Teton County
City of Choteau
Resiliency Meeting

November 14, 2024

Agenda

- Introductions
- Memo Review
- Q&A
- Next steps
  - Funding, etc.

Teton County MTA Request

Mitigation Technical Assistance Request

As part of a floodplain mapping project DNRC may be able to provide a community with semi engineered mitigation alternatives to reduce the flood risk identified during an updated flood study. This process will provide mitigation alternatives. It will be up to the community to further refine the alternatives in order to implement a flood risk reduction project.

Name: Brian Colesworthy Community: Teton County

Phone: 406-750-6788 Email: bcolesworthy@yahoo.com

Address: 19 Main Ave S, Choteau, MT 59422

Does your community have a FEMA approved Hazard Mitigation Plan? Yes [X] *No [ ]

Date Approved 1/19/2022

*If no is your community updating the mitigation plan now? **Yes [ ] No [ ]

**If yes when will the plan be submitted to MT DES for review and approval? _____

Why is your community requesting technical assistance support?

We are seeking technical assistance for floodway mitigation efforts in Teton County. As we face the impending implementation of a preliminary floodway, we are in need of support in stakeholder engagement, funding research, proposal development, engineering and development planning, collaboration with external organizations, and public awareness and advocacy.

What type of funding sources will your community intend to pursue to complete a project?

USACE, Silver Jackets, FEMA, DNRC and any other available agencies that would be able to provide grants/funds that would assist with the mitigation and reduction of the floodway. Teton County has a strained budget and any funds available to assist in a project to mitigate the floodway and help us match these funds is our goal.

As part of this support, it will be the community's responsibility to update the hazard mitigation plan with the mitigation alternatives provided through this process. To be eligible for certain flood risk reductions grants mitigation actions must be identified in the FEMA approved local hazard mitigation plan. Contact your local DES coordinator for more information on how to include this information in the plan.

Submit the completed form to Hannah Shultz Hannah.Shultz2@mt.gov

MTA Findings Overview

Table 1 – Concept Overview

Mitigation Concept	Description
A.1	Diversion channel in Teton River floodplain adjacent to western Choteau
A.2	Diversion channel from Spring Creek floodplain to Teton River diversion channel
A.3	Ditch parallel to HWY 89
A.4	Spring Creek channel improvements
B.1	Levee parallel to HWY 89
B.2	Levee around western Choteau
B.3	Levee across Spring Creek upstream of Choteau
C[1.]	Flood control dam
D.1	Combination of A.2, A.3, and A.4 - Spring Creek Diversion Channel, Highway 89 Ditch, and Spring Creek Channel Development
D.2	Combination of A.1 and B.1 - Teton River Diversion Channel and Highway 89 Levee
D.3	Combination of A.2 and A.3 - Spring Creek Diversion Channel and Highway 89 Ditch
D.4	Combination of A.1 and B.3 - Teton River Diversion Channel and Spring Creek Levee
D.5	Combination of B.1 and B.2 - Highway 89 Levee and Choteau Levee
E[2.]	Raise building elevations

Notes:

1. Concepts C was not modeled using HEC-RAS river analysis.
2. Concepts E hydraulic model was only used to determine flood depths at buildings within city limits.

A Concepts – Channel Development

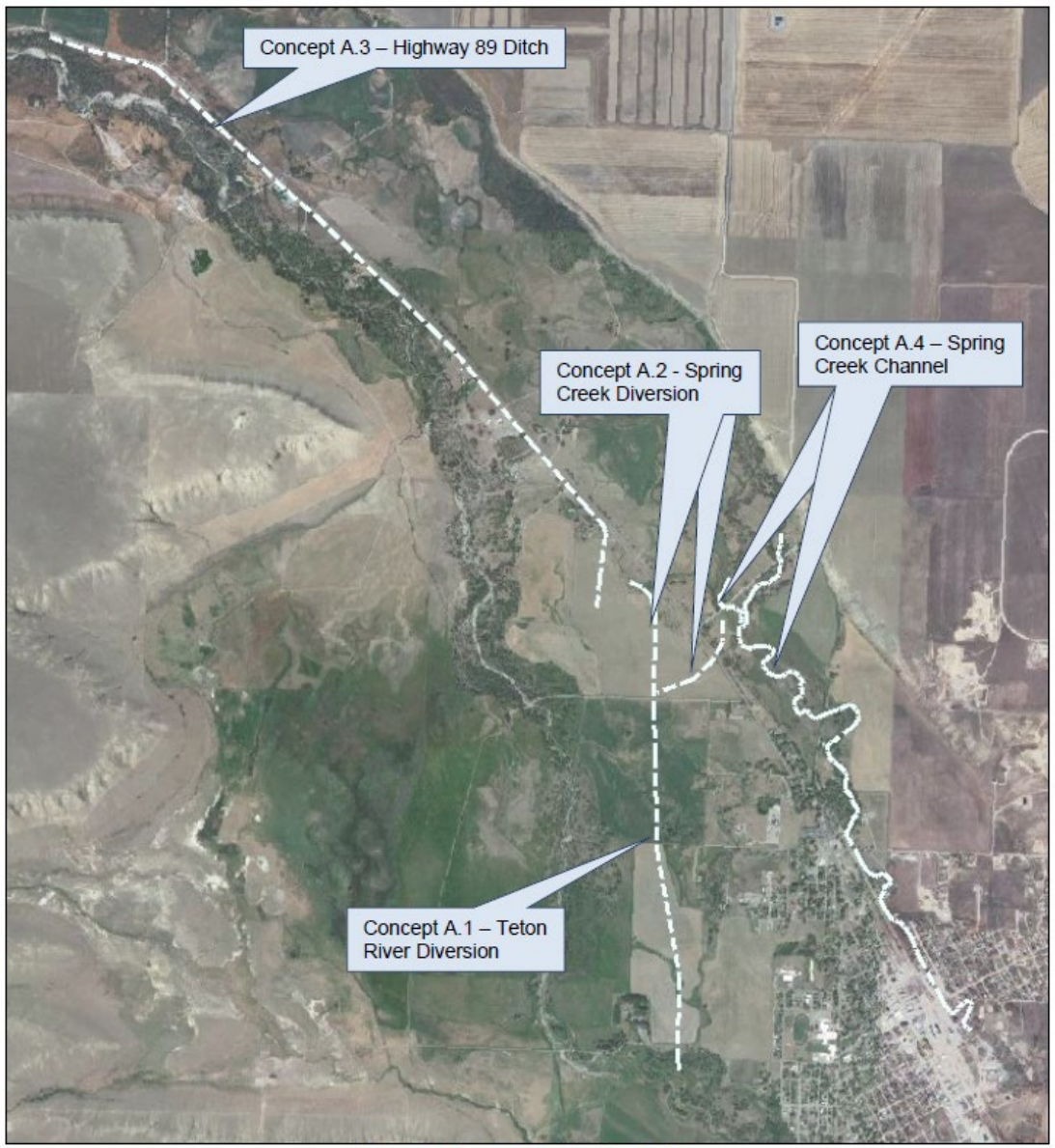
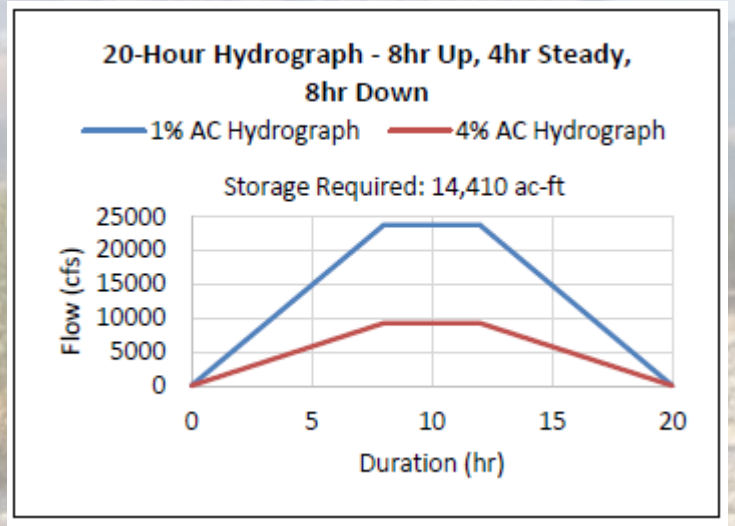


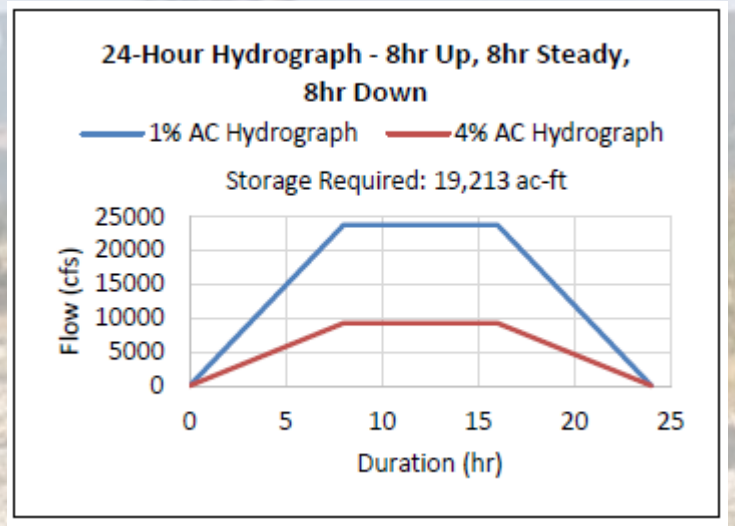
Figure 3 – Channel Modification Option

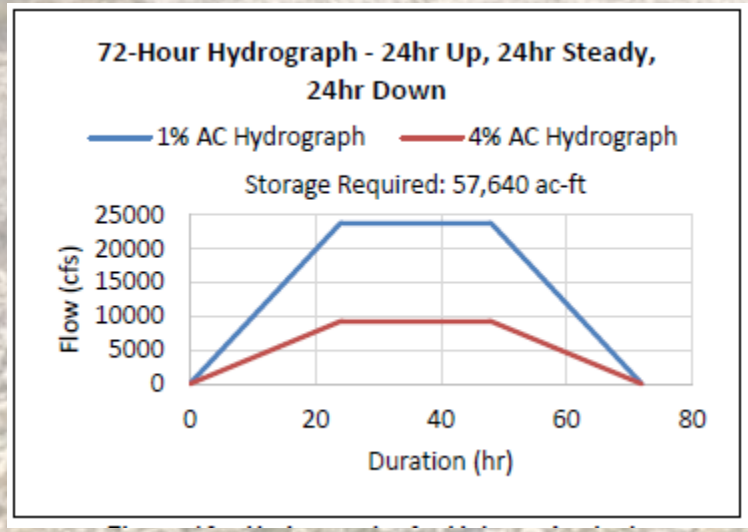
B Concepts – Levees

Figure 8 – Levee Options

C Concept – Flood Control Dam







C Concept – Flood Control Dam Summary

Type	Description	Advantage	Disadvantage
On-System Flood Control Dam	A structure built across the Teton River and within the river basin to control the amount of water that is transported downstream during flood events.	In the river system, and therefore, more directly connected to the hydraulics of the river, considered easier to control the floodwater. Removes most, if not all, of Choteau from the Teton River 1% AC floodplain.	Significant ecological impact on the river system and surrounding area due to the flood control structure. Impacts would be most acutely felt during construction and flooding events.
Off-System Flood Control Dam	A flood control structure placed away from the Teton River channel, connected by a man-made channel. The channel would be utilized to divert floodwater during high flow events to the storage dam.	Reduced ecological impacts to the Teton River channel and basin. Removes most, if not all, of Choteau from the Teton River 1% AC floodplain.	The necessity for the diversion channel impacts the feasibility of the off-system dam. The channel would likely need to be quite large to convey the amount of flow needed to have impactful flood reduction results; ~14,500 cfs (~60% of the Teton River 1% AC flows) needs to be removed from the Teton River mainstem for significant flood risk reduction.

E Concept – Building Elevations

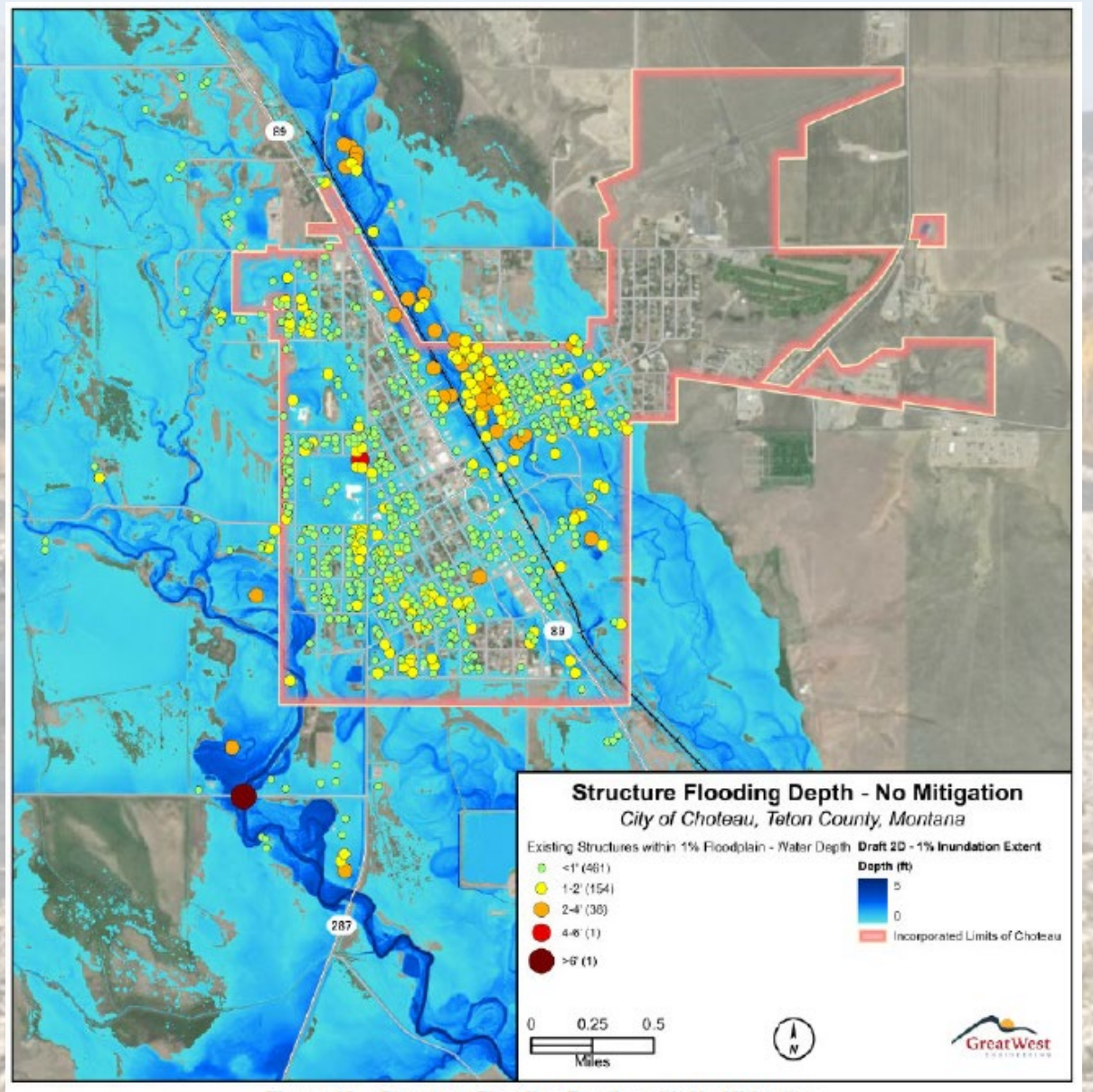


Figure 18 – Structure Flooding Depths with No Mitigation

D Concepts

Table 3 – Concept Combination Overview

Name	Concept Combination	Description
Concept D.1	Combination of A.2, A.3, and A.4	Spring Creek Diversion Channel, Highway 89 Ditch, and Spring Creek Channel Development
Concept D.2	Combination of A.1 and B.1	Teton River Diversion Channel and Highway 89 Levee
Concept D.3	Combination of A.2 and A.3	Spring Creek Diversion Channel and Highway 89 Ditch
Concept D.4	Combination of A.1 and B.3	Teton River Diversion Channel and Spring Creek Levee
Concept D.5	Combination of B.1 and B.2	Highway 89 Levee and Choteau Levee

Concept D.1

- A.2 Spring Creek Diversion Channel
- A.3 Highway 89 Ditch
- A.4 Spring Creek Channel Improvement

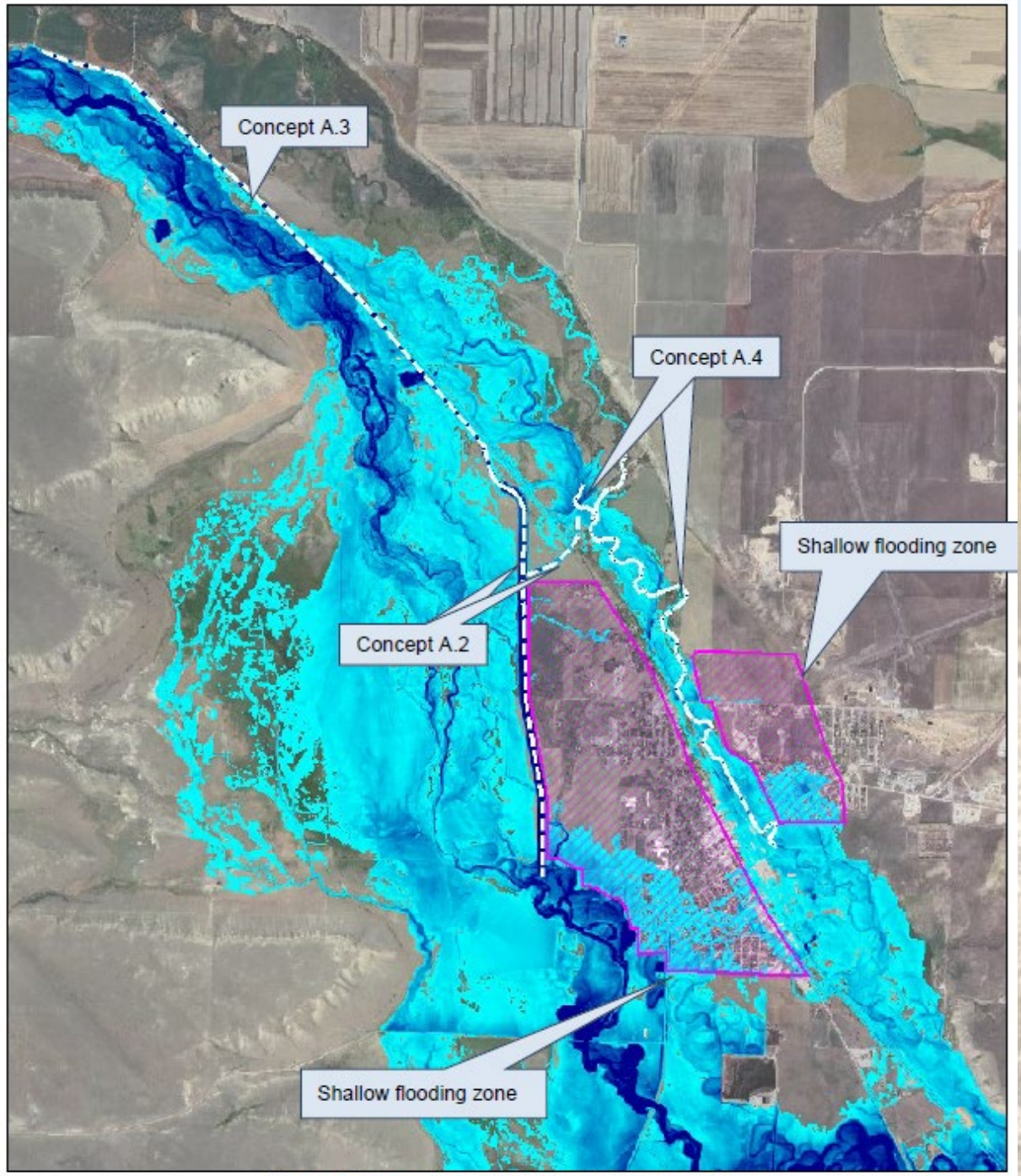


Figure 13 – Teton River 1% AC Event with Concept D.1

Concept D.2

- A.1 Teton River Diversion Channel
- B.1 Highway 89 Levee

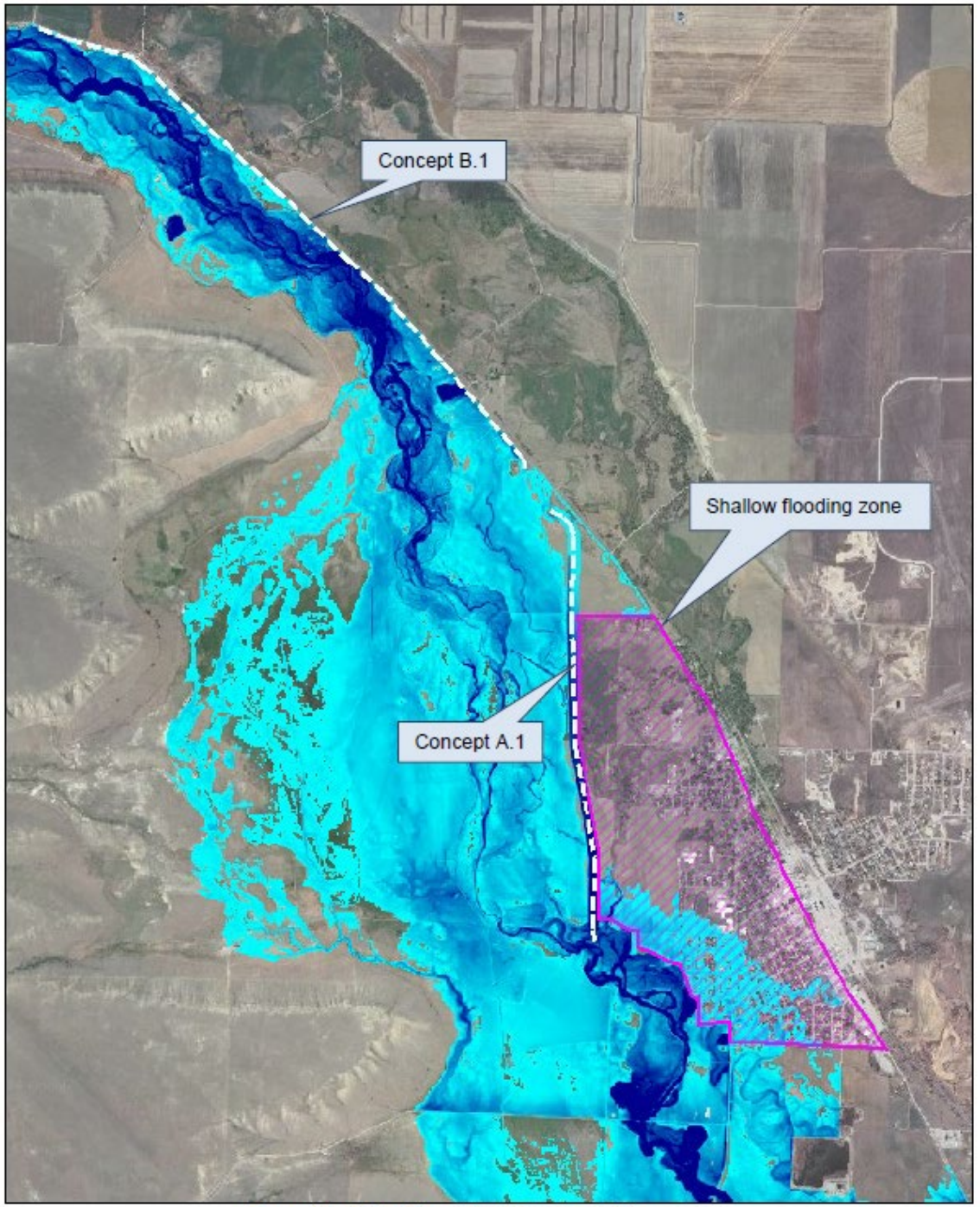


Figure 14 – Teton River 1% AC Event with Concept D.2

Concept D.3

- A.2 Spring Creek Diversion Channel
- A.3 Highway 89 Ditch

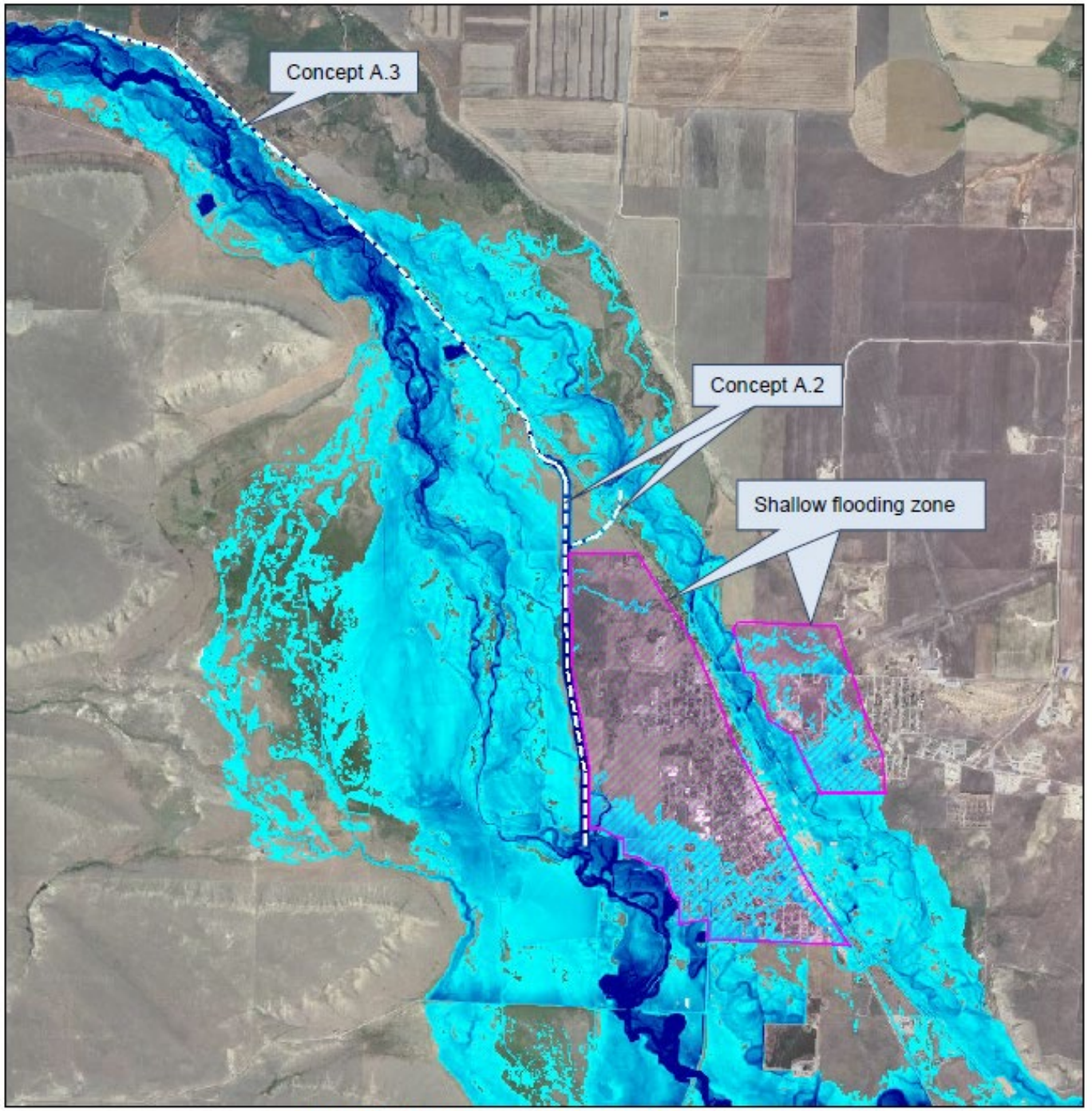


Figure 15 – Teton River 1% AC Event with Concept D.3

Concept D.4

- A.1 Teton River Diversion Channel
- B.3 Spring Creek Levee

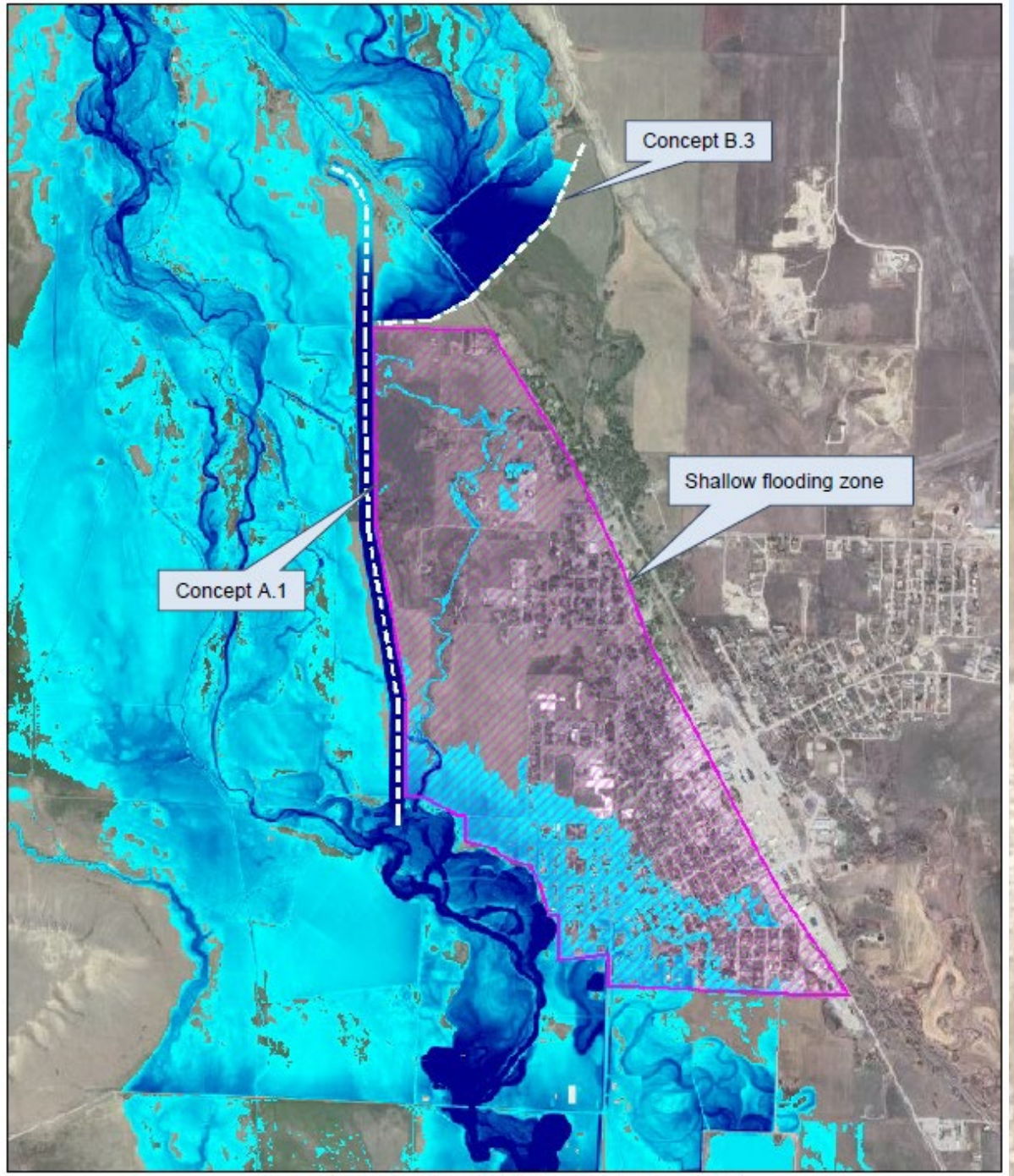


Figure 16 – Teton River 1% AC Event with Concept D.4

Concept D.5

- B.1 Highway 89 Levee
- B.2 Choteau Levee

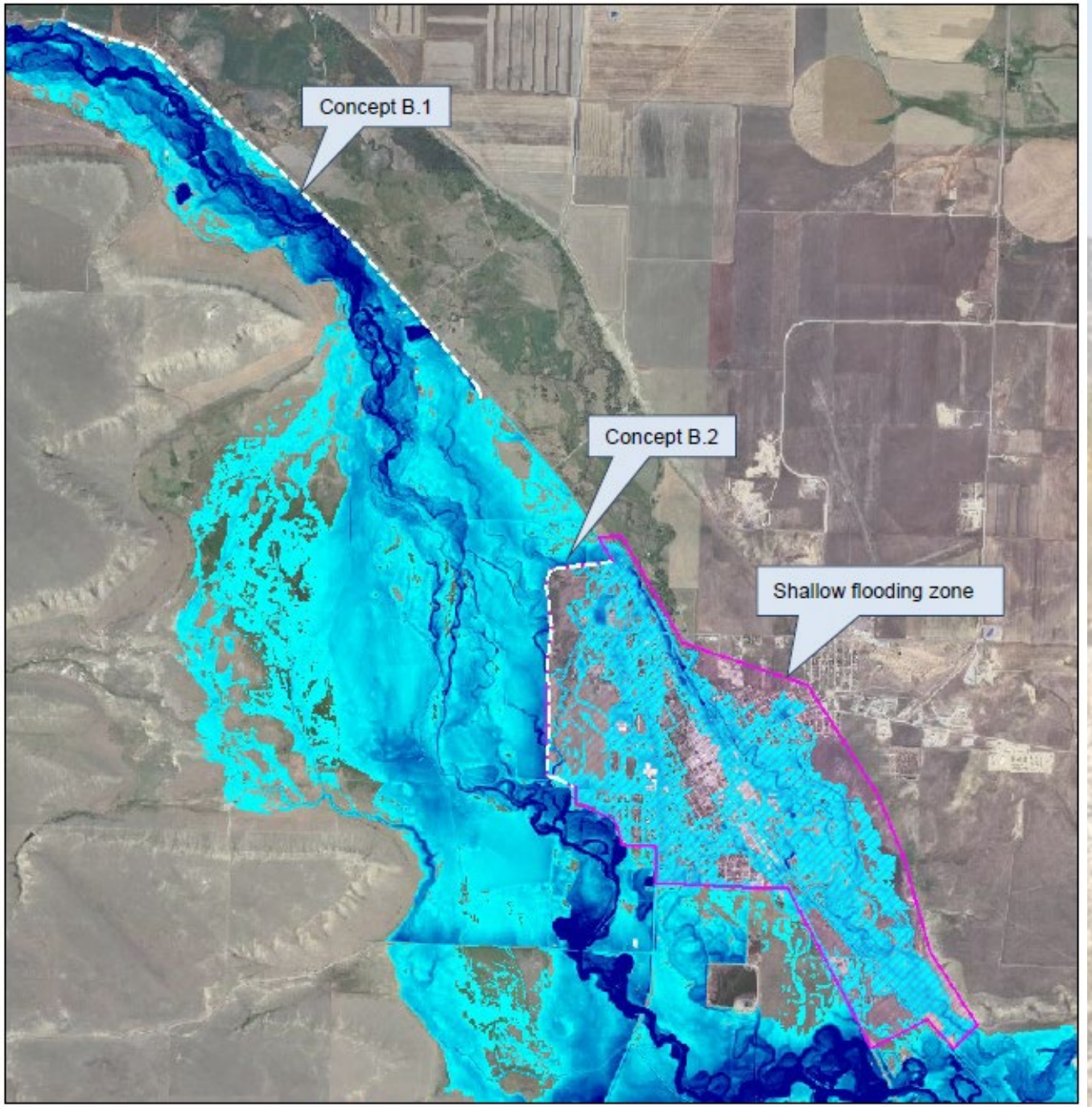


Figure 17 – Teton River 1% AC Event with Concept D.5

Summary of Concepts

Mitigation Concept	Description	Flood Risk Reduction		Flow (cfs)		% of Total Teton River Flow (23,800 cfs)	
		West Choteau	East Choteau	West Choteau	East Choteau	West Choteau	East Choteau
N/A	Existing Conditions	N/A	N/A	4,600	7,900	19%	33%
A.1	Diversion channel in Teton River floodplain adjacent to western Choteau	Yes	No	300	7,700	1%	32%
A.2	Diversion channel from Spring Creek floodplain to Teton River diversion channel	Yes	No	400	6,100	2%	26%
A.3	Ditch parallel to HWY 89	No	Yes	7,900	3,100	33%	13%
A.4	Spring Creek channel improvements	No	No	4,000	8,300	17%	35%
B.1	Levee parallel to HWY 89	No	Yes	7,500	0	32%	0%
B.2	Levee around western Choteau	Yes	No	400	8,700	2%	37%
B.3	Levee across Spring Creek upstream of Choteau	No	Yes	10,500	0	44%	0%
C	Flood control dam[3]	Yes	Yes	-	-	-	-
D.1	Combo of A.2, A.3, and A.4	Yes	Yes	300	2,100	1%	9%
D.2	Combo of A.1 and B.1	Yes	Yes	200	0	1%	0%
D.3	Combo of A.2 and A.3	Yes	Yes	300	2,200	1%	9%
D.4	Combo of A.1 and B.3	Yes	Yes	400	0	2%	0%
D.5	Combo of B.1 and B.2	Yes	Yes	400	900	2%	4%
E	Raise building elevations[4]	Yes	Yes	-	-	-	-

Notes:

1. Flows are rounded to the nearest hundred.
2. Flow values are approximate and based on preliminary draft design and hydraulic model.
3. Concepts C was not modeled using HEC-RAS river analysis.
4. Concepts E hydraulic model was only used to determine flood depths at buildings within city limits.

Questions?

Community Next Steps

- Great West
  - Feasibility
  - Funding
  - Application
- Headwaters - Ducks Unlimited future funding support
- Montana DES
  - FEMA funding
  - Grant Cycles
  - Application Technical Assistance (1. Feasibility Study -> 2. Full-design Construction Grant)
  - Resiliency Fund