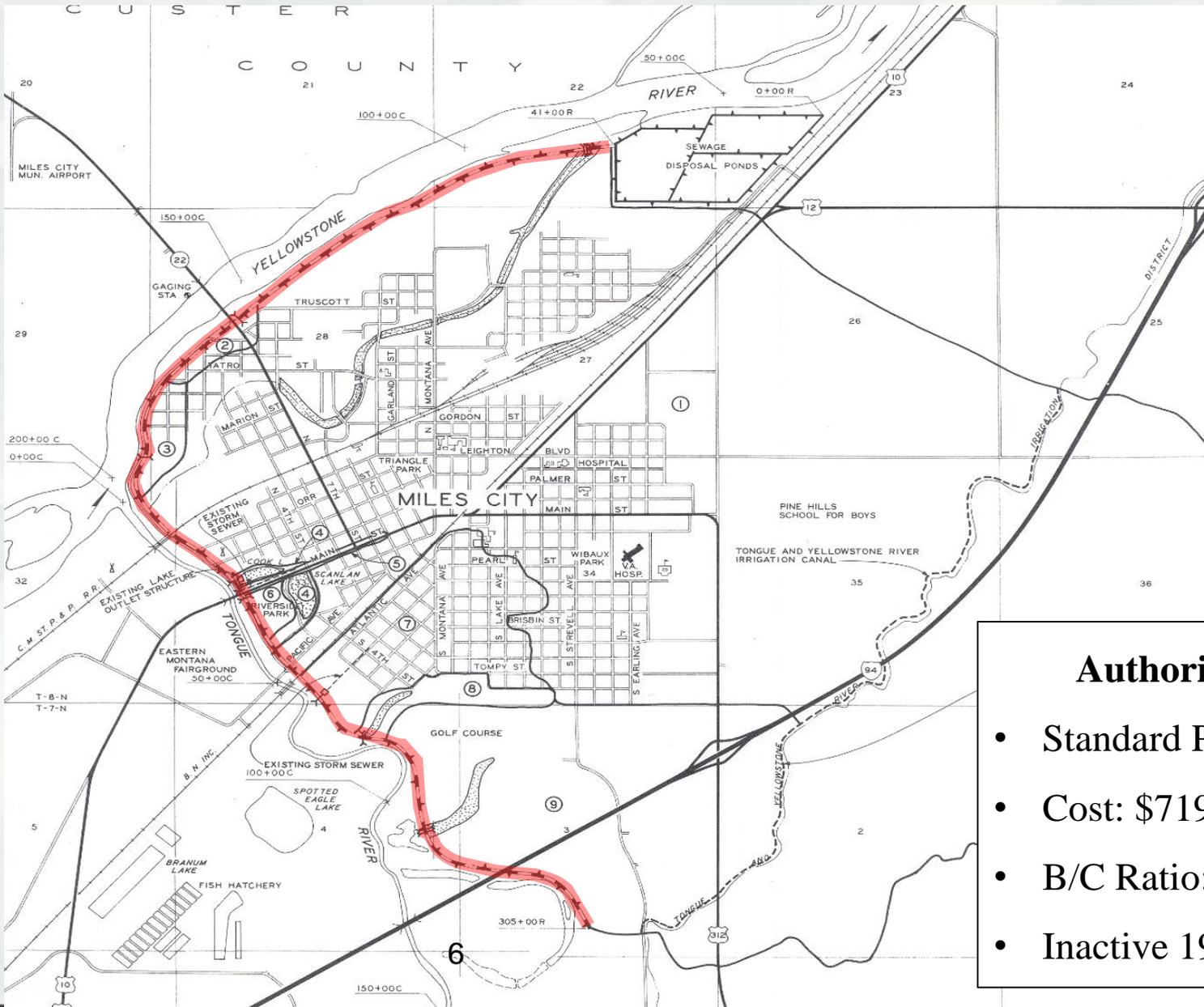
In 1 Sheet Sheet No 1 Scale (see graphic)

U.S. ENGINEER OFFICE KANSAS CITY MOMARCH 1932

Submitted *[Signature]* Approved *[Signature]*
Captain [Name] of Engineers Major [Name] of Engineers

Compiled by *[Signature]* Traced by *[Signature]* Checked by *[Signature]* Transmitted with report File No. _____
A. J. [Name] dated March 1932 Lt. 241 64

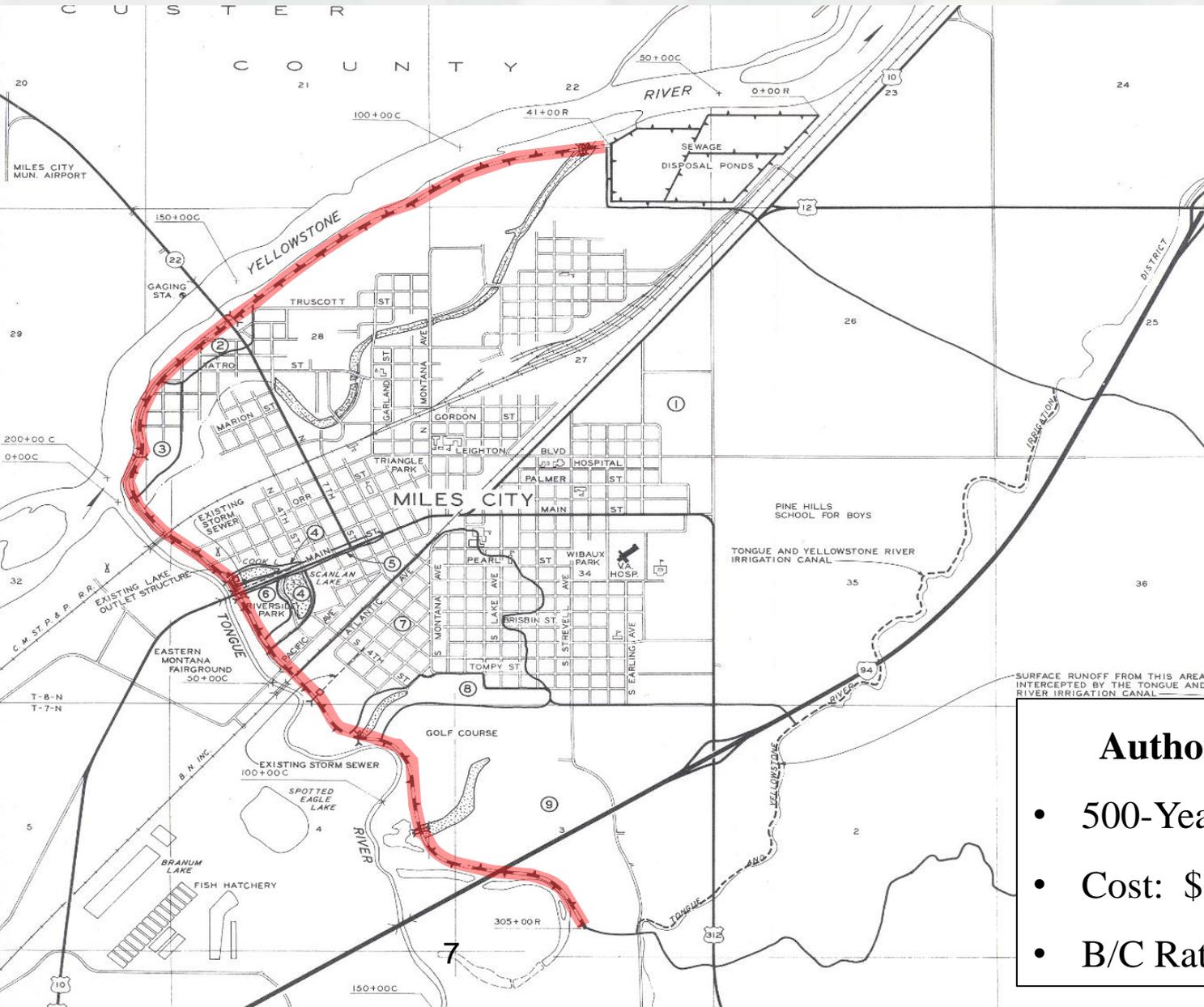
1950 USACE Proposed Levee



Authorized 1950 FCA

- Standard Project Flood Design
- Cost: \$719,400 (1946)
- B/C Ratio: 1.15
- Inactive 1961 – no sponsor

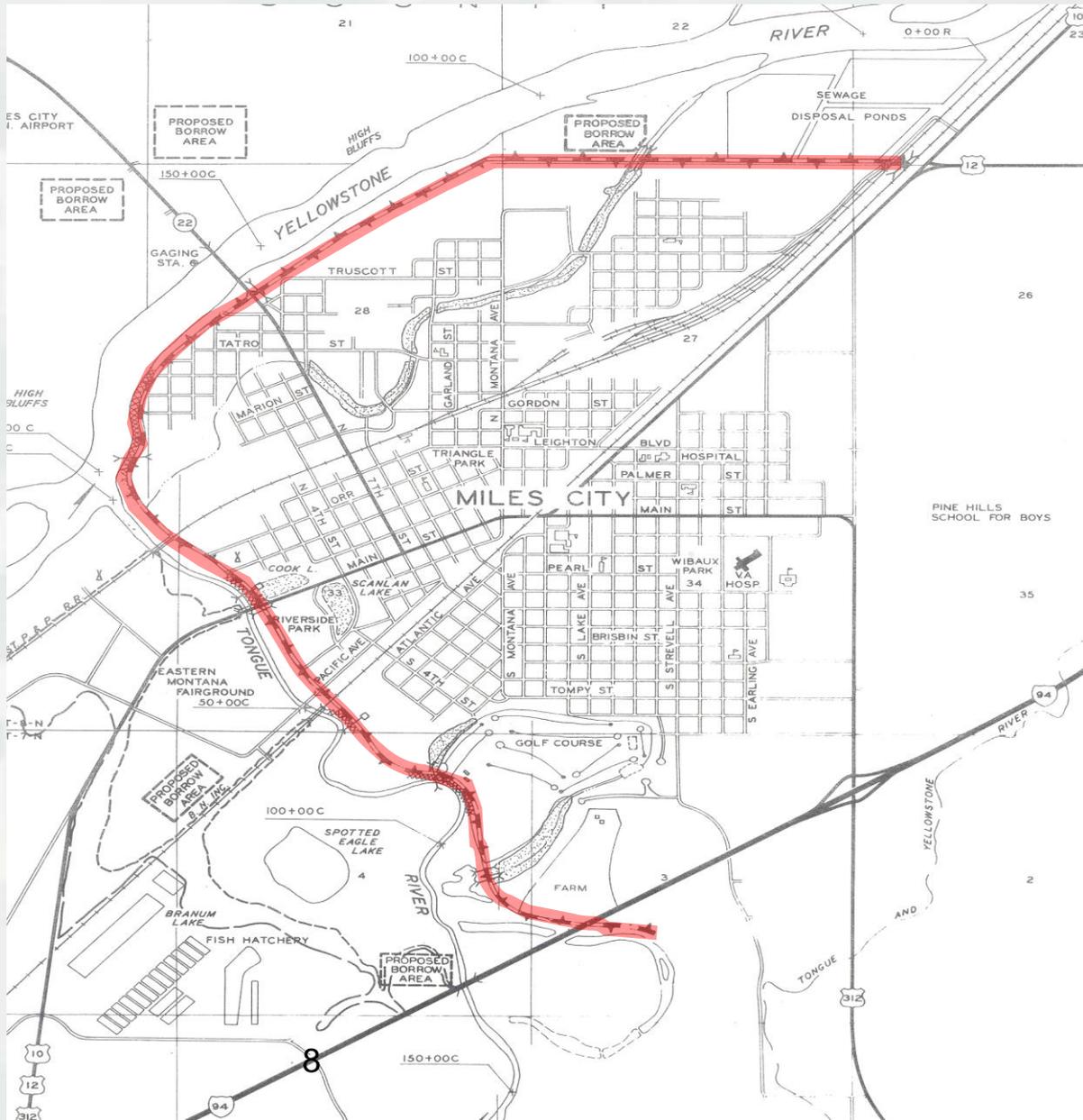
1974 Re-Study Levee



Authorized 1950 FCA

- 500-Year Ice-Affected
- Cost: \$2,077,000 (1974)
- B/C Ratio: 3.5

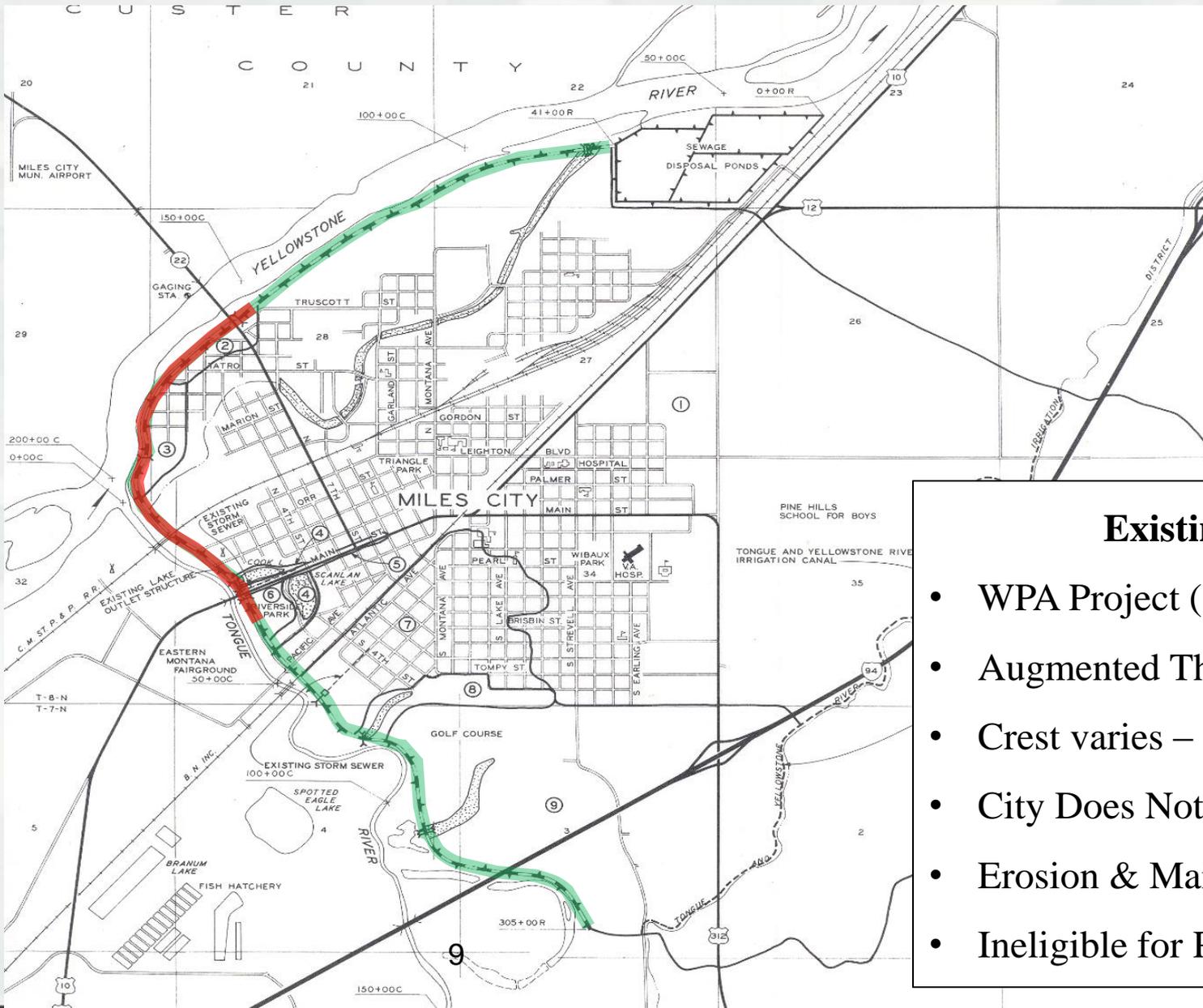
1978 GDM Levee



General Design Memorandum (GDM) Authorized 1950

- 500-Year Ice-Affected
- Cost: \$5,170,000 (1978)
- B/C Ratio: 1.2
- Deauthorized – no sponsor

Existing Levee



Existing Levee

- WPA Project (1930s)
- Augmented Through Time
- Crest varies – 15-50 yr Flood
- City Does Not Own All ROW
- Erosion & Maintenance Issues
- Ineligible for P.L. 84-99 in 1996

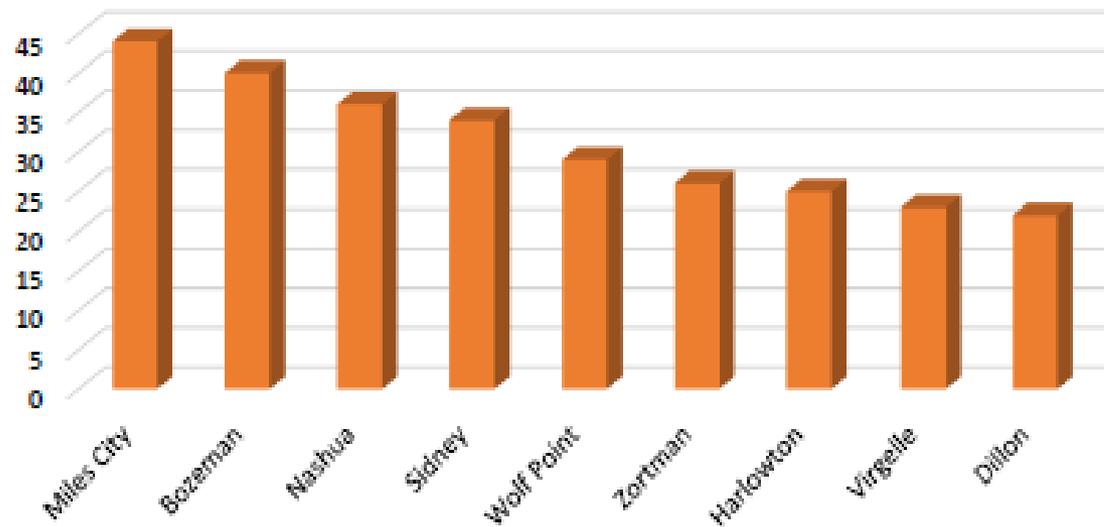
The Problem



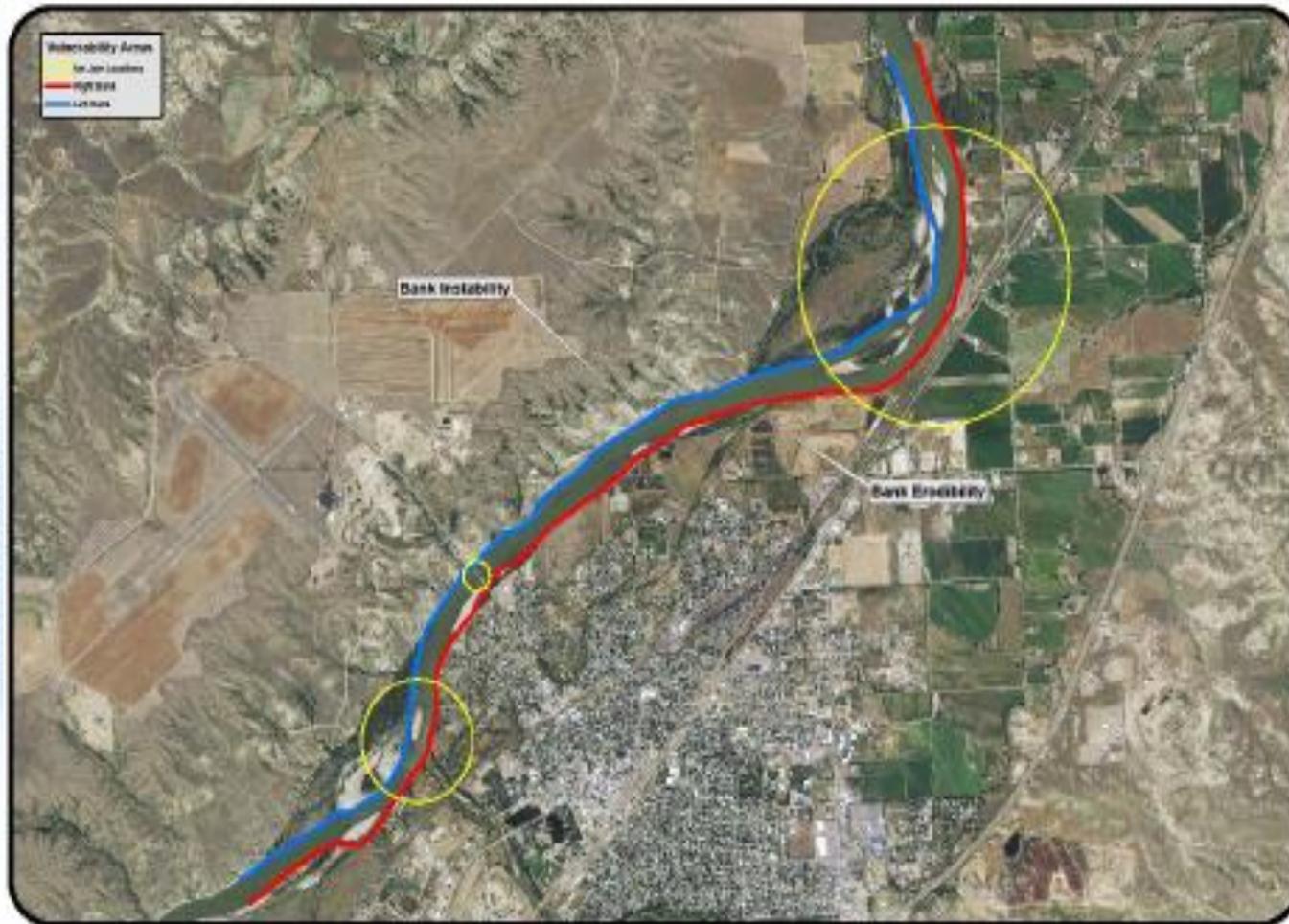
The Problem

Montana Cities East of the Continental Divide with the Most Reported Ice Jams

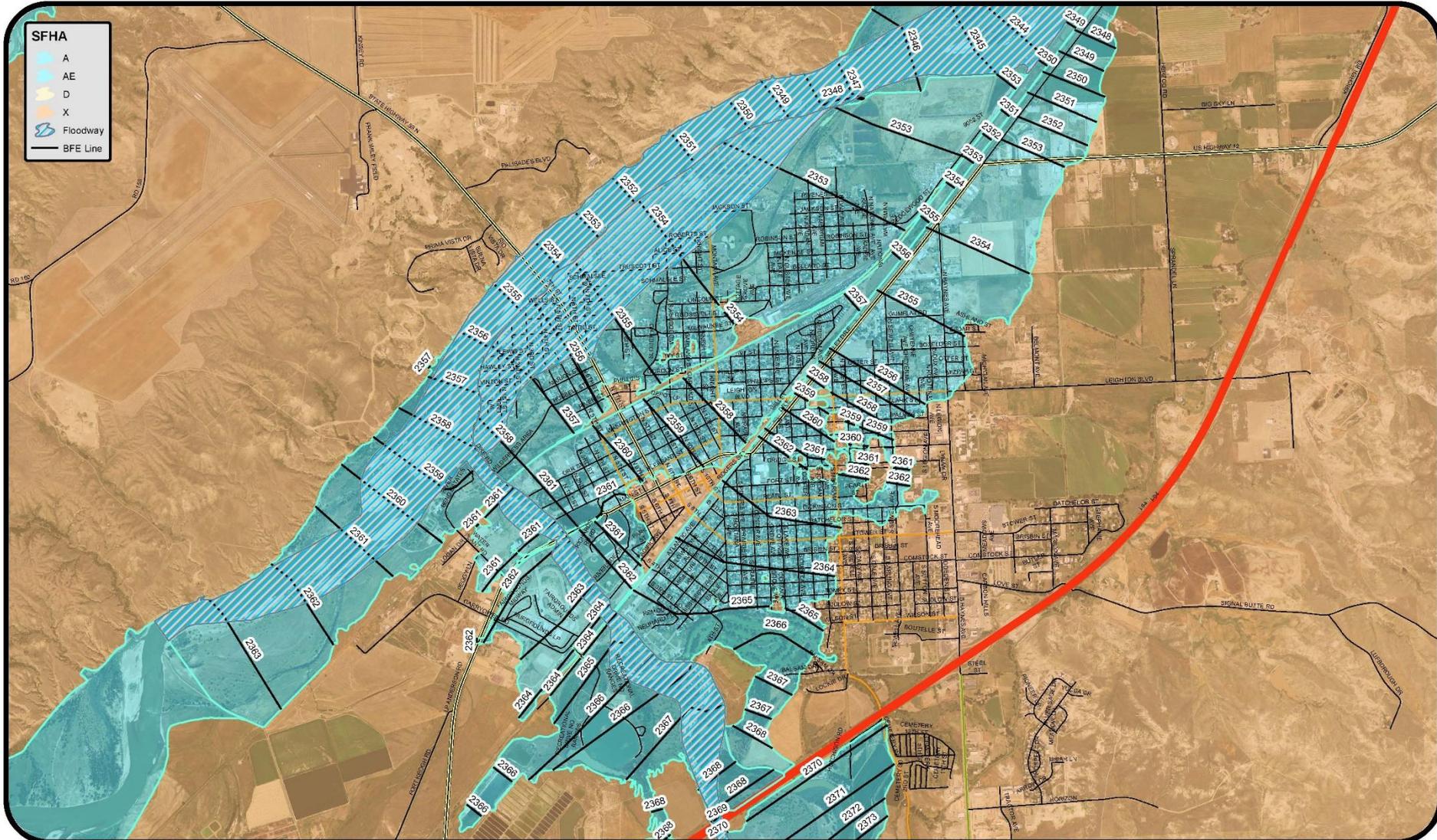
Source: National Weather Service, 2007



The Problem



Current FIRM (2010)



2,000 1,000 0 2,000 4,000
1 inch = 2,000 feet

Exhibit 6

Current FIRM



The Other Problem



Miles City, MT currently stands as the largest flood insurance policy holder in the state. The community represents approximately 23% of all flood insurance policies within Montana.



The current annual premiums, the policies holders within Miles City pay, is approximately \$625,000 per year for flood insurance premiums.



Miles City Flood Insurance Update

Changes to NFIP taking Effect April 1, 2016

- Newly Mapped Rates
- Approx. 850 Properties

Residential properties placed into Zone AE after 2010 map adoption



Flood Mitigation Feasibility Report



Flood Mitigation Feasibility Report

Prepared for Miles City, MT

DRAFT

9/3/14



www.ccmcfloodprotection.com

5 feasible flood mitigation
options



Alternatives Presented

Alternative #1: Do Nothing

**TODAY, I'm
doing NOTHING!
Cuz I started doing
it yesterday, but I
haven't finish it yet!**



Does nothing to mitigate flood risk to the community

Does nothing to address increasing flood insurance premiums



Alternatives Presented

Alternative #2: LOMAs (Letters of Map Amendment)



Number of property owners that would benefit was identified as relatively small

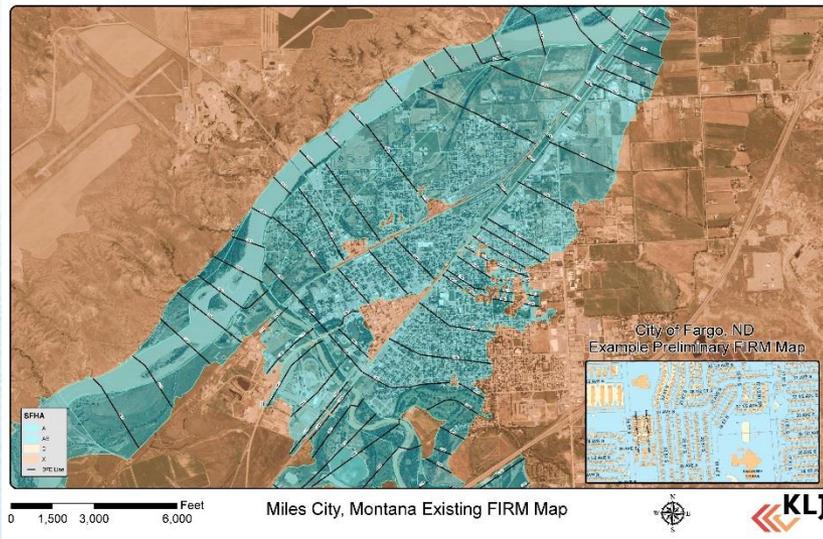
Provides no guarantee of not paying flood insurance

Does not remove flood risk



Alternatives Presented

Alternative #3: Letter of Map Change using 2D model



More intensive than 1D modeling

Number of property owners that would benefit could still be relatively small

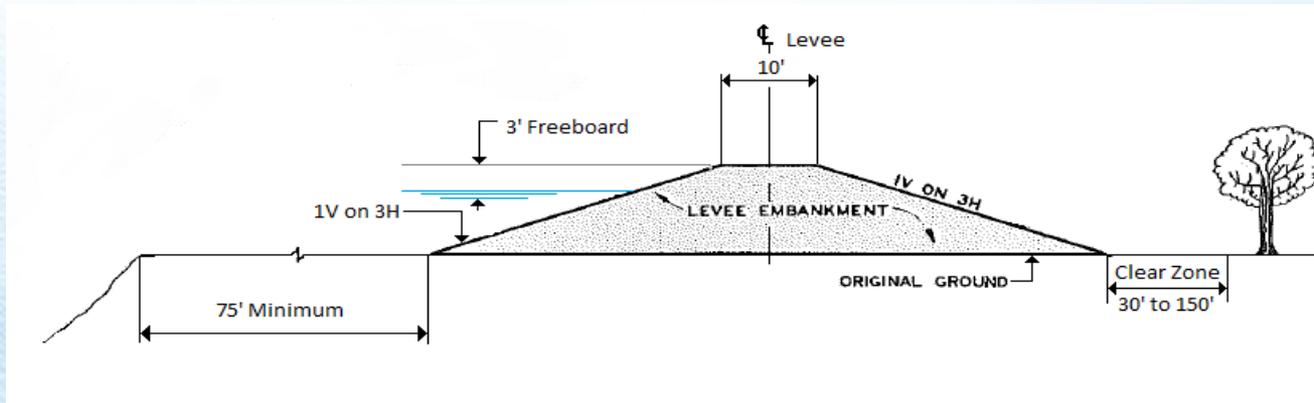
Still no guarantee of not paying flood insurance

Still does not remove flood risk



Alternatives Presented

Alternatives #4 and #5: Reconstruct Levee System 100-year flood or 500-year flood



Significantly reduced mandatory flood insurance

Significantly reduced flood risk

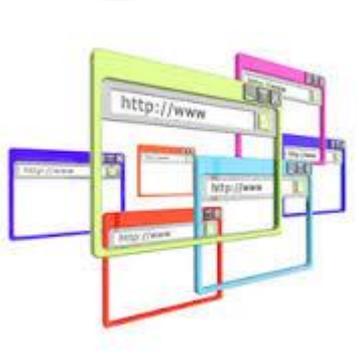
Most cost effective over time



Decisions were made-500 year levee



Now What?



Leadership Team

Steering Committee (4 members)

- City & County representatives



Sub-Committees

- Finance
- Public Relations and Government Affairs
- Engineering
- Environmental and Permitting



Stakeholder Engagement

- State and federal agency representatives
- Federal congressional staff
- State legislators
- Governor's Economic Development Office
- Residents and business owners
- Quarterly newsletter
- Website and social media



Extra, Extra Read All About It!



CCMC Flood Protection Project has been accepted into the USACE Section 205 Program

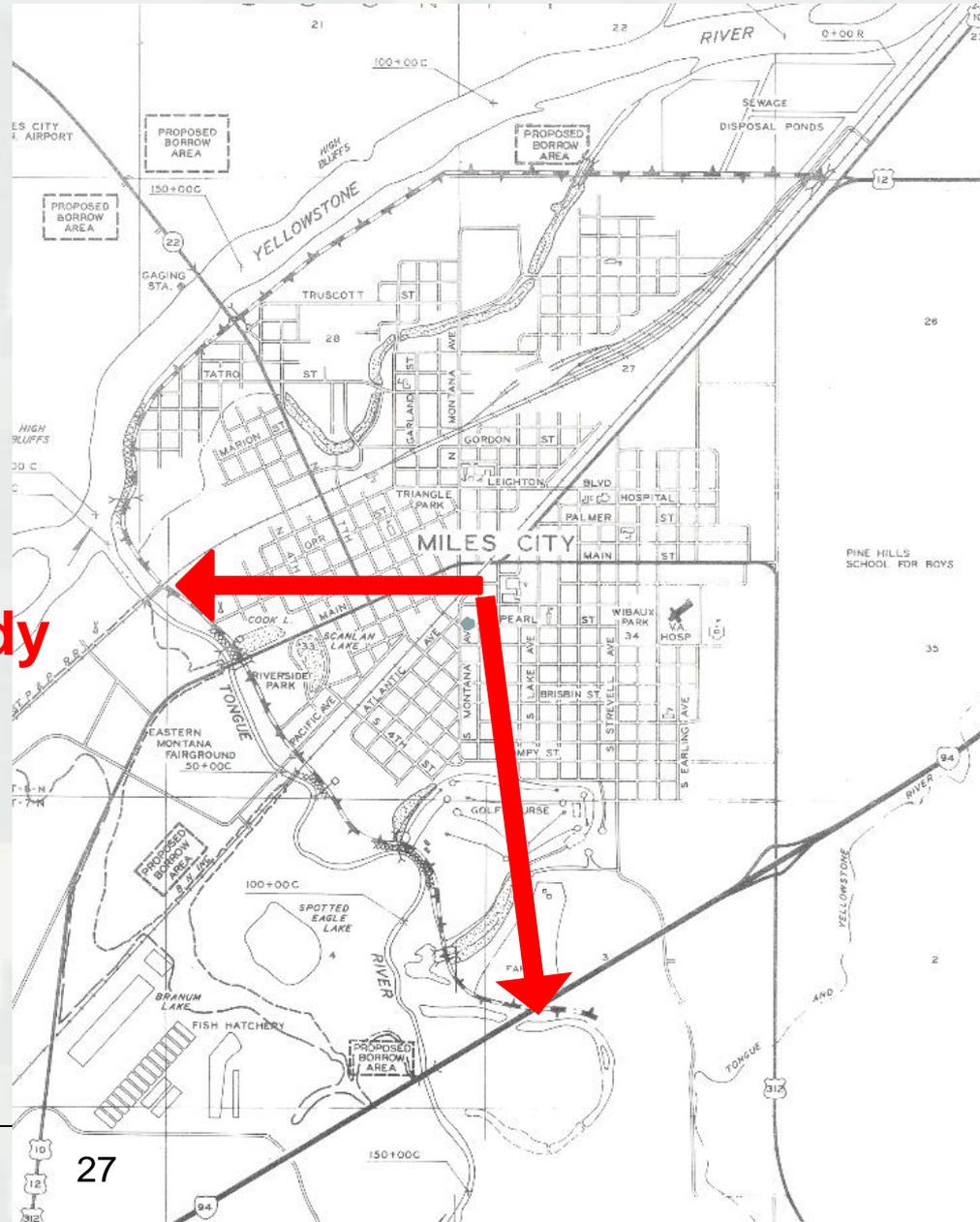


Up to \$10 million for the Tongue River portion of the project
(Includes additional feasibility work)

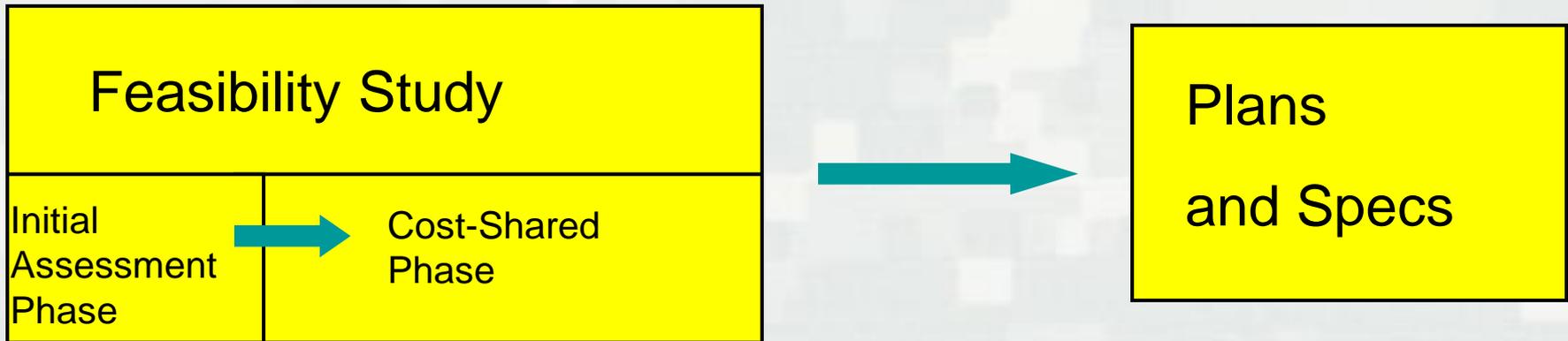


2005 Section 205 Initial Assessment

Primary Study Reach



Section 205 Process



WE ARE HERE



Section 205 Process

Sponsor Letter of Request



Initial Assessment

- Federal Interest Determination (FID) ← WE ARE HERE
- Scope and cost estimating
- Feasibility Cost Share Agreement (FCSA)

100% Federal - \$100k



Cost-Shared Feasibility Study

- Identification of existing conditions and alternatives
- Public scoping
- Environmental compliance
- Alternative Formulation Briefing (AFB)
- Final product is a completed feasibility report with recommended alternative
- Major Subordinate Command (MSC) approval

50% Federal
50% Local any
combination of cash
and in-kind services



Design and Implementation

- Plans and specs
- Construction
- Operation and maintenance manual provided to sponsor

65% Federal
35% Local including
Land, Easements Right-of-Way



Section 205 Criteria

- Intended for construction of a Flood Risk Reduction Project
- There is a project sponsor who meets the following criteria:
 - ▶ Public entity with financial capability for project cost sharing
 - ▶ Capability to acquire and provide the necessary real estate interests
 - ▶ Capability to operate and maintain project at completion
- Project justification meet a series of criteria
 - ▶ Benefits exceed costs ($B/C > 1$)
 - ▶ Federally preferred plan is the NED = National Economic Development. The plan that maximizes the net project benefits.
 - May not be plan with highest B/C
 - Locally preferred plan can be implemented instead of NED with sponsor funding and $B/C > 1$



Lessons Learned To-Date

Funding mechanism (district, bonding, etc.) for capital and maintenance

Comprehensive funding scenario analyses (IRMA, bond counsel, etc.)

Establishing owning entity (City, County, district) may take a while



Next Steps

Funding scenarios and financial planning

- Project and individual policyholders

Continue public relations

Continue multi-agency coordination

Preliminary engineering

Environmental

Land Acquisition



Contacts – Steering Committee

Custer County/Miles City Flood Protection Steering Committee

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Acknowledgement

USACE themed slides courtesy of:

Gwyn Jarrett, Project Manager
USACE Omaha District



Questions?



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