Precedents for Compatible Floodplain Development

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Reference Note — Floodplain Development That Serves Humans and Land Together

From: Michael Hoffman, North Star Group, Inc. **To:** Nathan Satcher, AICP, CFM — Senior Planner & Floodplain Administrator, City of Hattiesburg **Date:** April 18, 2026 **Re:** Precedents supporting compatible floodplain development at Eagles Flock / Leaf River

A short reference set, offered alongside the warning-infrastructure concept note. The question behind it is whether development in a floodplain can be designed to maintain or improve floodplain function rather than displace it. The precedents below say yes, in four different registers: US regulatory practice, international state of the art, peer-reviewed empirical work, and the academic framing of multifunctional management.

1. ASFPM's No Adverse Impact — the US regulatory lineage

The Association of State Floodplain Managers, which runs the Certified Floodplain Manager program, has for two decades promoted the No Adverse Impact (NAI) framework. ASFPM's stated mission is to *"promote education, policies and activities that mitigate current and future losses, costs and human suffering caused by flooding, and to protect the natural and beneficial functions of floodplains — all without causing adverse impacts."*[1]

The operative principle, from ASFPM's own description of NAI: *"NAI does not prohibit development; but it works to reduce any adverse impact caused by a project in a floodplain or watershed or to mitigate it."*[2] The NAI Toolkit, the foundational 2003 publication supported by FEMA's Community Rating System program, walks communities through mapping, planning, regulation, and development standards that allow development while protecting hydraulic function and downstream property rights.[3]

2026 is the 20th anniversary of NAI as an ASFPM policy framework. It is the closest thing US floodplain practice has to an affirmative doctrine on compatible development.

2. Netherlands Room for the River — international state of the art

Room for the River (*Ruimte voor de Rivier*) was the Dutch national water management program that ran from 2006 through 2018, implementing more than 30 projects across the country's four main rivers. Following catastrophic 1993 and 1995 floods that required evacuation of 250,000 people, the Dutch government made a formal paradigm shift — described in the program's own materials as moving *"from dominating the river with concrete to making room for it through coexistence."*[4]

The flagship project, Room for the Waal at Nijmegen, is the clearest single example of the model. The existing dike was moved 350 metres inland; a new 3-kilometre side channel, 200 metres wide, was excavated parallel to the original river course; and the island between the old and new channels was redesigned as an urban-adjacent public park for recreation and ecological activities. The measured outcome: peak water levels at the site were lowered by 35 centimetres — 8 centimetres more than the engineering model predicted.[5] Nijmegen won the European Green Capital Award in 2018, in part for this project.[6]

The Netherlands is now advancing Room for the River 2.0, extending the approach to freshwater security, drinking water supply, and water quality.[7]

The operative lesson is that widening and activating floodplain space with public, ecological, and urban uses can reduce flood risk measurably while increasing amenity. Multifunctional floodplain — not retreat.

3. Peer-reviewed evidence that edge-pushed development backfires

Sanchez and colleagues (2024), writing in *PLoS ONE*, conducted the first comprehensive national assessment of US development patterns relative to the regulatory 100-year floodplain. Their finding: 24 percent (89,080 km²) of US developed land by 2019 was concentrated in the 250-metre zones immediately adjacent to the floodplain boundary. The authors frame this as the *"safe development paradox"* — regulatory efforts to reduce flood risk by restricting development inside the floodplain paradoxically intensified it in the edge zones, because development displaced outward rather than redesigned inward.[8]

The implication relevant here: the operative comparison is not "development inside the floodplain versus preservation." The operative comparison is well-designed compatible development inside the floodplain versus displaced sprawl on the edge. The paper gives peer-reviewed support to the claim that the latter has measurably worse outcomes.

4. Multifunctional river-floodplain management

Recent peer-reviewed work on the economics of the Dutch Rhine program (Vermaat and colleagues, 2026, *Ecosystem Services*) finds that multifunctional strategies involving nature-based solutions and ecological restoration outperform conventional grey infrastructure when the full scope of benefits is considered — ecosystem services, cultural value, resilience to uncertain futures.[9] Single-purpose flood control underperforms on these wider measures. The authors argue for cost-benefit frameworks that incorporate the multifunctional benefits from the outset, because otherwise nature-based and multifunctional strategies are systematically disadvantaged against grey infrastructure in public investment decisions.

The framing is directly applicable: flood-compatible development that delivers public space, ecological function, and recreational amenity alongside residential use is measuring against a different yardstick than a pure flood control project.

What this reference set is, and isn't

It is a set of precedents for the framing that floodplain development, when designed to maintain or improve floodplain function, can be consistent with both the protection of property and the beneficial natural functions of the floodplain — the two halves of ASFPM's stated mission. It is not an argument that every development in every floodplain meets that bar. That is a site-by-site question, and at Eagles Flock the site-level work is what the engineering team is doing.

The reference set is offered in case any of it is useful to the City's review or to the legal analysis of the condominium pathway.

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Footnotes

[1] Association of State Floodplain Managers, *About ASFPM* (mission statement). https://www.floods.org/about/

[2] Association of State Floodplain Managers, *ASFPM Projects — No Adverse Impact overview.* https://www.asfpmfoundation.org/projects/project-overview.php

[3] Association of State Floodplain Managers, *No Adverse Impact: A Toolkit for Common Sense Floodplain Management* (2003), edited by Larry A. Larson, Michael J. Klitzke, and Diane A. Brown. Developed under support from FEMA's Community Rating System program. https://s3-us-west-2.amazonaws.com/asfpm-library/FSC/NAI/ASFPM_No_Adverse_Impact_a_toolkit_for_common_sense_floodplain_management_2003.pdf

[4] Rijkswaterstaat (Directorate-General for Public Works and Water Management, Netherlands

Ministry of Infrastructure and Water Management), *Room for the River* (program overview). https://www.rijkswaterstaat.nl/en/projects/iconic-structures/room-for-the-river

[5] Resilient Watersheds Toolbox, *Making room for the river by widening the floodplain — Room for the Waal, Nijmegen.* Program implemented 2012–2015 by Rijkswaterstaat in cooperation with the City of Nijmegen; total program cost EUR 350 million; peak water level reduction of 34.6 cm at maximum discharge. https://resilientwatershedstoolbox.org/projects/making-room-river-widening-floodplain

[6] City of Nijmegen — European Green Capital Award 2018, recognising flood-management and sustainability initiatives including Room for the Waal.

[7] Dutch Water Sector, *Room for the River Programme* overview. https://www.dutchwatersector.com/news/room-for-the-river-programme

[8] Sanchez, Georgina M., Margaret A. Lawrimore, Anna Petrasova, John B. Vogler, Elyssa L. Collins, Vaclav Petras, Truffaut Harper, Emma J. Butzler, and Ross K. Meentemeyer. *"The safe development paradox of the United States regulatory floodplain." PLoS ONE* 19, no. 12 (2024): e0311718. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11687735/

[9] Vermaat, J. E. and colleagues. *"Room for the River: An extended cost benefit analysis of integrated river-floodplain management for the Rhine in the Netherlands." Ecosystem Services* (2026). https://www.sciencedirect.com/science/article/pii/S2212041626000185