





OMAHA REGIONAL FLOOD RISK REDUCTION SYSTEM – A COMPARISON AND CONTRAST OF SCALE AND FUNCTION

SESSION C5

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MISSOURI RIVER SYSTEM

PAPILLION CREEK SYSTEM

COMPARE AND CONTRAST

RESIDUAL FLOOD RISK



MISSOURI RIVER SYSTEM

MISSOURI RIVER BASIN

- 322,800 square miles
- Part of Mississippi River Watershed
- Longest River in US



MISSOURI RIVER FLOODING HISTORY

- 1881
- 1952
- 2011



FLOOD RISK REDUCTION AUTHORIZATION

- Flood Control Act of 1944 (Pick-Sloane Act)
- Levees
- Dams



Pick-Sloan Plan for Missouri River Basin

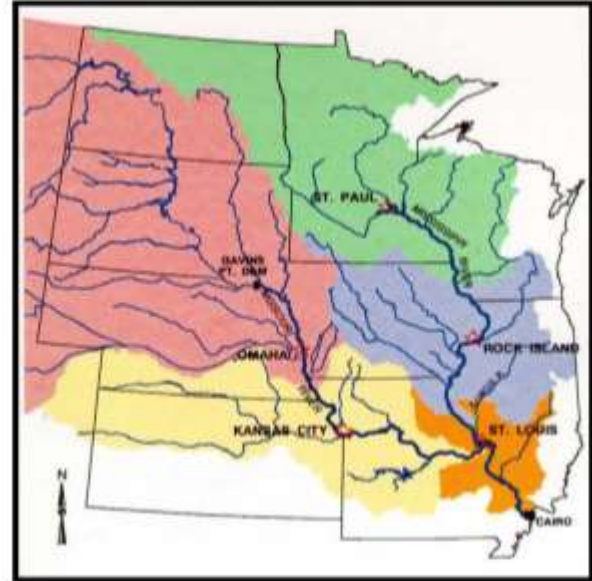
Showing Corps of Engineers and Bureau of Reclamation projects as described in H.D. 475 and S.D. 191, 78th Congress and approved by Congress in the 1944 Flood Control Act.

D LAND
BE IRRIGATED
RECLAMATION PLAN

OPERATION AND MANAGEMENT CHANGES

- Master Manual (1979)
- UMRSFFS (2004)
- USACE Floodway Study (~2007)

Upper Mississippi River System Flow Frequency Study



Final Report

January 2004

WHAT CHANGED?

- FEMA Now Acknowledges a Lower Flow Frequency Than Levees Were Designed For
- As Mapping Updates Occur, the UMRSFFS Floodway Study Results are Being Incorporated
- Keep Track of Non-Leveed Areas Along River



An aerial photograph of the Papillion Creek System. A concrete bridge with metal railings spans a wide, dark blue river. The river is flanked by lush green grassy banks that curve around the water. In the background, there are rolling hills, some bare trees, and distant buildings under a clear blue sky. The text "PAPILLION CREEK SYSTEM" is overlaid in large, white, bold, sans-serif capital letters across the middle of the image.

PAPILLION CREEK SYSTEM

PAPILLION CREEK BASIN

- 402 square miles
- Washington, Douglas, Sarpy Counties
- Tributary to the Missouri River



PAPILLION CREEK FLOODING HISTORY

- 1959
- 1964
- 2011



FLOOD RISK REDUCTION AUTHORIZATION

- Levees – Pick Sloan Act
 - R613 levees
 - Big Papillion Creek Levees
- Dams – Flood Control Act of 1968
 - Planned for 21 dams
 - USACE Constructed Several (i.e. Standing Bear, Zorinsky, Cunningham, Walnut Creek)
 - Developers Got Involved with Dam Construction (Candlewood, Newport Landing)
 - NRD Constructed With Partner Funding (i.e. Prairie Queen and Flanagan Lake)
 - Total of 9 Constructed, More in Planning



CURRENT STATUS

- Latest Dam (Flanagan Lake) About to Open to Public (#9)
- Additional Dams in Planning
- At Least One Dam Site is No Longer Viable Due to Development
- NRD Managing Flood Risk and Reducing Peak Flows and Trying to Beat Development



An aerial photograph of a large, multi-lane bridge spanning a wide river. The bridge features a prominent teal-colored truss structure. The road surface is grey asphalt with white lane markings. On the left side of the bridge, a significant portion of the ground is flooded, with water reaching the edge of the bridge deck. Two vehicles, a yellow truck and a dark car, are driving on the bridge. The surrounding area is lush with green trees and vegetation. A green highway sign is visible on the bridge. The text "COMPARISON AND CONTRAST" is overlaid in white, bold, sans-serif font across the lower portion of the image.

COMPARISON AND CONTRAST

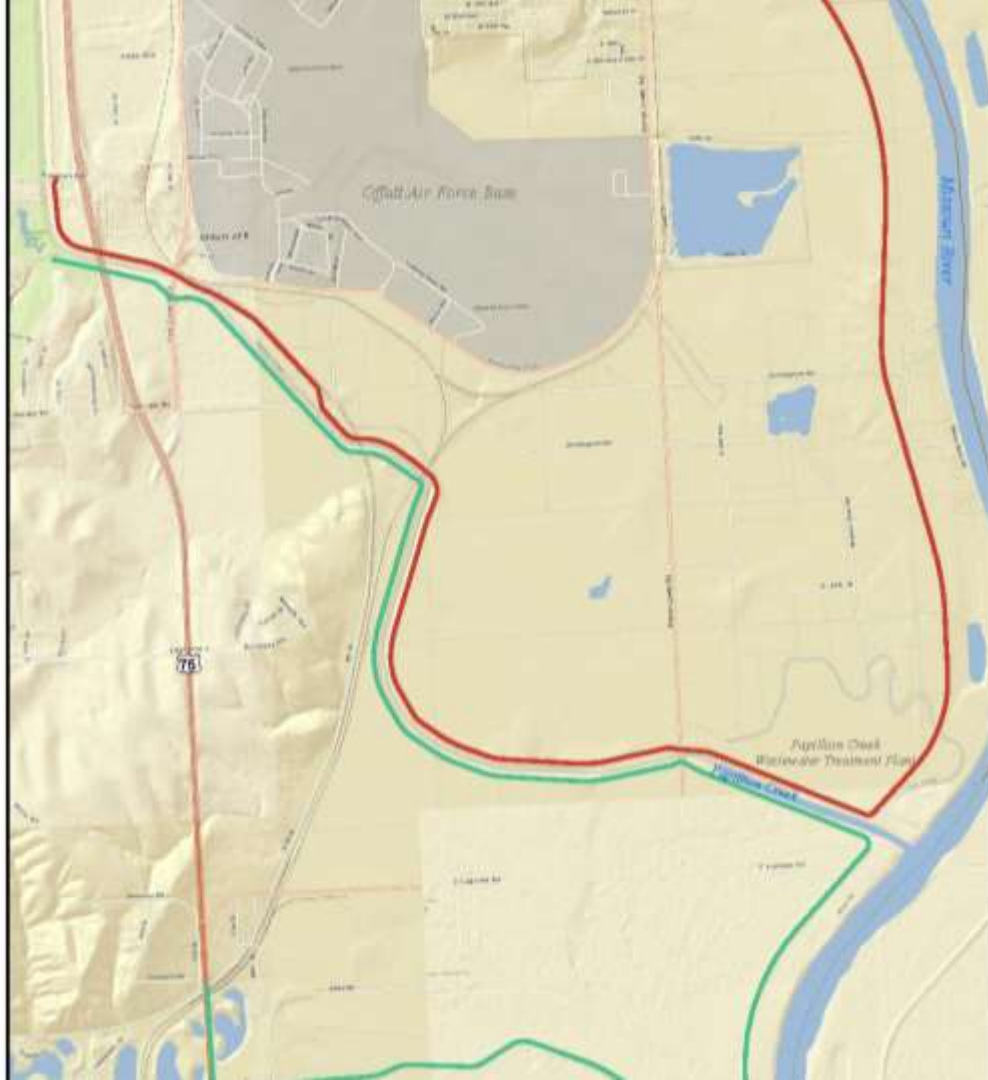
SIMILAR ELEMENTS

- Dam and Levee Components
- Order of Construction



SYSTEM DIFFERENCES

- Mainstem Versus Tributary Reservoirs
- Dam Operations
- Authorized Purposes (8 versus 3 – 4)
- Scale of Flooding (Long-Term Versus Flashy)



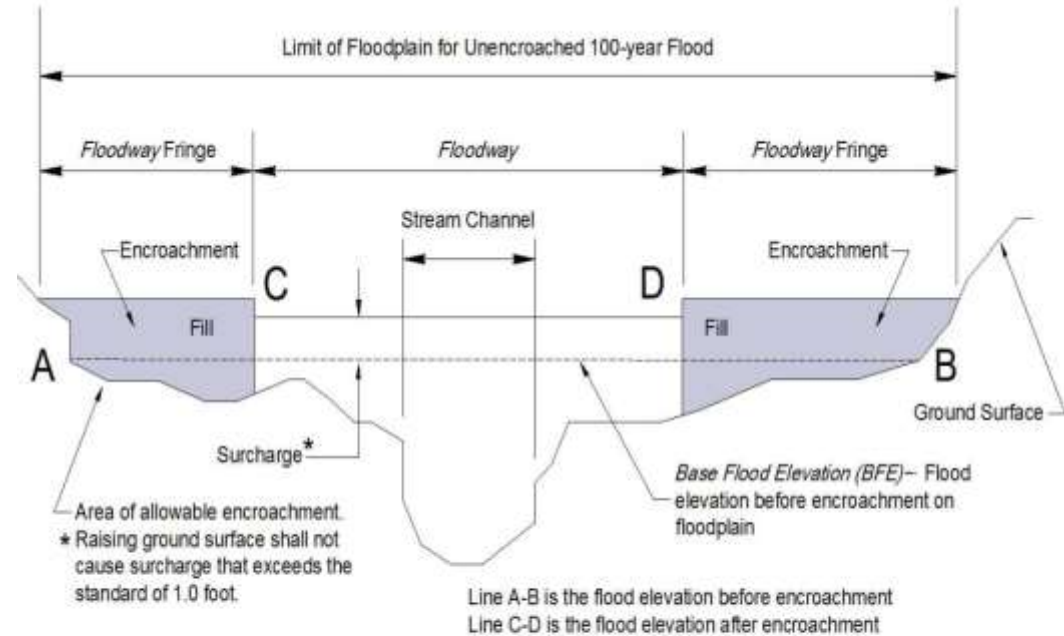
An aerial photograph of a large concrete dam with multiple spillways. Water is cascading over the spillways, creating white foam. To the left of the dam is a large, multi-story industrial building, likely a power plant. The surrounding area includes green fields, some trees, and a parking lot in the bottom left corner. The sky is clear and blue.

RESIDUAL FLOOD RISK

THE BASE FLOOD

100-Year Standard & 1-Foot Floodway

- In 1968 –
 - Inception of the National Flood Insurance Program (NFIP)
 - 100-year standard adopted as the Base Flood
- IN 1969 –
 - 1-foot floodway encroachment concept set forth in a Water Resources Council publication for Federal agencies



Floodplain Encroachment and *Floodway*

WHY IS 500-YEAR EVENT MAPPED?

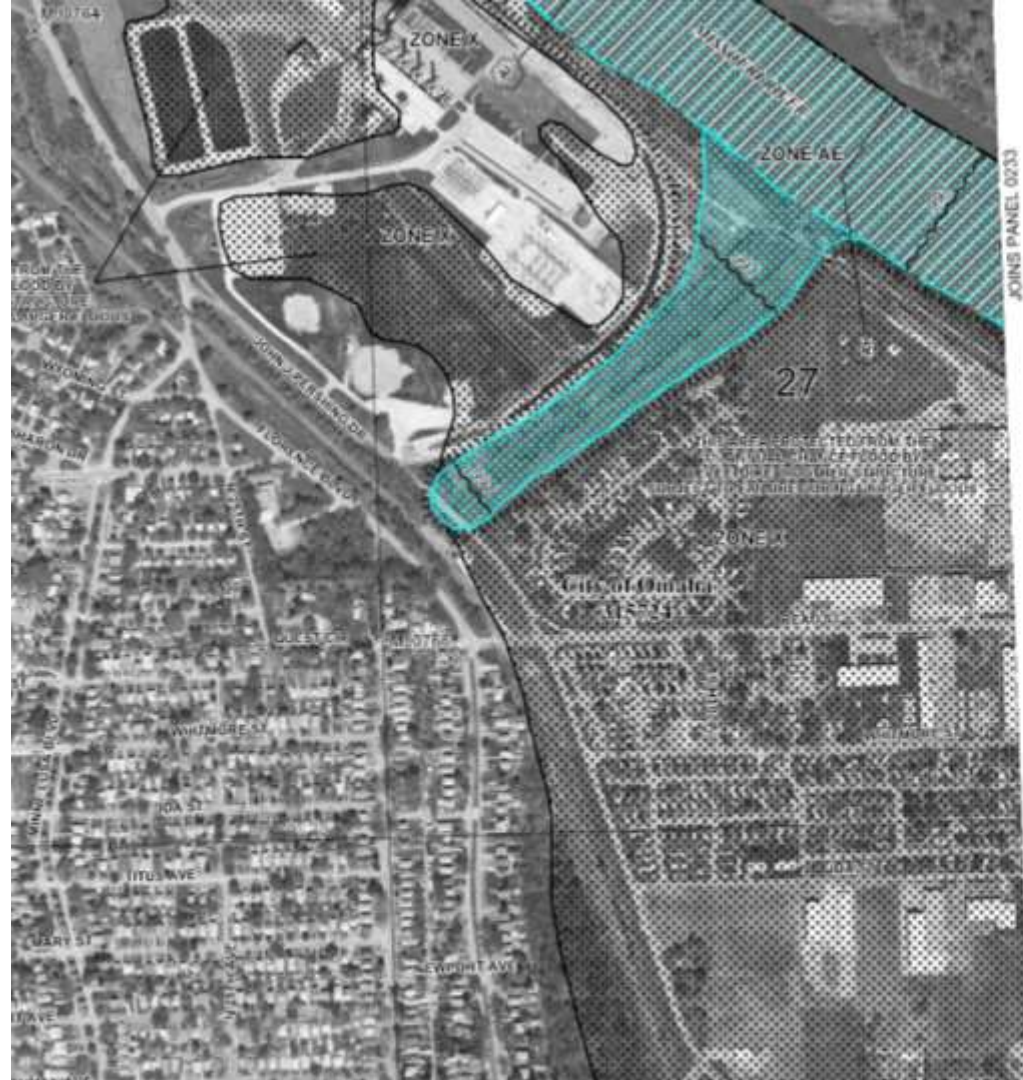
- Some Communities are Using the 500-Year as their Design Event due to Past Experience
 - 2008 Iowa Floods – Blue Ribbon Panel => Revise the minimum building standard from the 100-year to the 500-year event.
 - Non-starter with the Iowa legislature due to input that such would overly hinder development
 - Note that several Iowa communities have adopted the 500-year flood as their standard.



Cedar Rapids, Iowa – June 2008 Flood

LESSONS LEARNED

- Communicating Residual Flood Risk
- Example: Use of Levee Terminology
 - Flood Control Levee
 - Flood Protection Levee
 - Flood Damage Reduction Levee
 - Flood Risk Management (or Reduction) Levee
- FEMA's Accreditation Terminology



LESSONS-LEARNED

- Helping to Set the Stage on What Living Near/Next to a Levee or a Dam Really Mean
- Recent Examples to Pull From

Levees' Impact on Flood Risk Reduction, Not Elimination

Levees reduce risk during certain flood events. They do not provide complete protection from flooding. In addition, they can and do deteriorate over time and must be maintained to retain their effectiveness. When levees fail or are overtopped, the results can be catastrophic. In fact, the flood damage can be greater than if the levee had not been built.

QUESTIONS?

