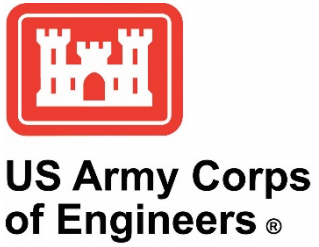
Lower Missouri River Planning Assistance to States (PAS) Stakeholder Meetings



Summer 2020

Presentation Goals

- Provide details on Planning Study with U.S. Army Corps of Engineers
- Discuss example problem area (Platte River Confluence)
- Discuss future meeting plans

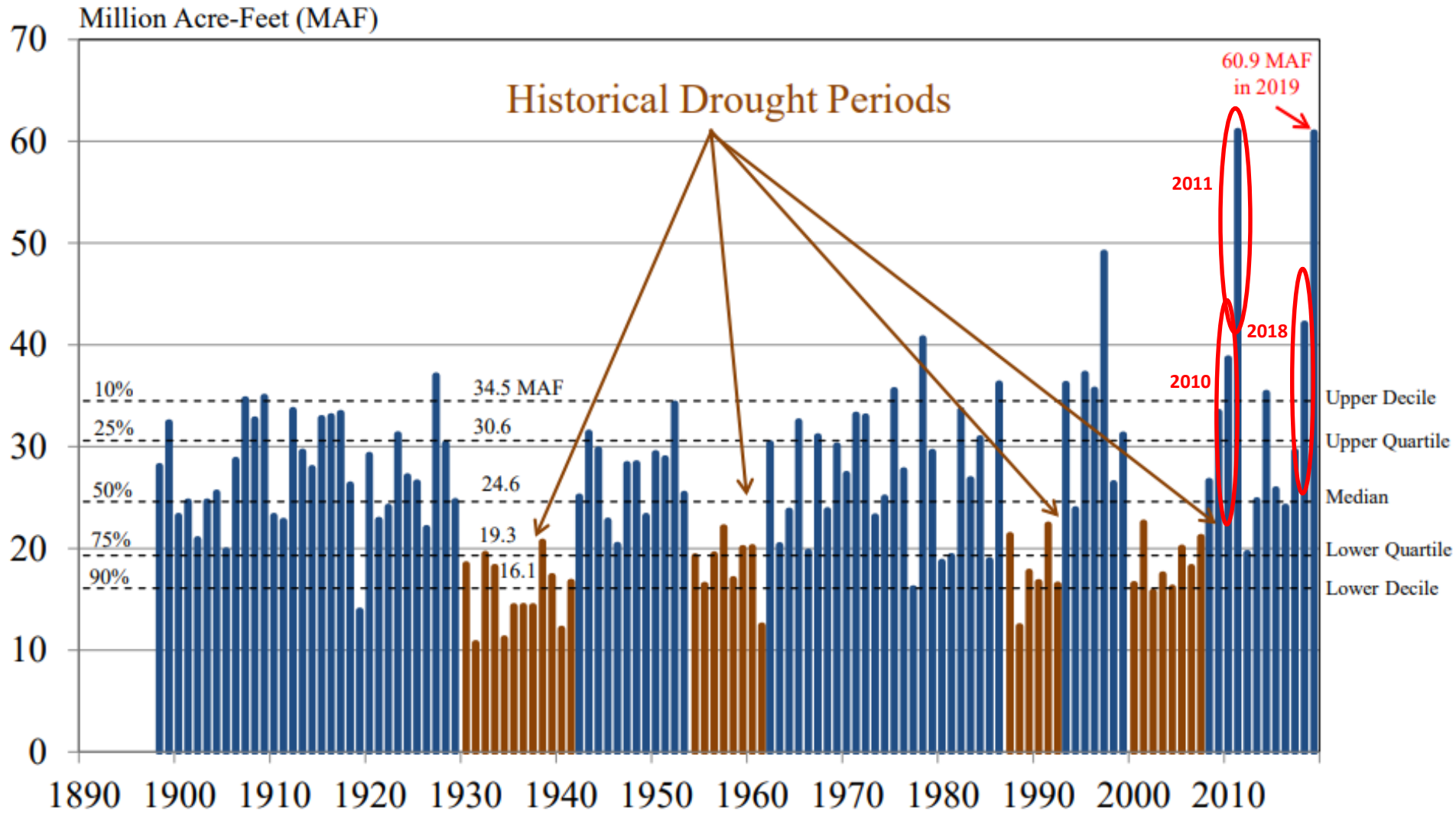
History of Flooding

- Historic flooding has occurred in the Missouri River basin: four of the six highest runoff years occurred within the past decade
  - 2010, 2011, 2018, 2019
  - 122 years if flow data history
- Severe to catastrophic flooding from these events has caused extensive damage to property, infrastructure and natural resources, as well as resulted in several fatalities.

Missouri River flooding near Fort Calhoun nuclear plant, Blair, NE (2011)

L-575 levee breach along the Missouri River near Percival, IA impacted I-29 (2019)

Annual Runoff above Sioux City, IA



Missouri River Basin annual runoff above Sioux City, IA
Source: USACE, Missouri River Mainstem Reservoir System Summary of Actual 2019 Regulation
https://www.nwd-mr.usace.army.mil/rcc/reports/pdfs/MRBWM_2019SummaryReport_Final_Web.pdf

Partnering Opportunity

- The 2019 flood provided an opportunity for the 4 lower Missouri River basin states (Iowa, Nebraska, Kansas, and Missouri) to partner with the U.S. Army Corps of Engineers (USACE) on a Planning Assistance to States (PAS) Study.

Study Purpose

- Identify problem areas along the Lower Missouri River
- Identify direct and indirect impacts of flooding
- Develop conceptual-level solutions using existing data and hydraulic models
- Facilitate better floodplain management by Local, State, and Federal agencies
- Improve future flood risk resiliency for communities along the lower Missouri River

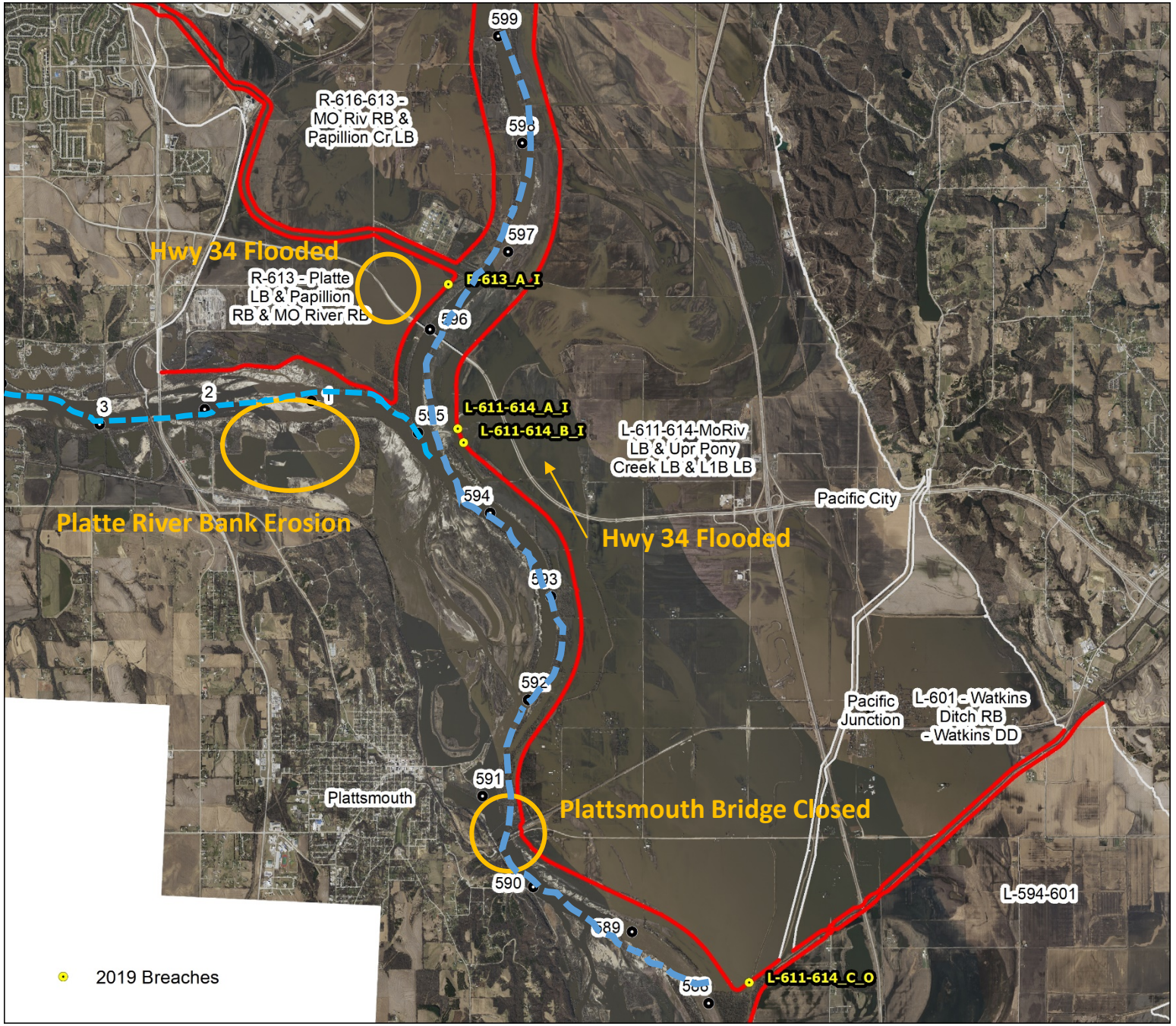
Study Steps

1. Identify and prioritize problem areas along the Missouri River
   - Pinch points, recurring flooding, severity of flooding, impacts to infrastructure, etc. (USACE, States, Stakeholders)

2. Use existing data and hydraulic modeling to define existing conditions and develop concept-level solutions for identified problem areas (USACE)

3. Develop flood risk management plan (USACE, States, Stakeholders)

*****Stakeholder Input is Key in the Study!*****



Example Problem Area – Platte River Confluence

- Constriction of flows upstream from the Platte River confluence
- 2019 was the highest flow year from the Platte (250,000 cfs at the peak)
- Caused Platte River bank erosion & levee overtopping and breaches
- During 2019, inundated approaches caused Hwy 34 and Hwy 75 bridge closures; Plattsmouth bridge also closed.

Example Impacts - transportation

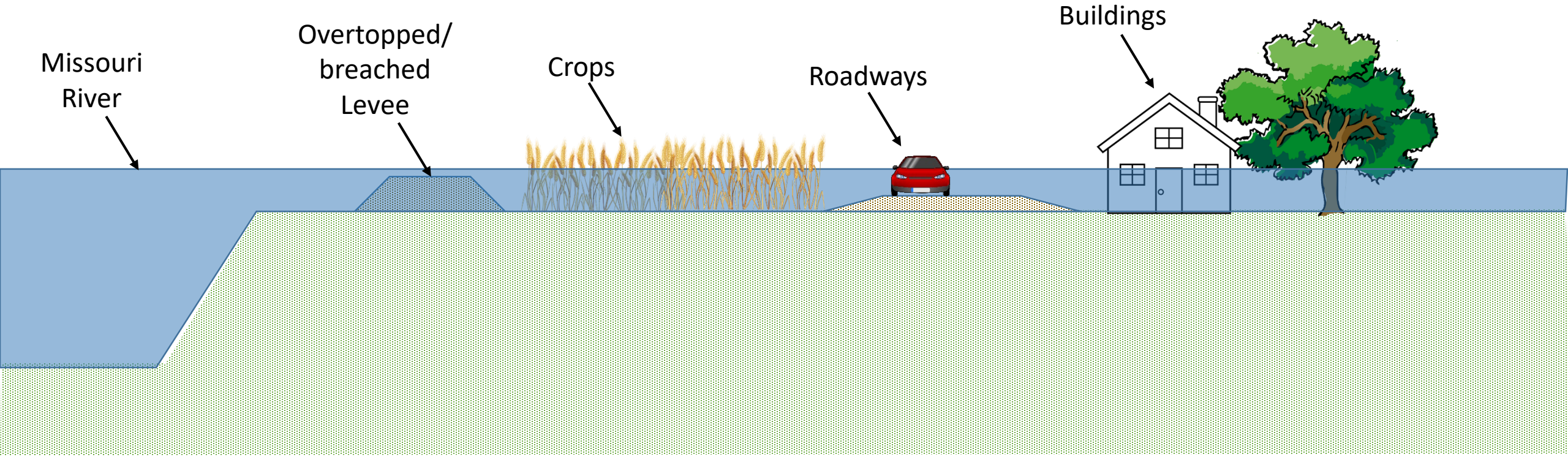
- During 2019, many bridges were closed due to inundated approaches.
- I-29 was closed from Loveland, IA to St. Joseph, MO for months during the summer which caused major detours to get across the Missouri River.

Problem Areas?

- Identify additional problem areas along the Missouri River
- Factors to consider
  - pinch points, recurring flooding, severity of flooding, impacts to infrastructure & property, etc.

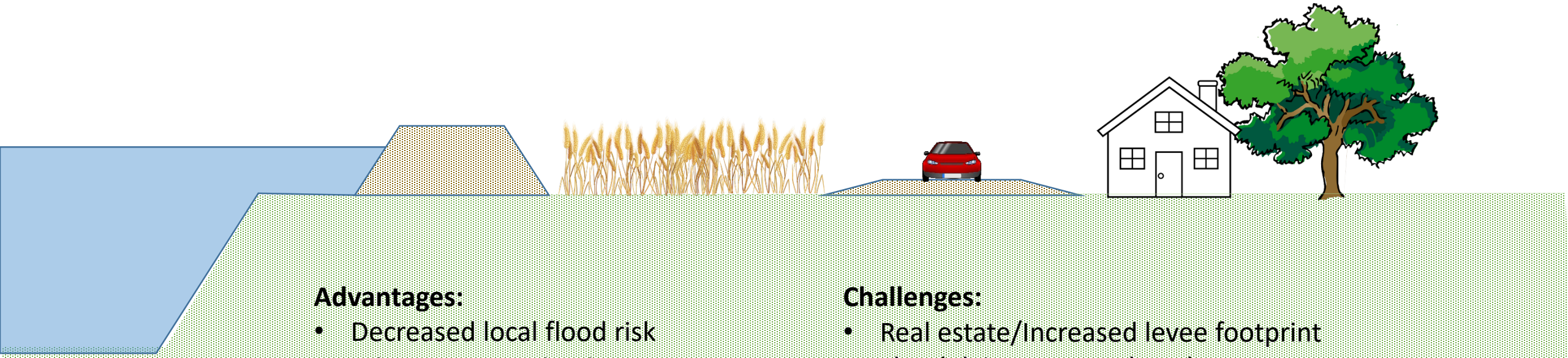
Potential Solutions for Problem Areas

Existing Condition



Note: Drawings are not to scale. They represent concepts only.

Possible Structural Solution: Levee Raise



Advantages:

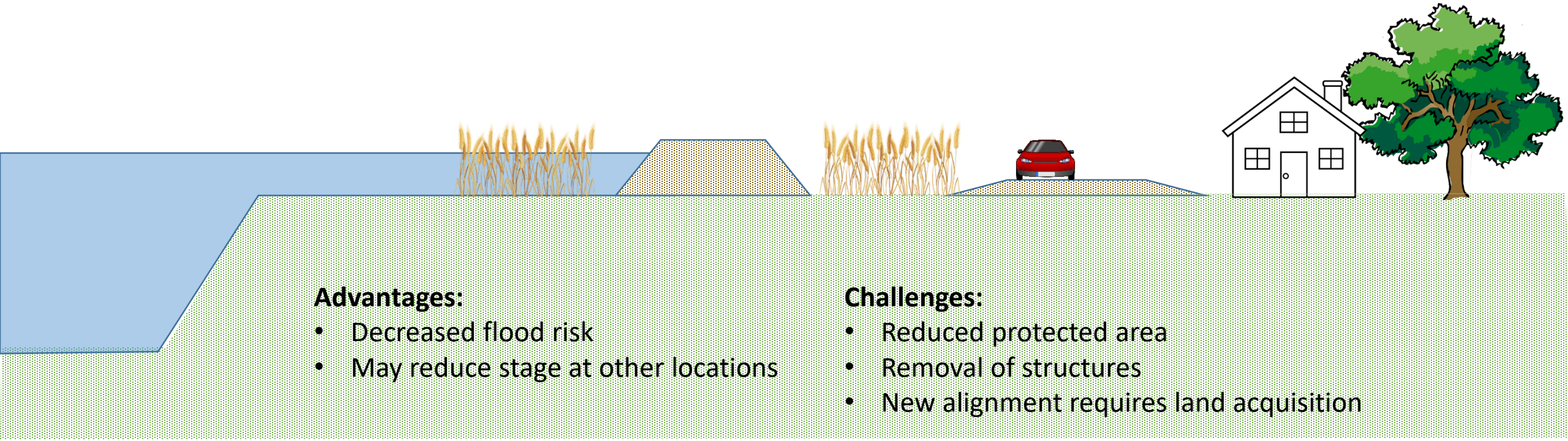
- Decreased local flood risk
- Minor construction impacts

Challenges:

- Real estate/Increased levee footprint
- Floodplain access reduced
- May increase stage at other locations

Note: Drawings are not to scale. They represent concepts only.

Possible Structural Solution: Levee Setback



Advantages:

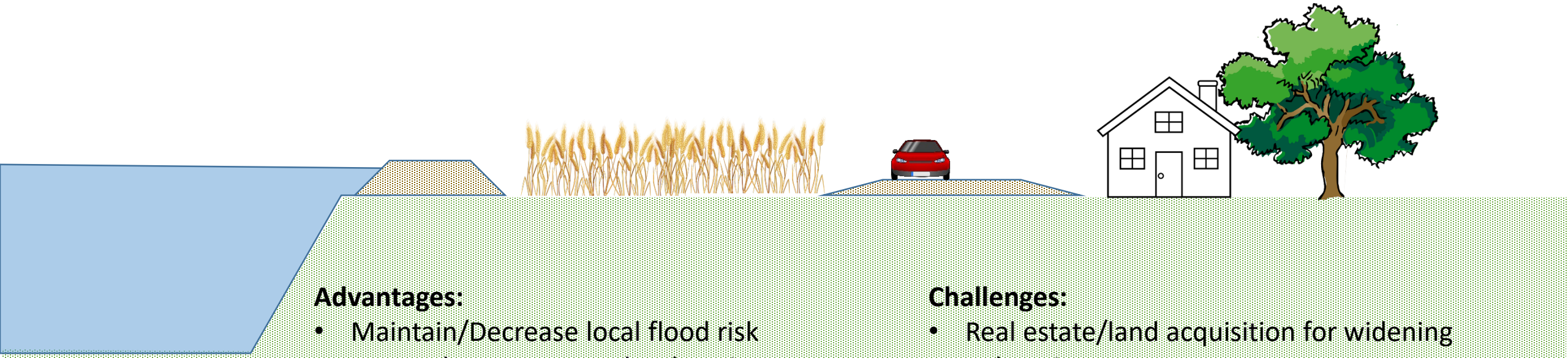
- Decreased flood risk
- May reduce stage at other locations

Challenges:

- Reduced protected area
- Removal of structures
- New alignment requires land acquisition

Note: Drawings are not to scale. They represent concepts only.

Possible Structural Solution: Channel Widening



Advantages:

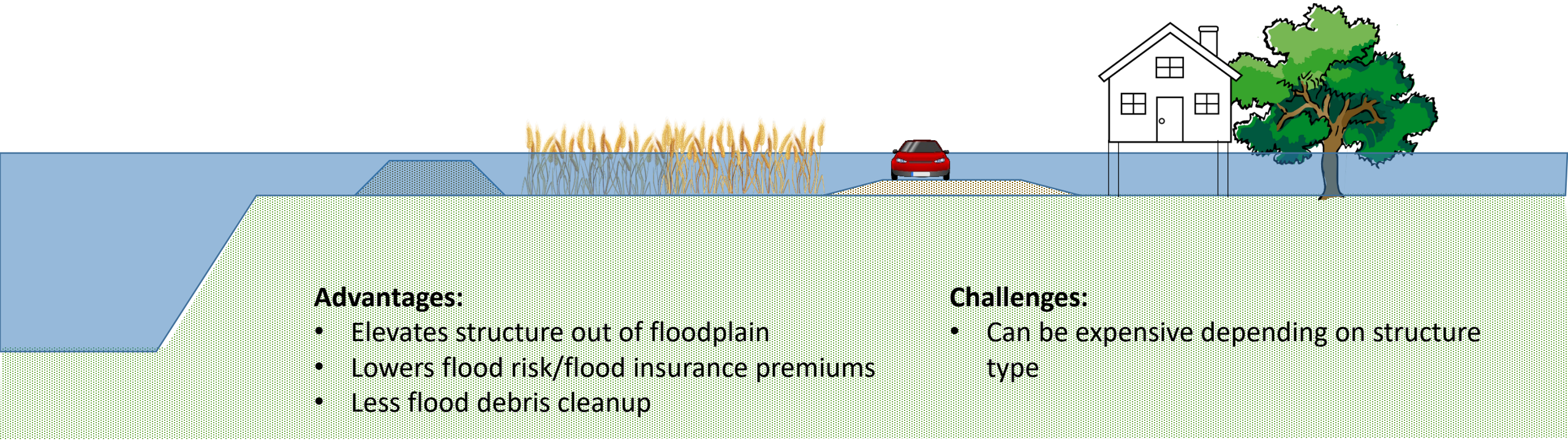
- Maintain/Decrease local flood risk
- May reduce stage at other locations

Challenges:

- Real estate/land acquisition for widening
- Relocation costs
- Significant construction costs

Note: Drawings are not to scale. They represent concepts only.

Possible Solution: Raise Buildings



Advantages:

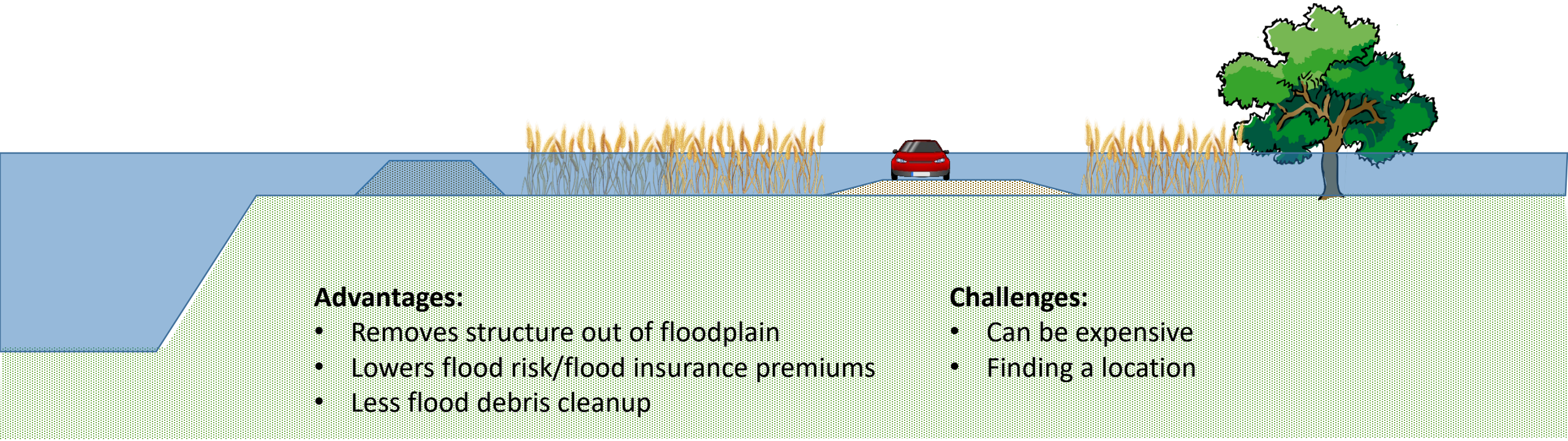
- Elevates structure out of floodplain
- Lowers flood risk/flood insurance premiums
- Less flood debris cleanup

Challenges:

- Can be expensive depending on structure type

Note: Drawings are not to scale. They represent concepts only.

Possible Solution: Relocate Buildings



Advantages:

- Removes structure out of floodplain
- Lowers flood risk/flood insurance premiums
- Less flood debris cleanup

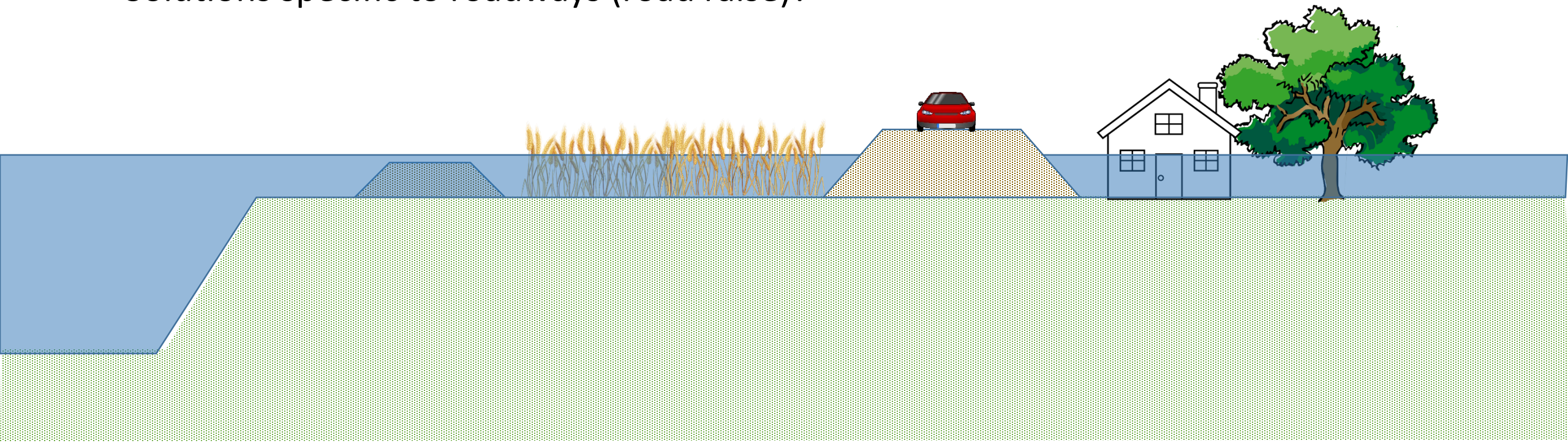
Challenges:

- Can be expensive
- Finding a location

Note: Drawings are not to scale. They represent concepts only.

Other Solutions?

- Off channel detention?
- Solutions specific to roadways (road raise)?



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Possible Solutions – Development of Ideas

- For each problem area – determine:

Area: *Description of the area (location; length of levee; inventory of area behind the levee such as ag land, number of homes, critical infrastructure, etc.)*

Site Characteristics: *What do we know about the current site/levee (info from NLD)? Are there problematic features, history of performance issues, known deficiencies, recurring instances of overtopping or breaching, road closures etc.?*

Potential Solution: *List a potential solution for the example site (levee construction, levee setback, levee raise, levee removal, channel widening, floodwall, off channel storage, nonstructural (relocation/buy-out), etc.*

Advantages of Solution: *What are some advantages of the potential solution? Reduced flood risk, etc.?*

Challenges of Solution: *What are challenges associated with the potential solution? Cost, real estate, environmental, public acceptance, access issues, etc.?*

Example Solution Matrix for the Platte River Confluence*

	Area	Site Characteristics	Potential Solution	Advantages of Pot… Solut…	…llenges Associated with Solution
Confluence of the Platte and Missouri Rivers	River Mile 595 Levee Groups: R-616-613 (Offutt AFB) R-613 (Papio RB & Platte) L-611-614 (HWY 34) 2 breaches, extensive overtopping Roadways: US Highway 75 US Highway 3… Inf… P… Off… Private… Residen…	Levees overtopped and breached in 2019 High Platte River flows are pushed onto left bank levees Critical infrastructur… behind levees Ag…	Levee raise	L…	…tage impacts …evee footprint …cquisition
			Levee…		…d …loodplain …e acquisition
				…posed …ure, dwellings, …personal property	Real Estate/Willing seller
			…e River Dam	Peak flow reduction below Dam location Reservoir Benefits	Real Estate/Impacts to existing communities Sedimentation Environmental
			Increase channel capacity	Increased level of local protection	Channel stability to meet BSNP requirements Real Estate Environmental

Generate a table like this for each problem area.

*This matrix does not represent final solutions for addressing flooding at the Platte River confluence. It simply represents how to start the planning process (i.e. brainstorm) to identify existing conditions at a problem area along with all possible solutions that might exist. Additional data gathering and modeling would need to be conducted to identify and further refine viable solutions.

Virtual Stakeholder Meetings – July 2020

The next set of stakeholder meetings will be virtual meetings – intended to:

- Identify problem areas identified by stakeholders and states
- Prepare solution matrix for each problem area
- Capture other relevant information from stakeholders
- Discuss possible methods for prioritizing problem areas
- Multiple Meetings held over a period of one to two weeks

Potential In-Person Stakeholder Meetings - August 2020

The next set of stakeholder meetings will focus on:

- Discussing problem areas identified by stakeholders and states (Nebraska and Iowa?) – tentatively planning for at least one meeting to be a joint meeting with both states participating
- Developing a set of criteria to prioritize problem areas
- Refining relevant information (i.e. example solution matrix)
- **Outcome will be a list of prioritized problem areas (along with example solution matrix for each problem area) to USACE for further analysis**

Future Announcements and Schedule

EcoNewsWire	Produced each Thursday by the DNR
DNR Website:	https://www.iowadnr.gov/simra
Contact:	Tim Hall Hydrology Resources Coordinator tim.hall@dnr.iowa.gov

Questions or Comments

Email

Bring to the virtual meetings - July

Participate in in-person meetings - August

Thank You

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