

Flood Management Plan

Systemwide Evaluation Update to Zone 7 Board

August 20, 2025



Agenda

- 01 Recap of FMP Phase 1
- 02 Project Objectives
- 03 Evaluation Criteria
- 04 Example of Evaluating Alternatives
- 05 Recap of Project Objectives & Evaluation Criteria
- 06 Questions and Next Steps

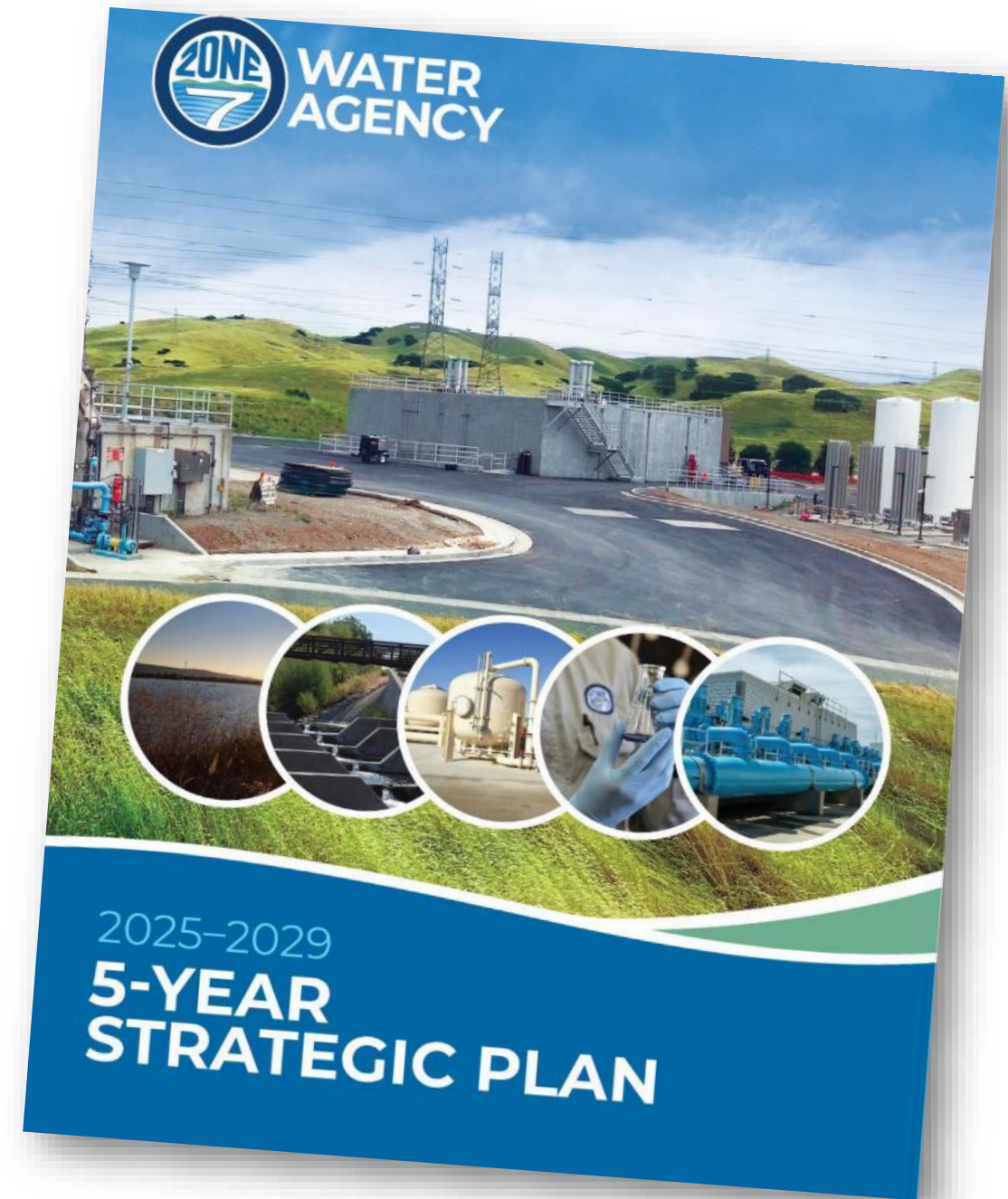


01

Recap of FMP Phase 1

Flood Management Plan Phase 1

- Two initiatives in Zone 7's 5-Year Strategic Plan (2025):
 - #12: Complete the Flood Management Plan
 - #13: Continue to Repair and Maintain the Flood Protection Facilities



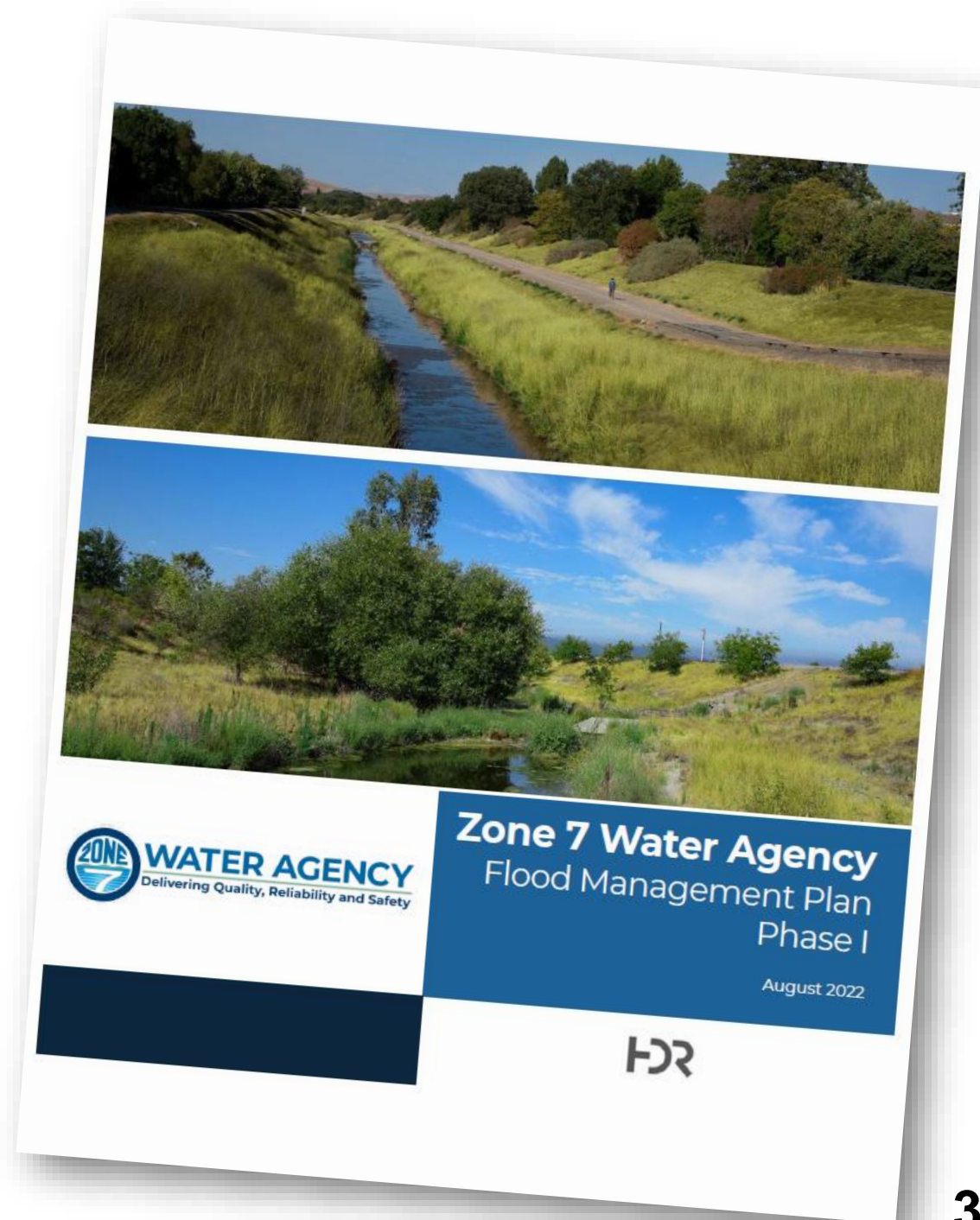
Flood Management Plan Phase 1

Goals and Objectives

- Goal #1
 - Develop the framework to provide flood protection to a level as high as reasonably practicable using a risk-informed process.
- Supporting Objective
 - Conduct a risk-informed, watershed-based evaluation of the flood control channel system.

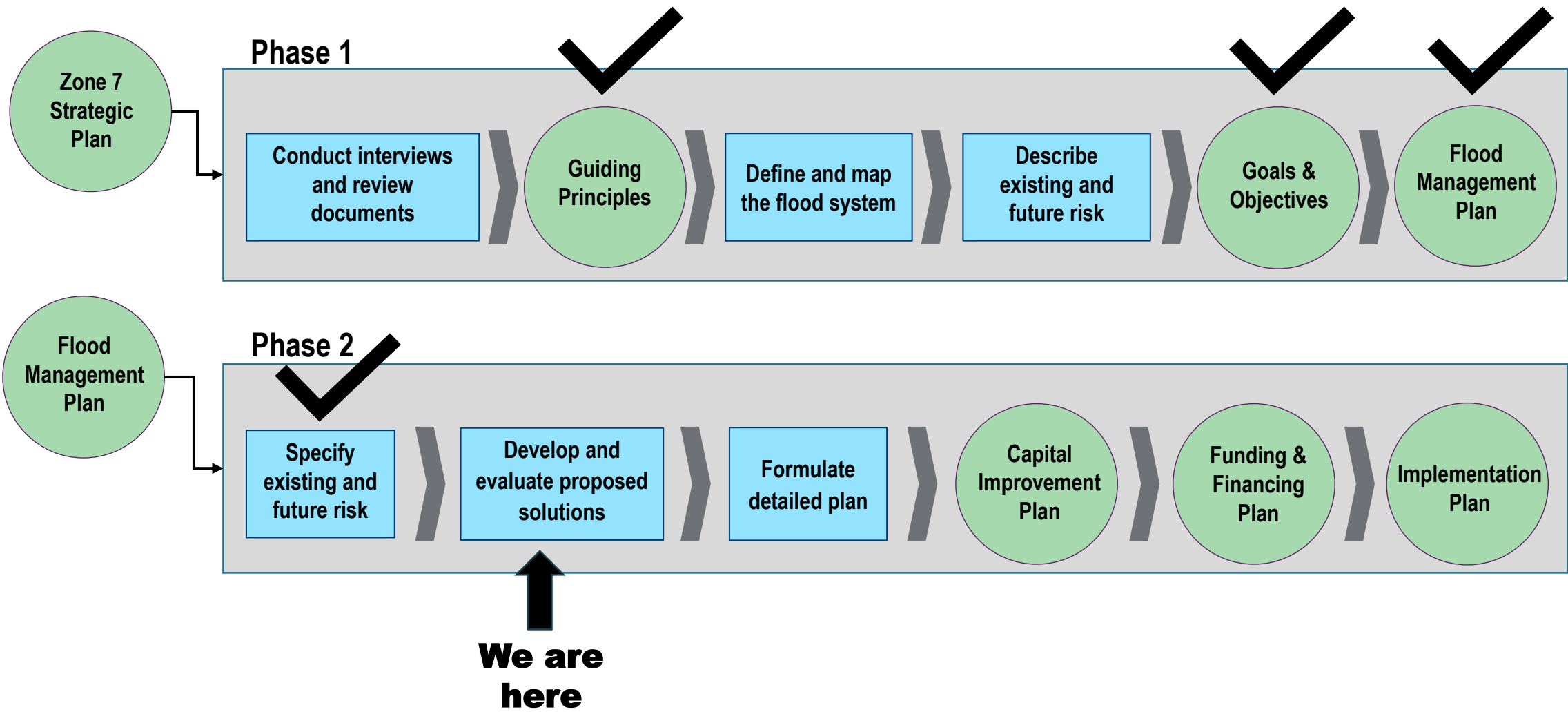


Systemwide Evaluation



Flood Management Plan process

...and where we are in it



Project Objectives and Evaluation Criteria

- The **FMP Phase 1 Goals and Objectives** are broad and apply to all aspects of Zone 7's flood protection strategy (O&M, asset management, capital projects, partnerships and coordination, etc.).
- **Project Objectives** are specific and tell us what the recommended alternative should accomplish.
- **Evaluation Criterion** guide the evaluation of alternatives and selection of the alternative to move forward to a detailed plan.

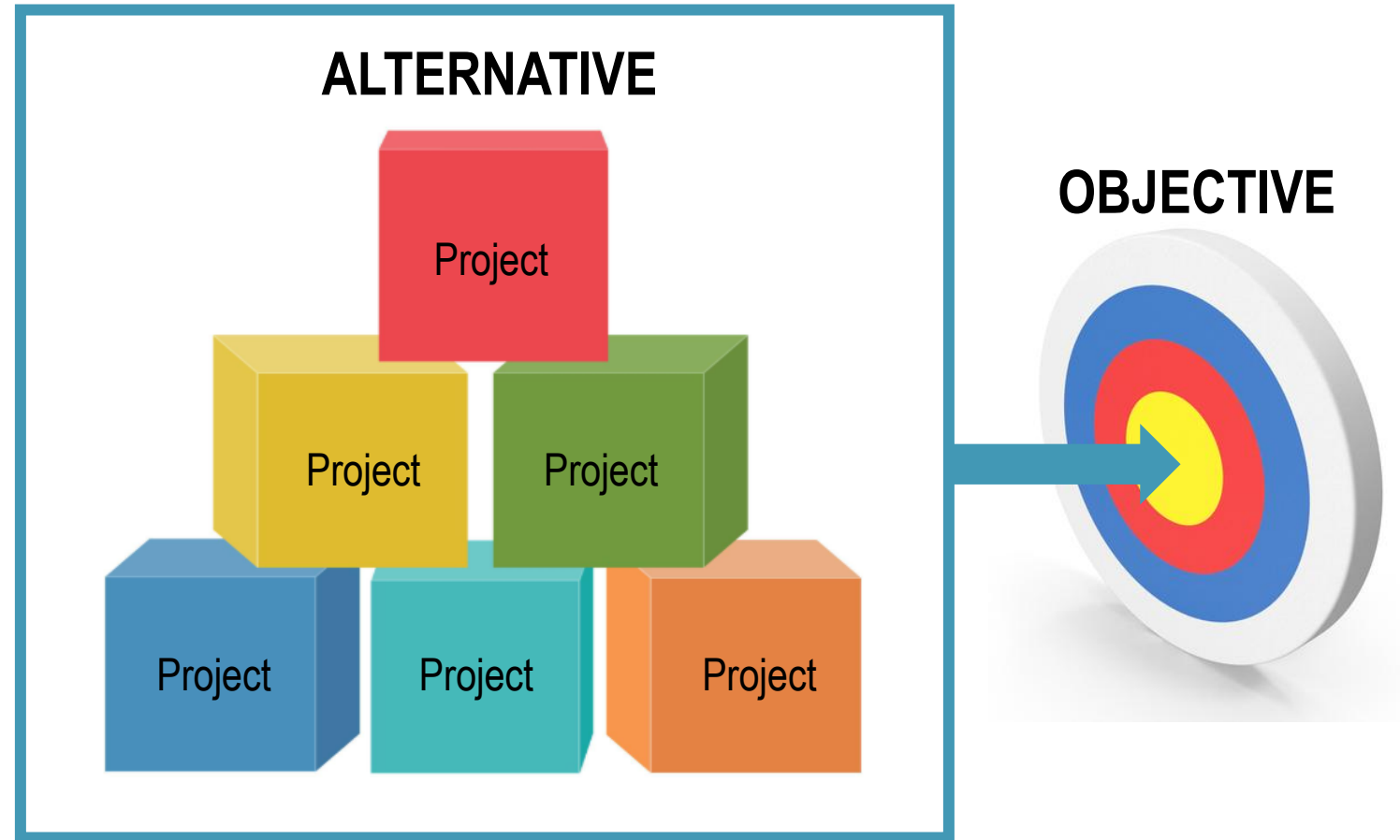


How do we know when the alternative hits the target?

Planning Terminology

- **Alternative**

- A combination of site-specific projects meant to achieve a *Project Objective*



02

Project Objectives

Purpose of Project Objectives

Project Objectives tell us what the recommended alternative should accomplish.



How do we know when the alternative hits the target?

Project Objectives fall into two-buckets:



Primary Project Objectives



Primary Project Objectives

- 1 Reduce impacts to public safety due to flooding from flows overtopping flood protection channels
- 2 Reduce the risk of economic impacts due to flood damage within the Zone 7 service area
- 3 Minimize lifecycle costs to Zone 7 and its customers

Secondary Project Objectives



Secondary Project Objectives

- 4 Use floodwaters to enhance water supplies in the Tri-Valley
- 5 Reduce Zone 7 channel sedimentation and bank erosion risk
- 6 Align investments with mitigation and permitting expectations
- 7 Align investments with potential funding and long-term management partners

03

Evaluation Criteria

Purpose of Evaluation Criteria

Evaluation Criteria

- Tell us whether and how much an alternative accomplishes the Project Objectives.
- Guide the evaluation of alternatives and selection of the alternative to move forward to a detailed plan.



How do we know when the alternative hits the target?

How the evaluation criteria relate to the objective:



What we're trying to accomplish:

Project Objective 1: Reduce impacts to public safety due to flooding from flows overtopping flood protection channels.



Springtown, Livermore Jan 2023

How will we know?

- We have modeled the without-project flooding* and can identify the number of people and critical facilities in each floodplain and impacted roadways.
- We will estimate with-project flooding for each alternative.
- Difference = reduced number of structures, roadways, and people impacted by flooding.

** Results from the without-project flooding were presented at the May Board meeting.*

Evaluation Criteria



Project Objective 1: Reduce impacts to public safety due to flooding from flows overtopping flood protection channels

Evaluation Criteria		Units
1a	Change in the number of people that could experience flooding	Count
1b	Change in number of critical facilities that could experience flooding	Count
1c	Change in miles of primary or emergency roadway that could experience flooding	Miles

How the evaluation criterion relates to the objective



What we're trying to accomplish:

Project Objective 2: Reduce the risk of economic impacts due to flood damage within the Zone 7 service area.



How will we know?

- We have estimated the without-project expected flood damage.*
- We will estimate the with-project expected flood damage for each alternative.
- Difference = reduced flood damage

** The without-project expected flood damage was presented at the May Board meeting.*

Evaluation Criteria



Project Objective 2: Reduce the risk of economic impacts due to flood damage within the Zone 7 service area

Evaluation Criteria		Units
2a	Flood damage reduced	\$

How the evaluation criterion relates to the objective



What we're trying to accomplish:

Project Objective 3: Minimize lifecycle costs to Zone 7 and its customers.



How will we know?

- We will estimate the capital cost of each alternative.
- We will estimate the annual O&M cost of each alternative.
- We will calculate the present value (PV) of O&M costs over the 50-year planning horizon and add it to capital cost.

Evaluation Criteria



Project Objective 3: Minimize lifecycle costs to Zone 7 and its customers

Evaluation Criteria	Units
3a Combined capital and O&M cost over the 50-year planning horizon *	\$

**Cost effectiveness can be seen when comparing all alternatives. Each alternative will provide varying benefits relative to its total cost and a comparison will guide fiscally responsible investments in the flood protection system.*

Evaluation Criteria



Project Objective 4: Use floodwater to enhance water supplies in the Tri-Valley

Evaluation Criteria		Units
4a	Potential volume of flood flows diverted to locations that increase Tri-Valley water supplies	Acre-feet

Evaluation Criteria



Project Objective 5: Reduce Zone 7 channel sedimentation and bank erosion risks to minimize long-term costs

Evaluation Criteria		Units
5a	Linear feet of bank with scour protection or other countermeasures	Linear feet
5b	Linear feet of Zone 7 channels designated as “High” sedimentation risk with reduced risk rating	Linear feet
5c	Linear feet of Zone 7 channel banks designated as “High” erosion risk with reduced risk rating	Linear feet

Evaluation Criteria



Project Objective 6: Align investments with mitigation and permitting expectations

Evaluation Criteria	Units
6a Potential to secure permits for implementation	High, Medium or Low

Project Objective 7: Align investments with potential funding and long-term management opportunities

Evaluation Criteria	Units
7a Potential to incorporate multiple benefits and align with requirements of funding opportunities	High, Medium or Low
7b Likelihood of agreement with potential funding and long-term management partner	High, Medium or Low

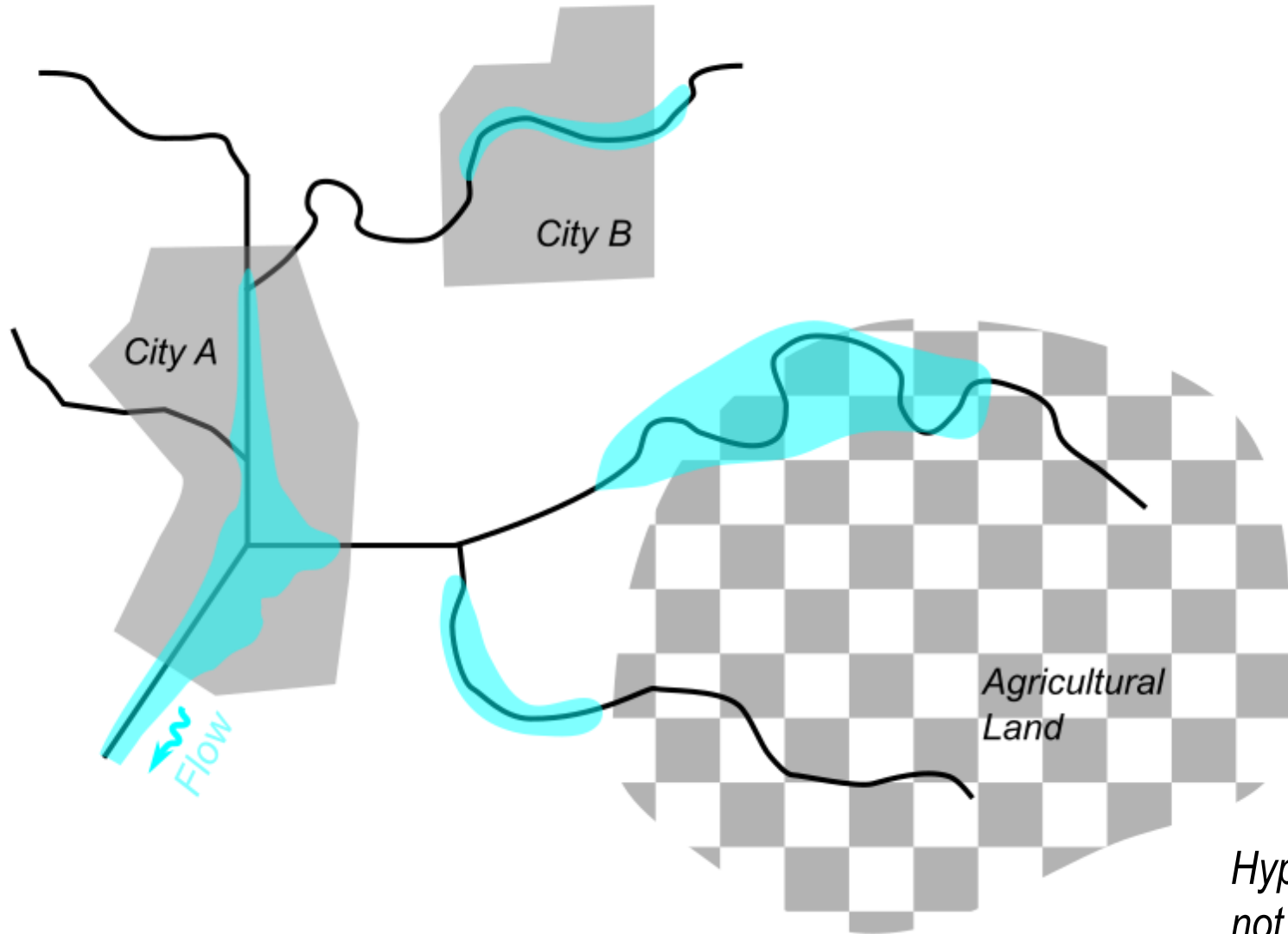
04

Example of Evaluating Alternatives

Hypothetical example to show how criteria will be used to evaluate alternatives*

*All proposed alternatives will accomplish primary project objectives

Hypothetical Flood Management System

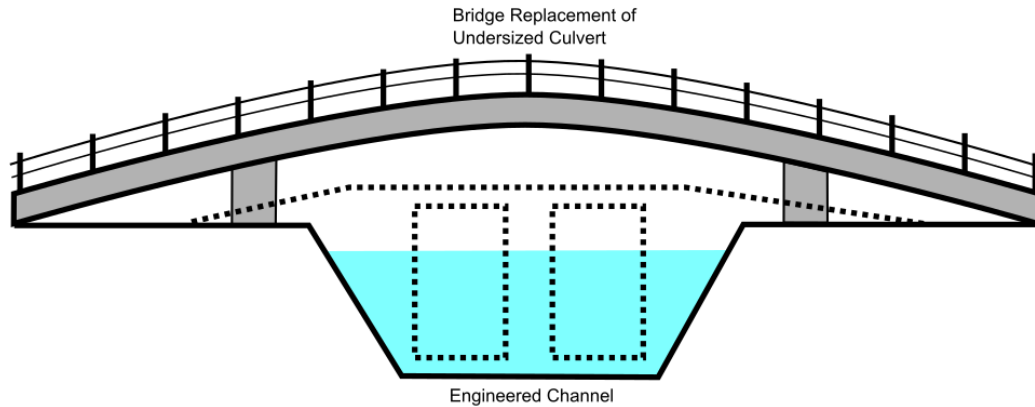


*Hypothetical flood channel system
not drawn to scale*

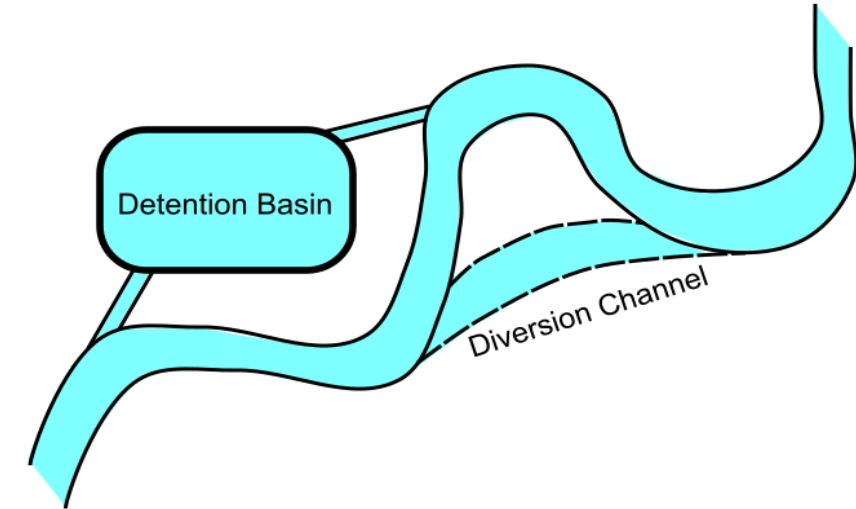
Hypothetical Flood Risk Management Measures

(potential project example types)

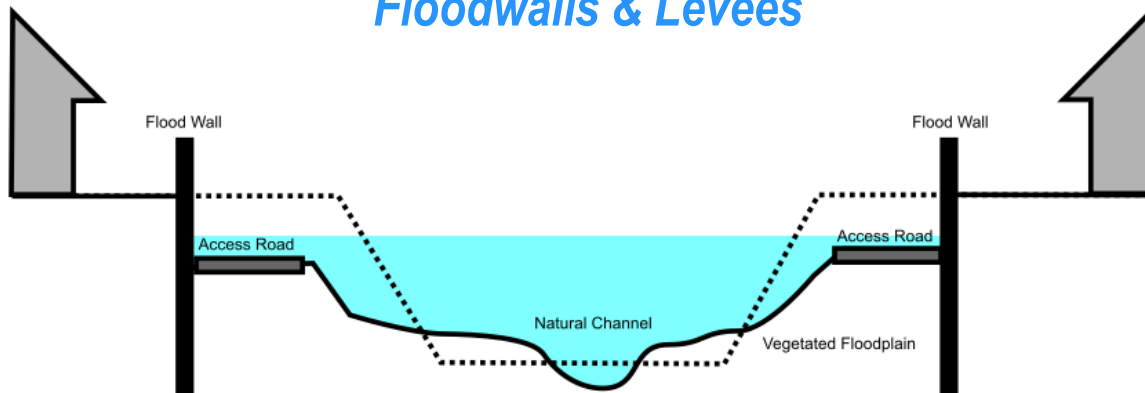
Modify or Replace Crossings



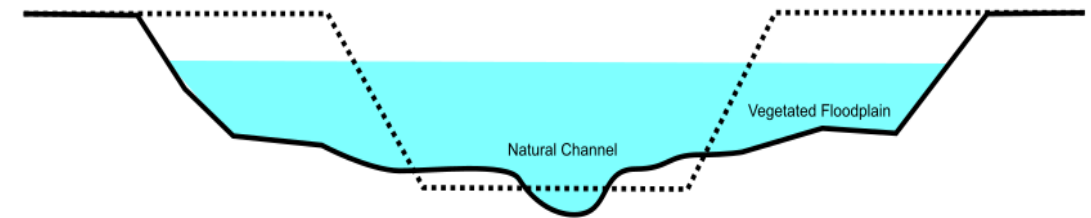
Upstream Diversion & Storage



Floodwalls & Levees



Change Channel Geometry



Example Alternative A

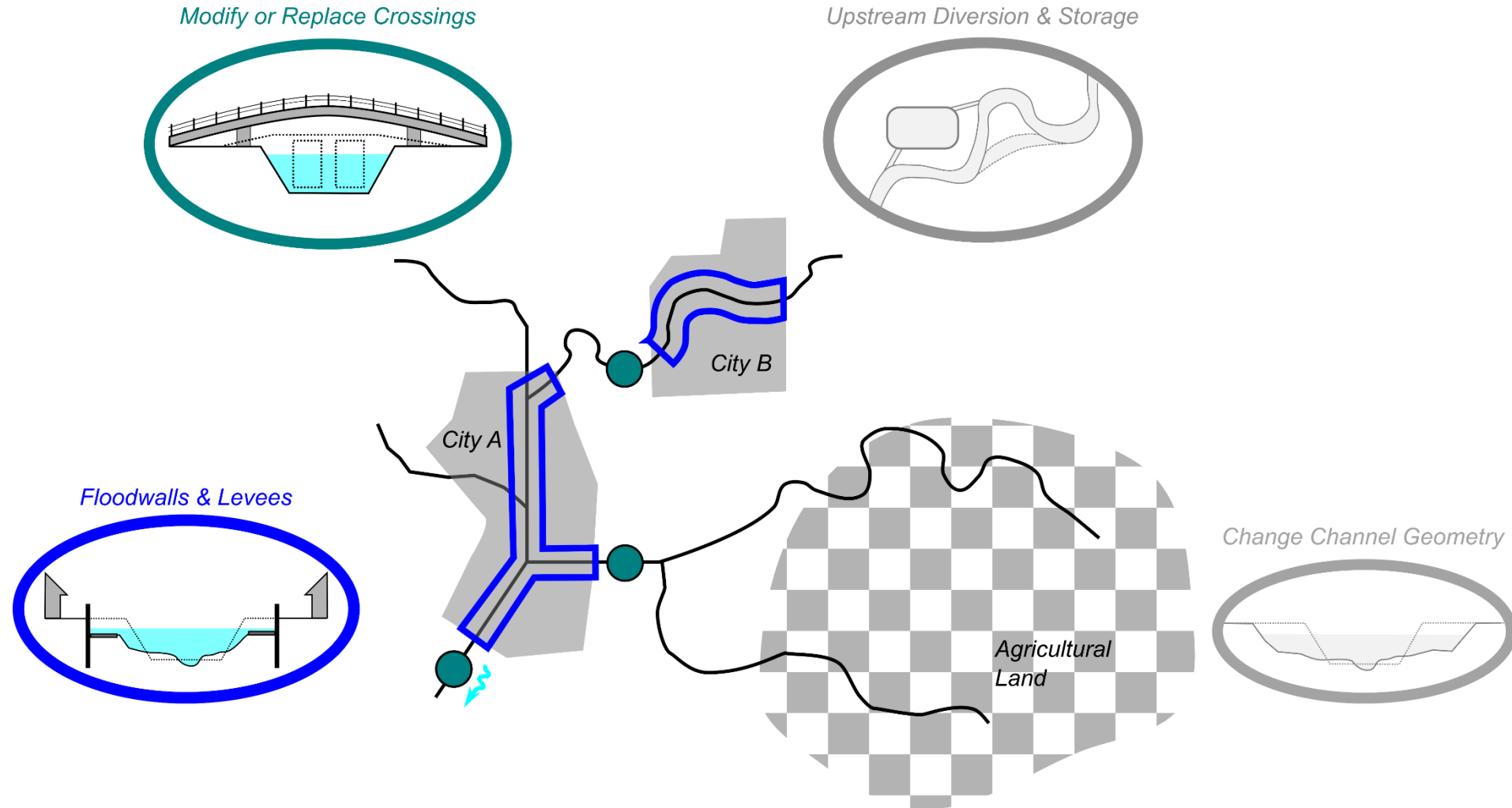
Focuses on increasing channel capacity:

Modify or Replace Crossings:
3 Locations

Floodwalls & Levees:
2 Locations

Upstream Diversion & Storage:
0 Locations

Change Channel Geometry:
0 Location



Example Alternative B

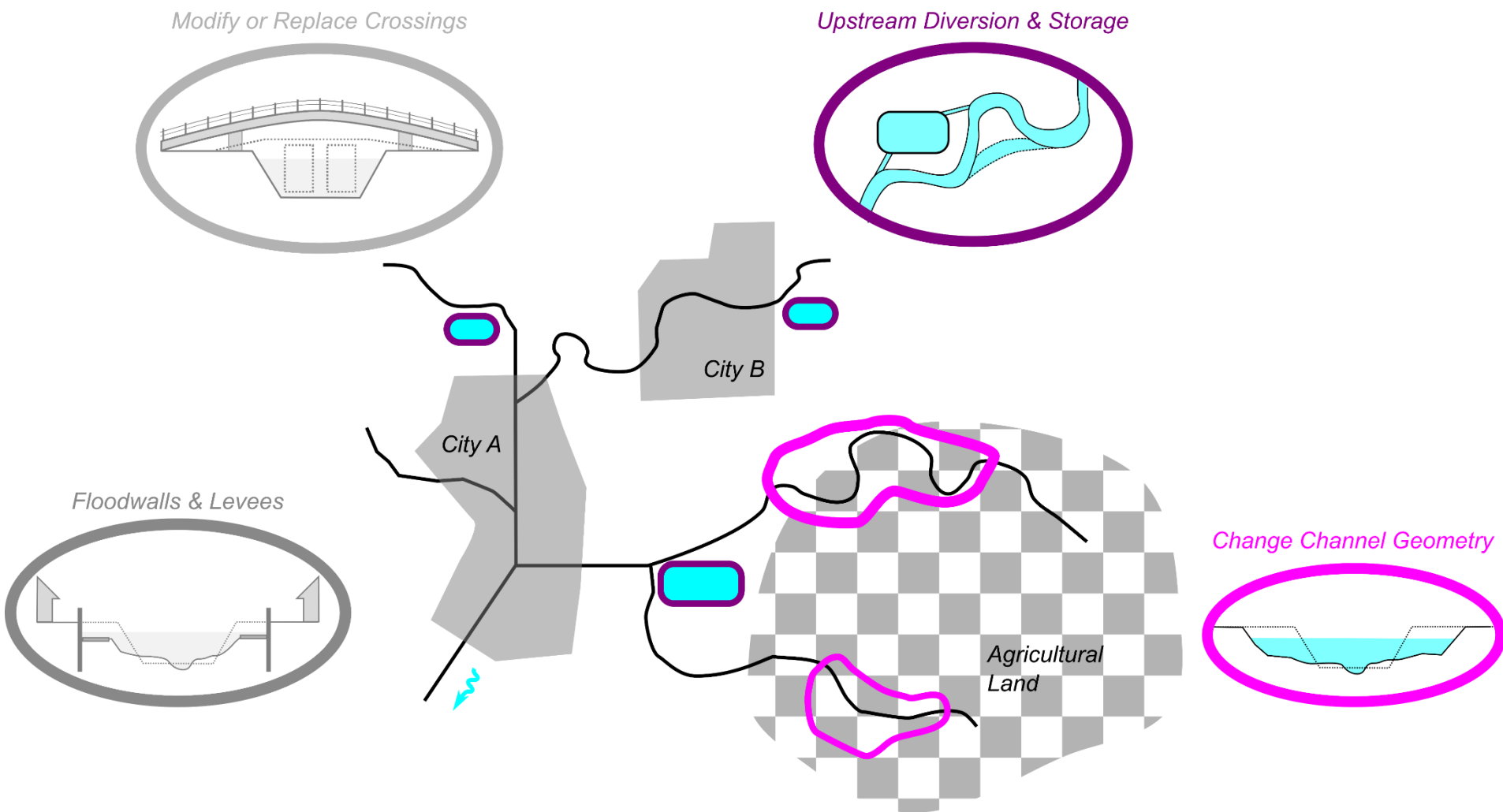
*Focuses on
decreasing peak flow:*

Modify or Replace Crossings:
0 Locations

Floodwalls & Levees:
0 Locations

Upstream Diversion & Storage:
3 Locations

Change Channel Geometry:
2 Locations



Example Alternative C

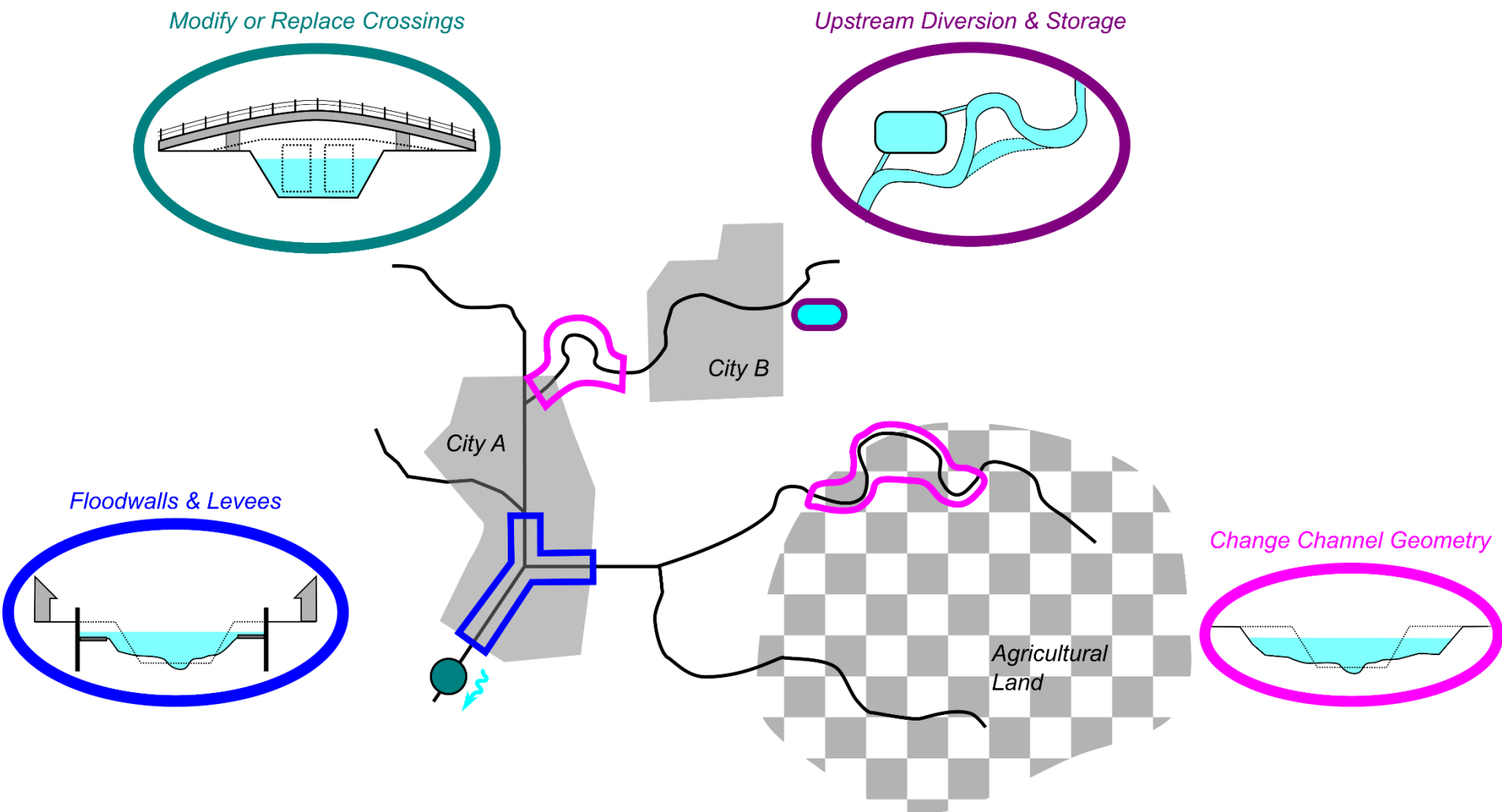
Mix of increasing
channel capacity and
decreasing peak flow:

Modify or Replace Crossings:
1 Location

Floodwalls & Levees:
1 Location

Upstream Diversion & Storage:
1 Location

Change Channel Geometry:
2 Locations



Evaluating Example Alternatives

(using criteria from Primary Objectives)

Evaluation Criteria		Alternative A <i>(Increase Channel Capacity)</i>	Alternative B <i>(Decrease Peak Flow)</i>	Alternative C <i>(Mix of A & B)</i>
1	Change in the number of people, critical facilities, and roadways that could experience flooding	Count	Count	Count
2	Flood damage reduced	\$ A	\$ B	\$ C
3	Combined capital and O&M cost over the 50-year planning horizon	\$ a	\$ b	\$ c

Evaluating Example Alternatives

(monetary metrics)

Evaluation Criteria		Alternative A <i>(Increase Channel Capacity)</i>	Alternative B <i>(Decrease Peak Flow)</i>	Alternative C <i>(Mix of A & B)</i>
1	Change in the number of people, critical facilities, and roadways that could experience flooding	Count	Count	Count
2	Flood damage reduced	\$ A	\$ B	\$ C
3	Combined capital and O&M cost over the 50-year planning horizon	\$ a	\$ b	\$ c

Evaluating Example Alternatives

(using criteria from Primary and Secondary Objectives)

Evaluation Criteria		Alternative A <i>(Increase Channel Capacity)</i>	Alternative B <i>(Decrease Peak Flow)</i>	Alternative C <i>(Mix of A & B)</i>
1	Change in the number of people, critical facilities, and roadways that could experience flooding	Count	Count	Count
2	Flood damage reduced	\$ A	\$ B	\$ C
3	Combined capital and O&M cost over the 50-year planning horizon	\$ a	\$ b	\$ c
4	Potential volume of flood flows diverted to increase water supplies	acre-feet	acre-feet	acre-feet
5	Reduction in channel sedimentation and bank erosion risks	linear feet	linear feet	linear feet
6	Potential to secure permits for implementation	High	Medium	Low
7	Potential to align with funding opportunity requirements and interest of funding partners	Low	Medium	High

Evaluating Example Alternatives

Evaluation Criteria		Alternative A <i>(Increase Channel Capacity)</i>	Alternative B <i>(Decrease Peak Flow)</i>	Alternative C <i>(Mix of A & B)</i>
1	Change in the number of people, critical facilities, and roadways that could experience flooding	Count	Count	Count
2	Flood damage reduced	\$ A	\$ B	\$ C
3	Combined capital and O&M cost over the 50-year planning horizon	\$ a	\$ b	\$ c
4	Potential volume of flood flows diverted to increase water supplies	acre-feet	acre-feet	acre-feet
5	Reduction in channel sedimentation and bank erosion risks	linear feet	linear feet	linear feet
6	Potential to secure permits for implementation	High	Medium	Low
7	Potential to align with funding opportunity requirements and interest of funding partners	Low	Medium	High
Total Score		#	#	#

05

Recap of Project Objectives & Evaluation Criteria

Primary Project Objectives & Evaluation Criteria



Primary Project Objectives	Evaluation Criteria
1 Reduce impacts to the public due to flooding from flows overtopping flood protection channels	1a Change in number of people that could experience flooding 1b Change in number of critical facilities that could experience flooding 1c Change in miles of primary or emergency roadway that could experience flooding
2 Reduce the risk of economic impacts due to flood damage within the Zone 7 service area	2a Flood damage reduced
3 Minimize lifecycle costs to Zone 7 and its customers	3a Combined capital and O&M cost over the 50-year planning horizon

Secondary Project Objectives & Evaluation Criteria



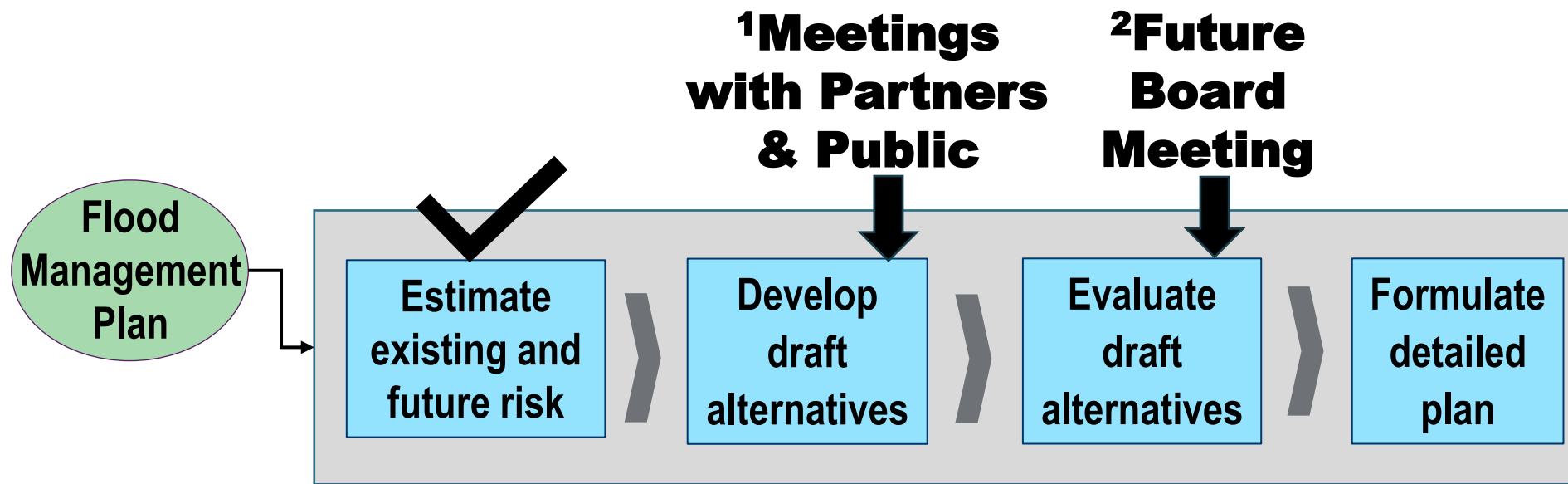
Secondary Project Objectives

Evaluation Criteria

4	Use floodwaters to enhance water supplies in the Tri-Valley	4a Potential volume of flood flows diverted to locations that increase Tri-Valley water supplies
5	Reduce Zone 7 channel sedimentation and bank erosions risk	<div>5a Linear feet of bank with scour protection or other countermeasures</div> <div>5b Linear feet of Zone 7 channels designated as “High” sedimentation risk with reduced risk rating</div> <div>5c Linear feet of Zone 7 channel banks designated as “High” erosion risk with reduced risk rating</div>
6	Align investments with mitigation and permitting expectations	6a Potential to secure permits for implementation
7	Align investments with potential funding and long-term management opportunities	<div>7a Potential to incorporate multiple benefits and align with requirements of funding opportunities</div> <div>7b Likelihood of agreement with potential funding and long-term management partner</div>

06

Questions and Next Steps



Next Steps

- Develop draft alternatives (groups of projects) to meet the objectives
- Meetings with partner agencies and meetings with the public¹
- Evaluate and compare alternatives using the evaluation criteria
- Select preferred alternative to move forward to a detailed plan
- Recommend preferred alternative to the Board²