

TULANE ENVIRONMENTAL LAW JOURNAL

VOLUME 34

WINTER 2021

ISSUES 1

The Flooding of Eagle Lake: But-For Causation and the Doctrine of Relative Benefits in Flood- Based Fifth Amendment Cases

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The Mississippi River and Tributaries Project reduces flood risks for millions of properties in the Lower Mississippi River Basin. But flooding on the river is inevitable and, when floods occur, landowners often seek compensation from the United States through the Fifth Amendment. These cases raise difficult questions about how to assess causation and how to weigh the benefits and harms associated with the government's flood-control project. In 2020, the United States Court of Appeals for the Federal Circuit rejected a flood-based takings claim in Alford v. United States. The Alford decision highlights the importance of assessing causation and comparing the benefits and harms of flood-control projects, but leaves open important questions about how to undertake those analyses. This Article discusses the history of federal efforts to control flooding on the Mississippi River and explains how that history matters in the evaluation of claims like the one raised in Alford. The Article discusses the early history of flood-based takings cases and then uses the Alford case to explain how courts should approach several unresolved issues related to but-for causation and the doctrine of relative benefits.

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I. INTRODUCTION

Eagle Lake sits at the Mississippi-Louisiana border, approximately fifteen miles northwest of Vicksburg. The lake was cut off from the Mississippi River at the turn of the century, and huge earthen levees now separate the lake from the river. Hundreds of homes surround the lake, and

locals can enjoy the Buckchute Burger and a beer at the Lo Sto Bar & Grill after a day of fishing for bass and catfish.

But life on the Mississippi River is not for the faint of heart. Mark Twain, who spoke with the authority of a former riverboat pilot, wrote in 1883 that man “cannot tame that lawless stream, cannot curb it or confine it, cannot say to it, Go here, or Go there, and make it obey; cannot save a shore which it has sentenced; cannot bar its path with an obstruction which it will not tear down, dance over, and laugh at.”¹

In 2011, heavy rains and snow melt produced record-high water levels along portions of the lower Mississippi River, including the highest flows ever recorded south of Cairo, Illinois.² As water flowed over the banks of the river, it swamped an estimated 21,000 structures and more than 1.2 million acres of farm land.³ One post-flood report estimated the flood waters caused approximately \$2.8 billion in damages.⁴ But these extraordinary tallies pale in comparison to the damages that would have occurred if the United States had not built a federal flood control project known as the Mississippi River and Tributaries Project (MR&T Project). Without that project, it is estimated that the 2011 flood would have inundated 1.5 million structures and more than 10 million acres of farmland, thereby causing \$237 billion in damages.⁵

The 2011 flood created a particularly dangerous situation for Eagle Lake residents. As the river levels rose, the U.S. Army Corps of Engineers (Corps) determined that the levees at the lake would almost certainly fail. A levee breach at that location would have destroyed most of the homes around the lake and thousands of other buildings and farms far beyond the lake. The Corps had two options. It could do nothing and hope the levees held. Or it could temporarily raise the water level in the lake, which would reduce the chance of a levee failure by equalizing the water pressure on both sides of the levees but would also severely damage private docks and piers on the lake.

When the Corps chose the latter option, several dozen landowners sued the United States for a flood-based takings claim. The Corps had, after all, intentionally raised the lake levels knowing it would damage private property. In the crudest definition of the word “cause,” the Corps’

1. MARK TWAIN, LIFE ON THE MISSISSIPPI 234 (1883).

2. U.S. ARMY CORPS OF ENG'RS, 2011 POST-FLOOD REPORT: MISSISSIPPI RIVER AND TRIBUTARIES SYSTEM III-1 (Corps 2012) (hereinafter referred to as 2011 POST-FLOOD REPORT).

3. *Id.* at ES-VI, V-11.

4. *Id.* at V-12.

5. *Id.* at V-11.

actions caused water to enter the lake and that water damaged private properties. But is that the end of the story? After all, the Corps' action during the storm prevented a catastrophic levee failure and the far-worse flooding that would have otherwise occurred. More broadly, the Corps' MR&T Project protected the landowners' homes from catastrophic flooding for decades before the 2011 storm and made it possible for plaintiffs to build their homes at the lake. Should those factors matter when evaluating a Fifth Amendment claim?

Although the law has long required a takings plaintiff to prove that the government caused flooding on private property, uncertainties exist about how to assess causation. This is particularly true when the circumstances involve the construction and operation of a long-term and complicated project with multiple structural components like the MR&T Project. Further, confusion has long existed about whether and how a court should weigh harms and benefits arising out of federal flood control projects. The case arising out of the flooding of Eagle Lake, *Alford v. United States*, presents an excellent opportunity to examine these issues in flood-based takings cases, particularly those premised on MR&T Project operations.⁶

In Parts II and III, we begin our discussion with a history of the MR&T Project, with a focus on the project elements most relevant to the *Alford* case. The MR&T Project serves important federal goals of improving navigation on the Mississippi River and reducing flood risks to private properties. The project has met those goals admirably, but it is a work in constant progress, changing through the years and adjusting as needed to address new challenges. Evaluating causation and assessing the historic harms and benefits in cases involving the MR&T Project demands a clear understanding of the project history and its possible future.

In Part IV, we discuss early flood-based takings cases. These early cases establish that government-caused flooding on private property can violate the Fifth Amendment and further delineate the groundwork for a fuller examination of the causation and relative benefits principles that follow.

In Part V, we discuss actual (i.e., but-for) causation. That topic poses a straightforward question: Would the injury have occurred but for the government action? That test, however, often demands a complicated analysis. And in many cases, including in *Alford*, confusion exists about how to define the no-government-action hypothetical. Although courts

6. *Alford v. United States (Alford I)*, 141 Fed. Cl. 421, 424 (Fed. Cl. 2019).

have long applied this approach to causation in physical takings cases, it received renewed attention in *St. Bernard Parish Government v. United States*.⁷ We discuss that case in some detail, as well as unresolved questions related to but-for causation.

In Part VII, we address the doctrine of relative benefits, a principle that allows for a comparison of harms and benefits. Some recent courts have conflated but-for causation and the doctrine of relative benefits, but the *Alford* decision highlights the error in that approach. The doctrine of relative benefits is related to causation principles, but it exists as a separate analysis. We address how the doctrine differs from but-for causation and provide some suggestions on how it should apply in future flood-based takings cases, including future cases involving the MR&T Project.

Alford v. United States presents an excellent case study because it raises many different issues in a fairly simple fact pattern. But the causation and relative benefits issues discussed below are not limited to that case. Over the past several years, litigants have filed several flood-based takings claims related to various operations of the MR&T Project. That project reduces flood risks for properties owned by millions of people, but, as Mr. Twain understood more than 130 years ago, the Mississippi River will flood again. The *Alford* decision does not answer all future issues related to causation or relative benefits, but it is clear that billions of dollars turn on the fundamental question posed in *Alford*: Who bears responsibility for the flooding of Eagle Lake?

II. THE MISSISSIPPI RIVER AND TRIBUTARIES PROJECT

A. *The Mississippi River*

The Mississippi is one of the world's largest rivers, extending approximately 2,340 miles from Minnesota to the Gulf of Mexico.⁸ Because of its extraordinary size, the Mississippi River has long held a unique role in this country's economy. Maintaining active commerce on the river while protecting the communities that developed alongside it has proven to be an expensive and difficult task.

The main challenge in attempting to tame the Mississippi River arises due to the enormous volume of water involved. The drainage basin is the third largest in the world, exceeded only by the Amazon and Congo

7. *St. Bernard Par. Gov't v. United States*, 887 F.3d 1354, 1362 (Fed. Cir. 2018), *cert. denied*, 139 S. Ct. 796 (2019).

8. CHARLES A. CAMILLO & MATTHEW T. PEARCY, UPON THEIR SHOULDERS x (2004).

Rivers.⁹ The basin drains forty-one percent of the continental United States and covers more than 1,245,000 square miles, including all or parts of thirty-one states and two Canadian provinces.¹⁰

The river carries an average of 612,000 cubic feet per second (cfs) of water into the Gulf of Mexico.¹¹ But that average flow is misleading because flows on the river vary dramatically. The total discharge fluctuates from approximately 70,000 cfs during periods of low flow to more than 2.3 million cfs when the river is in flood stage.¹² These fluctuations present extraordinary management challenges because any river project must adapt to conditions that produce stages that vary by as much as fifty feet in some areas.¹³

In addition to water, the river, in its natural state, moved a lot of sediment—more than 400 million tons each year, mostly fine sands and silts, with scattered deposits of clay.¹⁴ If the water velocity is fast, the river may carry large volumes of sediment downriver.¹⁵ During periods of low flow, the river may deposit sediment onto the channel bed.¹⁶ As one 1928 report noted, the river “is constantly eroding its banks in unprotected bends and forming new land on points. The caving is accentuated in many places by an underlying strata of sand, which washes out and causes the bank to fall by its own weight as the river subsides.”¹⁷ As a result of these forces, the Mississippi River follows an active and highly sinuous course, with constantly evolving meanders, loops, and bends.¹⁸

It is the natural condition of the Mississippi River to flood, and the modern history of the river is often told in terms of flooding events. It is apropos, then, that the first recorded flood occurred in 1543, just two years

9. U.S. ARMY CORPS OF ENG'RS, FINAL PROJECT REPORT FOR FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES PROJECT: MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL, Vol. I at 11 (July 1998) (hereinafter referred to as 1998 REPORT). The principal tributaries include the Ohio River, St. Francis River, Obion River, Forked Deer River, Arkansas and White Rivers, Yazoo River, and the Big Black River, all substantial rivers in their own right. *Id.* at Vol. I, at 16.

10. *Id.* at Vol. I, at 11; MRC, PUBLIC STATEMENT (Aug. 21, 2019); MISS. RIVER COMM'N, H.R. REP. NO. 70-1072, App. X, at 339 (1928); J.D. Rogers, *Development of the New Orleans Flood Protection System Prior to Hurricane Katrina*, J. GEOTECHNICAL & GEOENVIRONMENTAL ENG'G, May 2008, at 604.

11. CAMILLO & PEARCY, *supra* note 8, at x.

12. *Id.* at xi.

13. *Id.* at xi.

14. 1998 REPORT, *supra* note 9, at Vol. I at 11-12; Rogers, *supra* note 10, at 604.

15. CAMILLO & PEARCY, *supra* note 8, at xi.

16. *Id.* at xi.

17. MISS. RIVER COMM'N, H.R. REP. NO. 70-1072, App. X, at 340 (1928).

18. 1998 REPORT, *supra* note 9, at Vol. I at 11.

after the first European explorer of the region, Hernando de Soto, is documented to have crossed the Mississippi River.¹⁹

B. Early Efforts to Manage the Lower Mississippi River

The MR&T Project attempts to manage flows on the lower Mississippi River, generally considered to be that portion of the river south of Cape Girardeau, Missouri.²⁰ The upper Mississippi River, which has smaller flows and steeper river beds as compared to the lower river, is dominated by twenty-nine pairs of locks and dams, extending from northern Minnesota to the mouth of the Ohio River at Cairo, Illinois.²¹ These locks create a series of nautical staircases, which facilitate navigational traffic and provide some flood control relief.

The lower Mississippi River is flatter and slower than its northern counterpart. It also carries far more water, as it lies below the confluence of several large tributaries. The fertile soil in the lower basin has supported extensive agricultural efforts, but the topography presents significant flood risks.²² Many riparian areas in the southern portion of the basin are “by far the greater and most fertile portion of the natural banks of the Mississippi river . . . [but are located] below the level of the floods.”²³

A survey of the lower Mississippi River conducted in the late 1860s offered a detailed discussion of early attempts to control the river.²⁴ That

19. *Id.* at Vol. I at 18; JOHN M. BARRY, *RISE AND FALL: THE GREAT MISSISSIPPI FLOOD OF 1927 AND HOW IT CHANGED AMERICA* 173 (1997). Before arrival of Europeans, Native Americans enjoyed a rich and important life along the Mississippi River. Native Americans adapted to the river; records of large-scale efforts to control the river appear only after arrival of Europeans.

20. The Lower Mississippi River Valley includes parts of Missouri, Illinois, Tennessee, Kentucky, Arkansas, Mississippi, and Louisiana, and approximately 53,000 square miles. 2011 POST-FLOOD REPORT, *supra* note 2, at II-2, II-7.

21. CHRISTINE A. KLEIN & SANDRA B. ZELLMER, *MISSISSIPPI RIVER TRAGEDIES: A CENTURY OF UNNATURAL DISASTER* 2 (2014).

22. Although we focus on the lower Mississippi River, flooding occurs in the upper river basin as well. A 1993 flood in the upper Mississippi River basin, for example, destroyed more than 50,000 homes, killed at least forty-eight people, and caused an estimated \$20 billion in losses. USGS CIRCULAR 1375, *A BRIEF HISTORY AND SUMMARY OF THE EFFECTS OF RIVER ENGINEERING AND DAMS ON THE MISSISSIPPI RIVER SYSTEM AND DELTA* 7 (2012) (hereinafter referred to as USGS CIRCULAR 1375).

23. ANDREW ATKINSON HUMPHREYS & HENRY L. ABBOT, *CORPS OF TOPOGRAPHICAL ENGINEERS U.S. ARMY, REPORT UPON THE PHYSICS AND HYDRAULICS OF THE MISSISSIPPI RIVER; UPON THE PROTECTION OF THE ALLUVIAL REGION AGAINST OVERFLOW; AND UPON THE DEEPENING OF THE MOUTHS: BASED UPON SURVEYS AND INVESTIGATIONS MADE UNDER THE ACTS OF CONGRESS DIRECTING THE TOPOGRAPHICAL AND HYDRAULIC SURVEY OF THE DELTA OF THE MISSISSIPPI RIVER* 80 (1867) (hereinafter referred to as HUMPHREYS & ABBOT).

24. *Id.* at 80-91. It appears the first coordinated efforts to manage the river actively, rather than simply adapt to it, began after 1700, meaning that “[t]he history of the levees is, therefore, intimately connected with that of the settlement of the country.” *Id.* at 80.

report notes that the first construction of river levees coincided with the establishment of the first European settlement in New Orleans, Louisiana.²⁵ In 1717, French settlers began to construct levees along the river to protect the city.²⁶ By 1727, these structures were approximately three feet high, 5,400 feet long, and eighteen feet wide at the top.²⁷ By 1735, the levees extended approximately thirty miles above New Orleans and twelve miles below.²⁸ By the late 1700s, “a crude system of levees extended for 100 miles upriver of New Orleans.”²⁹

After the United States purchased the Louisiana Territory in 1803, riparian landowners in the lower river valley began to devote significant resources to flood-control efforts.³⁰ By 1812, the year Louisiana became a state, levees extended for 155 miles on the east bank and 180 miles on the west bank.³¹ Individual landowners constructed and maintained these early levees, and the federal government focused its efforts on maintaining the river for commerce.³²

As one historian noted, early settlers quickly learned that the Mississippi River was both a blessing and a curse:

The river enriched their lands, provided transportation for their products, and gave them easy access to their own and other nations. On the other hand, it periodically destroyed their homes, washed away their crops, and on occasion gobbled up their villages and towns. For more than a century individual landowners and local governments fought a losing battle against the river’s ravages.³³

Damaging floods in 1849 and 1850 prompted a renewed effort to control flooding, but the federal government continued to play only a

25. *Id.* at 80.

26. *Id.* at 80-81; CAMILLO & PEARCY, *supra* note 8, at xii; United States v. Sponenbarger, 308 U.S. 256, 261 (1939) (referencing the “small levees . . . erected in the vicinity of New Orleans” as early as 1717).

27. HUMPHREYS & ABBOT, *supra* note 23, at 81; CAMILLO & PEARCY, *supra* note 8, at xii.

28. 1998 REPORT, *supra* note 9, at Vol. I, at 19.

29. U.S. ARMY CORPS OF ENG’RS, BONNET CARRÉ SPILLWAY INFORMATION BOOKLET at 3 (2014) (hereinafter referred to as BONNET CARRÉ BOOKLET); HUMPHREYS & ABBOT, *supra* note 23, at 80-81 (discussing these early efforts).

30. CAMILLO & PEARCY, *supra* note 8 at xii-xiii.

31. BARRY, *supra* note 19, at 40; CAMILLO & PEARCY, *supra* note 8, at xiii; HUMPHREYS & ABBOT, *supra* note 23, at 82.

32. In 1820, for example, Congress enacted one of the first acts related to the river: authorization to conduct “a survey of the Mississippi River for navigation.” MISS. RIVER & TRIBUTARIES PROJECT, H.R. DOC. NO. 308, 88TH CONG., 2D SESS. VOL. I at 340 (1964). In 1824, Congress passed legislation to remove snags and other navigational obstructions. *Id.*

33. MARION BRAGG, HISTORIC NAMES AND PLACES ON THE LOWER MISSISSIPPI RIVER 1 (1977).

supporting role.³⁴ In 1850, for example, the federal government granted to several states “all swamp and overflowed lands within their limits remaining unsold,” with the expectation that the states would sell those lands and use the proceeds for flood control.³⁵ By the mid-1850s, the states of Louisiana, Mississippi, Arkansas, and Missouri began to work jointly to locate and construct levees.³⁶ These states created several local levee districts throughout the region to provide support,³⁷ but a lack of coordination hindered their efforts.³⁸

These localized, piecemeal projects were ineffective, and major floods in the mid-1800s destroyed much of this early infrastructure.³⁹ In 1874, a massive storm caused numerous crevasses along the river and resulted in significant damage to the lower Mississippi Valley.⁴⁰ One 1875 report described the levee breaks and crevasses in Missouri and Arkansas as “so numerous that it is unnecessary to recapitulate them in detail here” and identified more than 130 miles of breaches from Missouri to the Louisiana state line.⁴¹ The surviving levees fell even further into disrepair during the Civil War, and, “[b]y 1878, hundreds of miles of mainline levee had disappeared entirely or been rendered inoperative.”⁴²

C. *Creation of the Mississippi River Commission*

The 1874 storm provided a strong impetus for a more coordinated response, and the United States created a commission of engineers to “investigate and report a permanent plan for the reclamation of the alluvial

34. 1998 REPORT, *supra* note 9, at Vol. I, at SEIS 1-3. Most major navigational problems arose on the river due to high sediment loads. Large ships, for example, would sometimes have to wait months for sandbars and the Gulf of Mexico to dissipate. BARRY, *supra* note 19, at 34-35.

35. HUMPHREYS & ABBOT, *supra* note 23, at 82; MISS. RIVER COMM’N, H.R. REP. NO. 70-1072, App. X, at 340 (1928). The Swamp Land Acts resulted in the transfer of nearly 65 million acres of property in fifteen states to the state governments. MARTIN DOYLE, *THE SOURCE: HOW RIVERS MADE AMERICA AND AMERICA REMADE ITS RIVERS* 75 (2018).

36. HUMPHREYS & ABBOT, *supra* note 23, at 82.

37. H.R. REP. NO. 70-1072; CAMILLO & PEARCY, *supra* note 8, at xiv.

38. 1998 REPORT, *supra* note 9, at Vol. I, at SEIS 1-3.

39. HUMPHREYS & ABBOT, *supra* note 23, at 102-10; *United States v. Sponenbarger*, 308 U.S. 256, 261 (1939) (“Experience demonstrated that these disconnected levees were utterly incapable of safeguarding an ever-increasing people drawn to the fertile valley.”).

40. H.R. EXEC. DOC. NO. 127, 43D CONG., 2D SESS. at 40 (1875).

41. *Id.* Shortly after the 1874 flood, the mayor of New Orleans beseeched other leaders for help, estimating that 12,600 square miles of property in Louisiana was underwater. MAYOR WILTZ, *THE GREAT MISSISSIPPI FLOOD OF 1874: ITS EXTENT, DURATION AND EFFECTS* 4 (1874). Mayor Wiltz estimated that relief committees were then providing daily rations to at least 70,000 people. *Id.* at 6.

42. 1998 REPORT, *supra* note 9, at Vol. I at SEIS 1-3.

basin of the Mississippi River subject to inundation.”⁴³ The resultant report, issued in January 1875, proposed the construction of a massive and integrated levee system. The report concluded that levees were the only practical solution and opined that “no practical aid can be derived from any diversion of tributaries, or making of artificial reservoirs; that cut-offs are very pernicious, and that artificial outlets, although correct in theory, find no useful application to the Mississippi.”⁴⁴ The report also recommended creation of a new, permanent commission to finalize project plans.⁴⁵

In 1879, Congress created the Mississippi River Commission (MRC), a mix of Corps and civilian engineers, to oversee both navigation and flood-control efforts on the lower Mississippi River.⁴⁶ Significant disagreement existed about which of these goals—navigation or flood control—should take precedence.⁴⁷ This disagreement continued for decades, but in the early years of the MRC, flood control took a lower priority to navigational improvements.⁴⁸ Indeed, Congress’s early appropriation acts related to the MRC’s work provided that “no portion of the sum hereby appropriated shall be used in the repair or construction of levees for the purpose of preventing injury to land by overflow or for any other purpose whatever except as a means of deepening or improving the channel of said river.”⁴⁹ For the first two decades of its existence, the MRC conducted studies, developed plans, and provided advice to local interests involved in levee design and construction.⁵⁰

43. H.R. EXEC. DOC. NO. 127, at 2 (noting that the commission was designed to prepare plans for the “best system for the permanent reclamation and redemption of said alluvial basin from inundation”); CAMILLO & PEARCY, *supra* note 8, at 22.

44. H.R. EXEC. DOC. NO. 127, at 31.

45. *Id.* at 32.

46. BARRY, *supra* note 9, at 88.

47. H.R. EXEC. DOC. NO. 127, at App. W, at 334; CAMILLO & PEARCY, *supra* note 8, at 29; Oklahoma ex rel. Phillips v. Guy F. Atkinson Co., 313 U.S. 508, 516 (1941); *About the MRC*, ARMY CORPS OF ENG’RS, MISSISSIPPI VALLEY DIV., <https://www.mvd.usace.army.mil/About/Mississippi-River-Commission-MRC/About-the-MRC/> [<https://perma.cc/RX6L-TCTZ?type=image>]; MISS. RIVER COMM’N, H.R. REP. NO. 70-1072, App. Z, at 356 (1928) (discussing this disagreement, and asking: “Shall it be only flood control and no more, or shall it be the inauguration, once and for all, of a broad-minded and far-reaching policy of flood prevention which must include conservation of waters, soils, and forests?”).

48. H.R. REP. NO. 70-1072, at App. X, at 335 (discussing the levee construction and repair work undertaken “in primary behalf of navigation and commerce”).

49. *Id.* at App. X, at 342.

50. MISS. RIVER & TRIBUTARIES PROJECT, H.R. DOC. NO. 308, 88TH CONG., 2D SESS. VOL. I at 340 (1964). The MRC’s first report, issued in 1880, maintained the past bias in favor of a levees-only approach, aiming to “concentrate, rather than disperse, the waters of the river.” *Id.* The report

In 1882, a massive storm flooded “the entire alluvial area from Cape Girardeau to the Gulf of Mexico.”⁵¹ The non-federal levees failed at hundreds of locations, again demonstrating the inadequacies of early piecemeal flood control efforts.⁵² Mark Twain described the resultant devastation:

It put all the unprotected lowlands under water, from Cairo to the mouth; it broke down the levees in a great many places, on both sides of the river; and in some regions south, when the flood was at its highest, the Mississippi was seventy miles wide! A number of lives were lost, and the destruction of property was fearful.⁵³

Twain predicted that “[t]his present flood of 1882 will doubtless be celebrated in the river’s history for several generations before a deluge of like magnitude shall be seen.”⁵⁴ He was, unfortunately, incorrect.

The extensive flooding resulted in a renewed “groundswell of support for federal aid” focused on flood control for the river.⁵⁵ In 1883, the MRC issued the Eads Plan, which committed the United States “to cooperate with, and to coordinate the efforts of the people and authorities of the various river localities in order to effect a continuous line of levees along both banks . . . from Cape Girardeau, Missouri, to the Gulf of Mexico.”⁵⁶ The Eads Plan attempted to harness “the vast power of the river” to control itself.⁵⁷ By attempting to confine the river between levees, the plan attempted to direct the river’s “energies to cutting out a deeper channel,” which, the MRC anticipated, would ensure the river remained contained within banks.⁵⁸

Congress enacted the 1890 Rivers and Harbors Act, which rapidly expanded levee construction efforts along the river,⁵⁹ but massive flooding occurred in several subsequent years, including 1897, 1903, 1912, 1913,

condemned use of any spillways, convinced that such lateral outlets would ultimately raise the flood surface of the river. H.R. REP. NO. 70-1072, APP. X, at 342.

51. CAMILLO & PEARCY, *supra* note 8, at 74; H.R. REP. NO. 70-1072, APP. X, at 8.

52. CAMILLO & PEARCY, *supra* note 8, at 74. As the Supreme Court explained, the Mississippi River levees at this time, “constructed by state and local authorities[,] consisted of a broken chain of levees of insufficient height and strength to confine the flood waters, and had been built without regard to a uniform grade.” *Jackson v. United States*, 230 U.S. 1, 16-17 (1913).

53. TWAIN, *supra* note 1, at 224.

54. *Id.*

55. CAMILLO & PEARCY, *supra* note 8, at 75.

56. *United States v. Sponenbarger*, 308 U.S. 256, 261 (1939); *United States v. Archer*, 241 U.S. 119, 133-34 (1916) (describing the Eads Plan).

57. *United States v. Jackson*, 230 U.S. 1, 18 (1913).

58. *Id.*

59. Rivers and Harbors Act, 51st Cong., 2nd sess., Ch. 26, 426-65 (1890); CAMILLO & PEARCY, *supra* note 8, at 87.

and 1916.⁶⁰ In 1917, Congress enacted a flood control act in an effort to take a more aggressive role in levee construction.⁶¹ As one historian noted, “[t]he Flood Control Act of 1917 changed the federal government’s activities on the nation’s rivers from a single-purpose program (navigation improvement) to a limited dual-purpose program.”⁶² Consistent with earlier efforts, however, the MRC continued to pursue a levees-only approach on the Mississippi River.⁶³

By 1927, the United States and state and local interests had spent a combined \$238 million (approximately \$3.5 billion in 2020 dollars) on 1,880 miles of Mississippi River levees.⁶⁴ These efforts soon revealed themselves to be costly failures.

D. *The 1927 Flood*

Beginning in 1926 and continuing into 1927, extensive rain fell throughout the basin, including unprecedented amounts in eastern Oklahoma, western Arkansas, and southern Missouri.⁶⁵ Historically high stages on the Mississippi River and its tributaries caused numerous levee breaches beginning in early April 1927.⁶⁶

The resultant flooding would eventually inundate approximately 26,000 square miles in seven states.⁶⁷ One historian estimated that in the lower river basin, the flood waters, some as much as thirty feet deep, inundated almost a million private properties.⁶⁸ The event killed at least 247 people and forced up to 700,000 people to seek emergency shelter in refugee camps.⁶⁹ Approximately half of the refugees were forced to live in tent cities run by the Red Cross, many for several months.⁷⁰ Flood waters destroyed hundreds of cities, towns, and villages, and killed an estimated 1.5 million farm animals.⁷¹ Representative Frank R. Reid of

60. CAMILLO & PEARCY, *supra* note 8, at 93, 97, 105, 134; MISS. RIVER COMM’N, H.R. REP. NO. 70-1072, at 9; App. T, at 310-11 (1928).

61. BONNET CARRÉ BOOKLET, *supra* note 29, at 7; 1998 REPORT, *supra* note 9, at Vol. I at 19.

62. JOSEPH ARNOLD, THE EVOLUTION OF THE 1936 FLOOD CONTROL ACT 15 (1988).

63. BONNET CARRÉ BOOKLET, *supra* note 29, at 7.

64. H.R. REP. NO. 70-1072, at App. X, at 344; BONNET CARRÉ BOOKLET, *supra* note 29, at 7.

65. H.R. REP. NO. 70-1072, at App. X, at 345.

66. *Id.* at 10; CAMILLO & PEARCY, *supra* note 8, at 143.

67. 1998 REPORT, *supra* note 9, at Vol. I at SEIS 1-1; ARNOLD, *supra* note 62, at 18.

68. BARRY, *supra* note 19, at 285.

69. H.R. REP. NO. 70-1072, at 3; CAMILLO & PEARCY, *supra* note 8, at 138; BONNET CARRÉ BOOKLET, *supra* note 29, at 8.

70. BARRY, *supra* note 19, at 285-86.

71. H.R. REP. NO. 70-1072, at 3.

Illinois described the devastation in a 1928 House Report: “After the flood had subsided these people had no homes to which to return; their fields have grown up to weeds, they have no mules, no implements of husbandry with which to begin anew the cultivation of the soil, they have no seed, they have nothing.”⁷²

Direct property damages were estimated to exceed \$200 million, approximately \$3 billion in 2020 dollars.⁷³ Unofficial estimates of direct and indirect costs approached five times that amount.⁷⁴ Herbert Hoover, then Secretary of Commerce, called the 1927 Flood the greatest peacetime disaster ever faced by the country.⁷⁵

E. *The Jadwin Plan*

The 1927 flood caused many in Congress to conclude that the levees-only policy was a mistake. The House Committee on Flood Control, for example, described the policy as the “monumental blunder of the age.”⁷⁶ The MRC agreed, now concluding that spillways were necessary because “[w]hatever may be assumed as the probable maximum flood of the future, an even greater flood may someday occur, sufficient to overtop the levee line.”⁷⁷

After much debate, the MRC began to develop a new flood-control plan, known as the Jadwin Plan.⁷⁸ The plan proposed a massive project intended to survive a flood event even larger than the 1927 flood.⁷⁹ The authorizing documents make clear that the MRC considered “[c]omplete flood control” through levees an impossible goal: “Man must not try to restrict the Mississippi River too much in extreme floods. The river will break any plan which does this. It must have the room it needs, and to accord with its nature must have the extra room laterally.”⁸⁰

72. *Id.* at xii.

73. H.R. DOC. NO. 90, 70TH CONG. 1ST SESS. at 2 (1927); <https://www.in2013dollars.com/us/inflation/1928?amount=200000000> [<https://perma.cc/23T6-2WAY?type=image>].

74. BARRY, *supra* note 19, at 286.

75. H.R. REP. NO. 70-1072, at 5; ARNOLD, *supra* note 62, at 18.

76. *James v. United States*, 740 F.2d 365, 371 (5th Cir. 1984) (citing H.R. REP. NO. 70-1072, at 83).

77. H.R. REP. NO. 70-1072, at App. X, at 353.

78. *Hurley v. Kincaid (Kincaid I)*, 285 U.S. 95, 99 (1932); *Danforth v. United States*, 308 U.S. 271, 277 (1939). The plan, named for Major General Edgar Jadwin, Chief of Engineers, is described in H.R. DOC. NO. 90.

79. H.R. REP. NO. 70-1072, at 51; ARMY CORPS OF ENG'RS, FINAL ENVIRONMENTAL IMPACT STATEMENT FOR MISSISSIPPI RIVER AND TRIBUTARIES MISSISSIPPI RIVER LEVEES AND CHANNEL IMPROVEMENT at 4 (1976) (hereinafter referred to as 1976 FEIS).

80. H.R. DOC. NO. 90, at 4.

Thus, in addition to substantial levee construction, the Jadwin Plan called for the development of several floodways, where the narrow river channel might create a bottleneck and risk flooding populated areas.⁸¹ As the U.S. Supreme Court described it, “the plan in its entirety is based upon a levee system which constricts the water to a moderate degree and allows in periods of extreme floods the escape from some lower levees, known as fuse-plugs, of the water from the main channel to back waters and floodways.”⁸²

Congress adopted the Jadwin Plan in the 1928 Flood Control Act and authorized \$325 million, or more than \$4.8 billion in 2020 dollars, to construct the plan’s several elements.⁸³ The amount was the largest public works project appropriation ever authorized by the federal government, “even exceeding the construction cost of the Panama Canal, which was \$310 million.”⁸⁴ The program would eventually be renamed the Mississippi River and Tributaries (MR&T) Project.

Recognizing the impossibility of perfect flood control and the huge federal outlay, the 1928 Flood Control Act included broad federal immunity: “No liability of any kind shall attach to or rest upon the United States for any damage from or by floods or flood waters at any place.”⁸⁵ The provision has been held to immunize the United States in certain flood-based tort claims resulting from construction or operation of federal

81. CAMILLO & PEARCY, *supra* note 8, at 175; *Matthews v. United States*, 87 Ct. Cl. 662, 677 (1938). These were the Birds Point-New Madrid Floodway in southeast Missouri, the Boeuf Floodway in southeast Arkansas and northeast Louisiana, the Atchafalaya Floodway, and the Bonnet Carré Spillway just north of New Orleans.

82. *Danforth*, 308 U.S. at 277; *United States v. Sponenbarger*, 308 U.S. 256, 261-62 (1939) (noting that the Jadwin plan assumed that because “there might be floods of such proportions as to overtop the river’s banks and levees despite all the Government could do, this plan was designed to limit to predetermined points such escapes of floodwaters from the main channel” as levees alone would not protect the Mississippi valley from floods).

83. Flood Control Act of May 15, 33 U.S.C. § 702(a)-(m) (1928); *Matthews*, 87 Ct. Cl. at 678; <https://www.dollartimes.com/inflation/inflation.php?amount=100&year=1928> [<https://perma.cc/U2ZH-CY5U?type=image>]. Even when Congress adopted the act, the real cost was expected to run many times higher. BARRY, *supra* note 19, at 406.

84. ARNOLD, *supra* note 62, at 21. Congress passed subsequent flood control acts, which addressed the MR&T Project and several other federal flood-control projects across the United States. In June 1936, for example, Congress enacted a new Flood Control Act, also known as the Overton Act, which set forth a broad federal policy: “[T]he Federal Government should improve or participate in the improvement of navigable waters or their tributaries, including watersheds thereof, for flood-control purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs.” FLOOD CONTROL ACT OF 1936, 33 U.S.C. § 701a, (1936). The 1936 Flood Control Act was the first to adopt the principle that flood control is “a proper activity of the Federal Government.” FLOOD CONTROL ACT OF 1936, 49 Stat. 1570 (1936); ARNOLD, *supra* note 62, at i.

85. 33 U.S.C. § 702c (1928).

flood control projects, including the MR&T Project.⁸⁶ Despite its sweeping language, however, the Federal Circuit has stated that the act “did not partially impliedly repeal the Tucker Act.”⁸⁷ If the Federal Circuit’s assessment is correct, the act may immunize the United States from flood-based tort claims, but not flood-based takings claims.

F. The Current Mississippi River and Tributaries Project

The MR&T Project, like the Mississippi River itself, constantly evolves. In the early 1930s, for example, at the beginning of project construction, the Army Corps of Engineers conducted a lengthy restudy. The Army Corps restudy as well as public hearings and inspection trips conducted by the MRC prompted the Commission to make major changes to the original Jadwin Plan.⁸⁸ The MRC would eventually eliminate the Boeuf Floodway and propose the addition of a new Eudora Floodway, a much smaller floodway in a different location.⁸⁹ Later, in 1941, Congress eliminated the planned Eudora floodway.⁹⁰

In its current configuration, the MR&T Project includes (1) approximately 2,000 miles of levees and floodwalls on the river and an additional 1,500 miles of levees on backwater and tributary areas; (2) several floodways that are designed to open during certain high flow events; (3) a variety of channel improvement and stabilization elements; and (4) improvements to tributaries.⁹¹

86. *United States v. James*, 478 U.S. 597, 599 (1986) (holding that § 702c “bars recovery where the Federal Government would otherwise be liable under the Federal Tort Claims Act, 28 U.S.C. § 2671, et seq., for personal injury caused by the Federal Government’s negligent failure to warn of the dangers from the release of floodwaters from federal flood control projects”); *Cent. Green Co. v. United States*, 531 U.S. 425, 437 (2001) (clarifying that, “in determining whether § 702c immunity attaches, courts should consider the character of the waters that cause the relevant damage rather than the relation between that damage and a flood control project”); *In re Katrina Canal Breaches Litig.*, 696 F.3d 436, 444-51 (5th Cir. 2012) (concluding that the Federal Tort Claims Act (FTCA) immunized government from discretionary related claims in operating navigational channel). The article assumes—without taking a position as to the accuracy of—a view that the 1928 Flood Control Act immunity extends to some tort claims but not Fifth Amendment claims.

87. *California v. United States*, 271 F.3d 1377, 1383 (Fed. Cir. 2001).

88. *CAMILLO & PEARCY*, *supra* note 8, at 216-17.

89. *Id.* at 217.

90. *Yazoo Backwater Project*, MISSISSIPPI LEVEE BD. (2019), <https://www.msleveeboard.com/index.php/projects/current-projects/yazoo-backwater-project> [<https://perma.cc/LFH6-9RQM?type=image>].

91. 1998 REPORT, *supra* note 9, at Vol. I at 1; 1976 FEIS, *supra* note 79, at 5; MRC, MISSISSIPPI RIVER AND TRIBUTARIES PROJECT: CONTROLLING THE PROJECT DESIGN FLOOD at 5 (2007), available at <http://biotech.law.lsu.edu/climate/docs/MR-T-info.pdf> [<https://perma.cc/WT7577CM?type=image>] (hereinafter referred to as CONTROLLING THE PROJECT DESIGN FLOOD).

The Jadwin Plan originally intended the MR&T Project to withstand the “probable design flood,” a hypothetical storm larger than the one that produced the 1927 flood.⁹² However, predictions are always estimates, and the future can never be foretold with certainty. In the mid-1950s, the MRC and the National Weather Service re-analyzed the history of storms over the drainage basin to reassess the probable design flood. In 1956, that analysis resulted in adoption of a new project design flowline (that is, flows that the system is intended to handle in light of the newly assessed probable design flood).⁹³ The 1956 flowline provided a new basis to design and construct levees, and is summarized in the schematic description that follows.⁹⁴

92. The “probable design flood,” also referred to as the “project design flood,” is a hypothetical flood event defined as “the greatest flood having a reasonable probability of occurrence.” 1998 REPORT, *supra* note 9, at Vol. I at 2; CONTROLLING THE PROJECT DESIGN FLOOD, *supra* note 91, at 2-3.

93. 1998 REPORT, *supra* note 9, at Vol. I at 8.

94. *Id.* at Vol. I at 8-9.

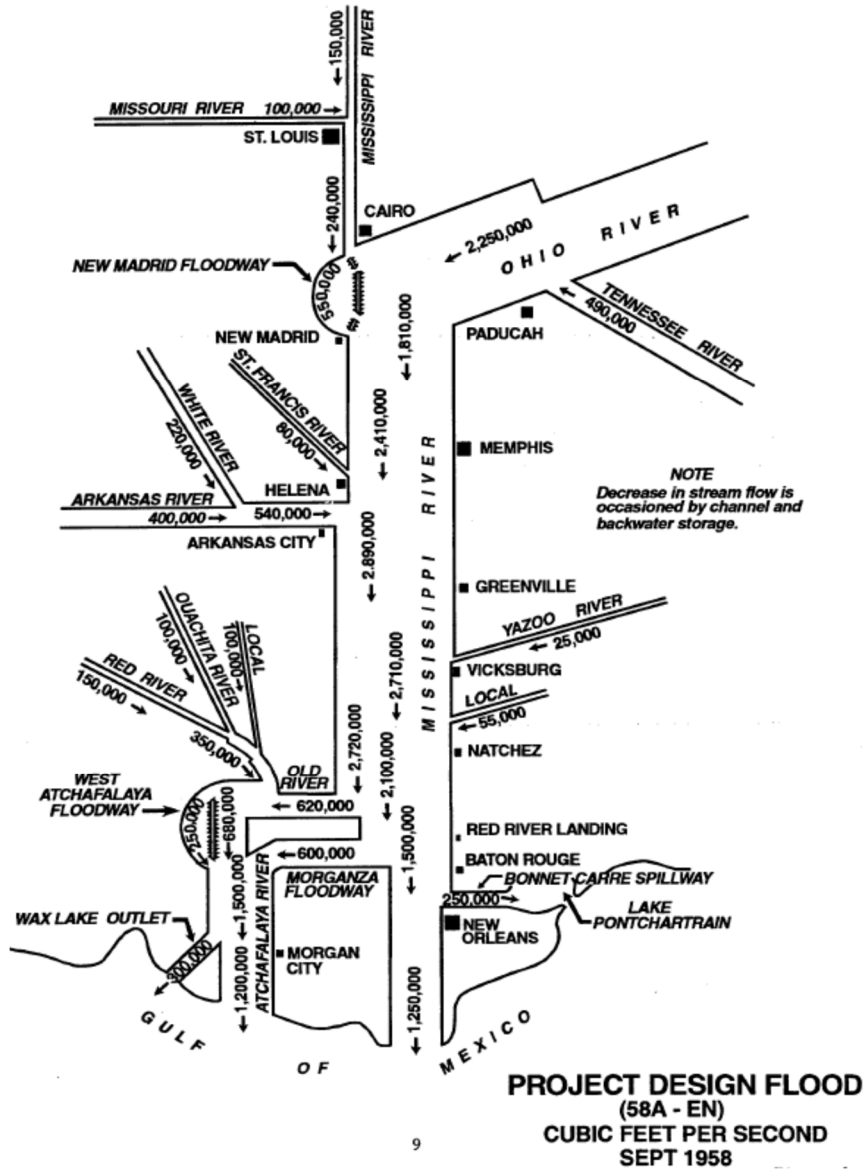


Figure 1. Schematic Description of MR&T Project Flowline, 1956

Since 1928, the United States has expended approximately \$13.9 billion on the MR&T Project.⁹⁵ In 2008, the Corps estimated that the

95. 2011 POST-FLOOD REPORT, *supra* note 2, at II-11.

project requires \$500 million annually for operation and maintenance.⁹⁶ That extraordinary cost has bought improved navigation and flood risk reduction to millions. In 1875, less than 7,000 tons of goods were shipped on the Mississippi River.⁹⁷ In 2017, domestic carriers hauled more than 310 million tons of goods along the river, more than seventy-five percent higher than the next highest amount of waterborne traffic that year (on the Ohio River).⁹⁸ The MR&T Project also reduces flood risks for approximately 6.4 million people along the lower Mississippi River.⁹⁹ The MRC estimates that, as of February 2020, the MR&T Project has “prevented more than \$1.5 trillion in flood damage since 1928, or \$95 for every one dollar invested.”¹⁰⁰

To continue these successes and address an ever-changing environment, the MR&T Project has remained a work in constant flux.

1. Changes Based on New Weather Data

The MRC and the Corps continually assess new weather data to determine whether changes to the project are needed. A 1973 storm, for example, provided additional information, which resulted in a new project design flowline.¹⁰¹ The new flowline demonstrated a need to raise portions of the levee system to guard against flooding.¹⁰² Flooding in 1993 and 1995, too, revealed “significant changes in the flood plain,” which required additional revision of hydraulic and hydrologic parameters.¹⁰³

These evolving standards highlight one area where the MR&T Project remains unfinished.¹⁰⁴ The Corps’ 1976 Final Environmental Impact Statement (1976 FEIS) for the MR&T Project noted that in order to provide minimum protection above the 1973 flowline, levee improvements were needed on approximately 461 miles of levee.¹⁰⁵ As

96. *Id.*

97. BARRY, *supra* note 19, at 89.

98. Corps Institute for Water Resources, Final Waterborne Commerce Statistics for Calendar Year 2017 at 2, available at <https://www.iwr.usace.army.mil/About/Technical-Centers/WCSC-Waterborne-Commerce-Statistics-Center/> [<https://perma.cc/QNG6-J9JM?type=image>]. In 2017, the main commodities were, from highest to lowest: petroleum and petroleum products, food and farming related products, chemicals, crude materials, coal, and manufactured goods. *Id.* at 28.

99. 2011 POST-FLOOD REPORT, *supra* note 2, at II-16.

100. MRC, MISSISSIPPI RIVER & TRIBUTARIES PROJECT, WITHOUT FLOOD CONTROL, NOTHING ELSE MATTERS at 1 (2020).

101. 1998 REPORT, *supra* note 9, at Vol. I at 8.

102. *Id.* at 10.

103. *Id.*

104. *Id.*

105. 1976 FEIS, *supra* note 79, at 5.

weather patterns change in the basin, the Corps and the MRC continue their re-evaluation efforts, which could result in project modifications and different operational decisions.

2. Maintenance and Improvements

Another area of constant change is in regard to levee maintenance and component improvements. Maintenance on project structures occurs regularly and improvements are made when needed. Movement of water and soil beneath a levee (underseepage) is a constant threat and if left unchecked can destabilize MR&T Project levees.¹⁰⁶ When river levels are high and underseepage is occurring, sand boils may form next to the levee, which can lead to failure under certain conditions.¹⁰⁷ To reduce that possibility, the Corps and local levee boards conduct periodic inspections, maintenance operations, and levee improvements.

3. New Project Infrastructure

To address a changing environment, the Corps periodically constructs river training structures, such as revetments and dikes along the MR&T Project.¹⁰⁸ These improvements protect levees from erosion and bank failure and help maintain and improve the carrying capacity of the navigation channel.¹⁰⁹ The 1976 FEIS, for example, reported that the MR&T Project included approximately 643 miles of revetments, which help to stop the river's meandering and reduce bank caving.¹¹⁰ That same document noted that the project required 325 additional miles of revetment in 154 locations.¹¹¹

The MR&T Project also includes 348 dikes, which help direct the river channel into a favorable alignment.¹¹² As of 1973, the Corps planned to construct an additional 574 dikes in 165 locations throughout the river.¹¹³ To reduce bank erosion, the project includes ninety-four miles of foreshore protection, and, as of 1976, the Corps anticipated constructing seventy-four additional miles at fifty-two locations.¹¹⁴ The Corps also

106. *Id.* at 6.

107. *Id.*

108. *Id.*

109. *Id.*

110. *Id.* at 7; see also USGS CIRCULAR 1375, *supra* note 22, at 10-11 (describing engineering principles underlying use of revetments and dikes).

111. 1976 FEIS, *supra* note 79, at 7.

112. *Id.*

113. *Id.*

114. *Id.*

periodically dredges portions of the river to maintain navigable depths in the main channel.¹¹⁵

One of the most important project modifications in recent years is the addition of the Old River Control Structure in 1963 between the Mississippi River main channel and the Atchafalaya River. When Mississippi River levels are high, the waters naturally push toward the Atchafalaya River, which offers a shorter route to the sea.¹¹⁶ A concern has long existed that the Atchafalaya River would become the main channel to the ocean, and cut off flows through New Orleans.¹¹⁷ Such an event would have devastating consequences to the continued viability of New Orleans and cause significant destruction to communities along the Atchafalaya River.¹¹⁸ The Old River Control Structure aims to prevent that occurrence, but its success is not guaranteed. During the 1973 flood, for example, high river velocities scoured a hole 75 feet underwater that nearly destroyed the structure.¹¹⁹ Without further MR&T Project modifications, some engineers believe the Mississippi River will continue its inevitable shift to the Atchafalaya.¹²⁰

4. Changes Due to Environmental Concerns

The MR&T Project must also change to address environmental concerns. The extensive geographic scope of the MR&T Project means that it extends through sensitive areas, including wetlands and forests.¹²¹ For decades, federal and state engineers have explored ways to address a long-term problem—the loss of coastal land resulting from sediment deprivation, subsidence, and sea level rise. The State of Louisiana estimates that, between 1932 and 2010, the state’s coast lost more than 1,800 square miles of land.¹²² Some portion of this loss may result from the existence of the MR&T Project, which reduces the natural deposit of

115. *Id.* at 8.

116. It is a 150-mile journey to the sea from the Old River Structure via the Atchafalaya River, but 300 miles through New Orleans. JAMES F. BARNETT, JR., *BEYOND CONTROL: THE MISSISSIPPI RIVER’S NEW CHANNEL TO THE GULF OF MEXICO* 4 (2017).

117. BARRY, *supra* note 19, at 425.

118. BARNETT, *supra* note 116, at 4. A 1980 study prepared by the Louisiana Water Resources Research Institute estimated failure of the Old River Control Structure would impact tens of thousands of lives and cause billions of dollars in losses. RAPHAEL G. KAZMANN & DAVID B. JOHNSON, *IF THE OLD RIVER CONTROL STRUCTURE FAILS?* (1980).

119. BARRY, *supra* note 19, at 426.

120. *Id.*

121. 1998 REPORT, *supra* note 9, Vol. I, at SEIS 3-1.

122. COASTAL PROTECTION AND RESTORATION AUTHORITY OF LOUISIANA, *LOUISIANA’S COMPREHENSIVE MASTER PLAN FOR A SUSTAINABLE COAST* at ES-2 (2017).

sediment on abutting properties.¹²³ The State of Louisiana's 2017 Coastal Master Plan proposes 120 projects to reverse this trend, including eight sediment diversions along the Mississippi River.¹²⁴

The MR&T Project also has potential impacts on endangered species, cultural resources, water quality, and air quality.¹²⁵ Nearly 200 species of freshwater fish are found in the main stem of the Mississippi River, a figure that represents almost one-third of the freshwater species in North America.¹²⁶ The MR&T Project makes it possible for extensive agricultural activities on nearby lands, but those activities increase the amount of pesticides, herbicides, and fertilizers released into the water.¹²⁷ To address those issues, and other environmental impacts, the Corps and MRC constantly reevaluate MR&T Project operations.

III. A HELPFUL CASE TO ASSESS BUT-FOR CAUSATION AND RELATIVE BENEFITS—*ALFORD V. UNITED STATES*

To explore but-for causation and the doctrine of relative benefits arising in flood-based takings cases, we turn now to the MR&T Project elements related to Eagle Lake and to the facts underlying the *Alford* decision.

A. *The MR&T Project Elements Near Eagle Lake*

Eagle Lake is a 3,800-acre oxbow lake located in Warren County, Mississippi.¹²⁸ The Louisiana-Mississippi state line runs through the lake, a remnant of the fact that the Mississippi River itself serves as the state boundary in that area.¹²⁹ The lake was created when the Mississippi River changed course and cut off a portion of its old channel.¹³⁰ By the mid-1800s, the river's currents had narrowed a natural bend at the lake's

123. *Id.* at ES-6.

124. *Id.*

125. 1998 REPORT, *supra* note 9, Vol. I at SEIS 3-2. USGS studies show that “[f]ishes that inhabit swift-current habitats in the unimpounded lower Mississippi River have not declined as much as in the upper Mississippi River.” USGS CIRCULAR 1375, *supra* note 22, at 1.

126. USGS CIRCULAR 1375, *supra* note 22, at 30.

127. 1998 REPORT, *supra* note 9, Vol. I, at SEIS 3-11.

128. *Hearings Before a Subcommittee of the Committee on Appropriations, Public Works for Water, Pollution Control, and Power Development and Atomic Energy Commission Appropriation Bill*, 91st Cong. 925 (1970) (statement of General Rollins) (hereinafter referred to as 1970 HEARINGS).

129. 1970 HEARINGS, *supra* note 128, at 108. The Louisiana side of the lake, known as Australia Island, is undeveloped. *Id.* at 109.

130. BRAGG, *supra* note 33, at 151.

current location.¹³¹ Locals complained that in 1863, Civil War soldiers were sent to the bend to dig out the remaining sediment.¹³² By March 1866, both ends of the bend silted up and Eagle Lake was created.¹³³ The following map depicts the lake and the relative location of nearby structures:¹³⁴

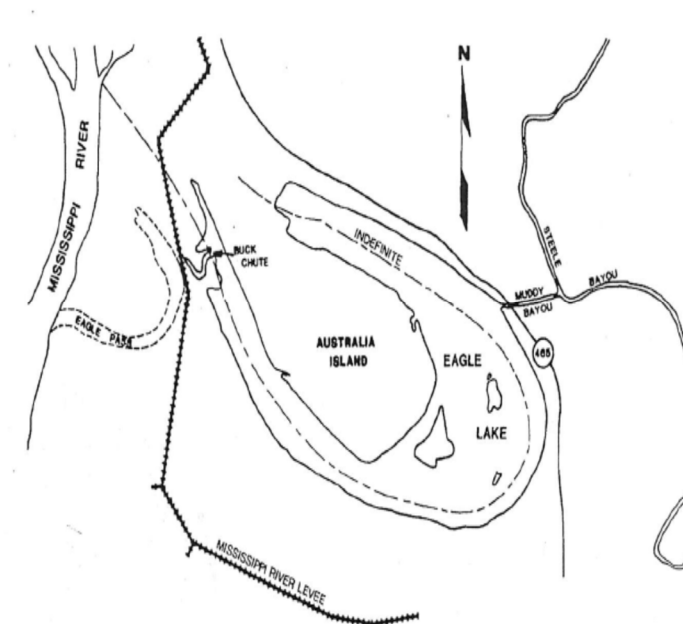


Figure 2. Eagle Lake and Nearby Structures

Like other communities along the Mississippi River, Warren County's pre-1927 efforts at flood control consisted of uncoordinated, and ultimately fruitless, efforts.¹³⁵ Although individuals and local organizations spent millions of dollars building levees, the 1927 flood destroyed much of that work.¹³⁶ The federal government's MR&T Project

131. *Id.* at 150.

132. *Id.* at 150-51.

133. *Id.* at 151.

134. U.S. ARMY CORPS, MUDDY BAYOU CONTROL STRUCTURE WATER CONTROL MANUAL at 2 (1985).

135. U.S. DEPT. OF HOUS. & URBAN DEV., FLOOD INSURANCE STUDY: COUNTY OF WARREN, MISSISSIPPI at 5 (1979), available at <https://babel.hathitrust.org/cgi/pt?id=txa.ark:/81423/m32f3z&view=1up&seq=11> [<https://perma.cc/QX9D-FPHE?type=image>].

136. *Id.*

replaced, or supplemented, the levee adjacent to Eagle Lake.¹³⁷ At the point where the lake meets the levee, a remnant hydrological connection to the Mississippi River remains. That area, today called the Buck Chute, is a low-lying area in front of the toe of the mainline levee.

On the east side of the lake is a small, natural channel known as the Muddy Bayou. At some point prior to 1925, it is believed that locals enlarged that channel, which allowed the backwater flow of the Mississippi and Yazoo Rivers to enter the lake.¹³⁸ The water quality of that backwater flow is impacted by another part of the MR&T Project, known as the Yazoo Backwater Feature. When Congress eliminated the Eudora floodway in 1941, it recognized that levee construction on the Mississippi River could create flooding issues for some interior areas by cutting off drainage outlets.¹³⁹ To address that issue, the 1941 Flood Control Act authorized the Yazoo Backwater Feature, which contemplated construction of new levees, drainage culverts, and pumping stations in west-central Mississippi.¹⁴⁰ The United States completed the construction of the new drainage structures in 1969 and the new levees and channels in 1978.¹⁴¹ Due to opposition from environmental interests, however, the Corps has not constructed the planned pumping stations.¹⁴²

The portions of the Yazoo Backwater Feature that were eventually constructed coincided with greatly increased crop production.¹⁴³ As agricultural activities increased, the backwater began to experience higher concentrations of pesticides and herbicides,¹⁴⁴ and as pollutant levels increased, fish populations in Eagle Lake dwindled.¹⁴⁵ By the late 1960s,

137. *Alford I*, 141 Fed. Cl. 421, 424 (Fed. Cl. 2019).

138. 1970 HEARINGS, *supra* note 128, at 925.

139. MISSISSIPPI LEVEE BOARD, *supra* note 90.

140. *Id.*; MRC PAPER, *supra* note 90, at 8; ARMY CORPS OF ENG'RS, FINAL SUPPLEMENTAL EIS TO THE 1982 YAZOO AREA PUMP PROJECT, at Vol. No. 1 at SEIS-1 (1982) (hereinafter referred to as SUPPLEMENTAL EIS).

141. MISSISSIPPI LEVEE BOARD, *supra* note 90.

142. MRC PAPER, *supra* note 90, at 9; "The pumps are the last remaining unconstructed feature of the Yazoo Backwater Project." MISSISSIPPI LEVEE BOARD, *supra* note 90.

143. Flood Control Act, Pub. L. No. 89-298, 79 Stat. 1073 (1965); 1970 HEARINGS, *supra* note 128, at 906.

144. 1970 HEARINGS, *supra* note 128, at 926.

145. BRAGG, *supra* note 33, at 151. For several years, Eagle Lake had been considered a widely respected fishing lake. *Id.*; 1970 HEARINGS, *supra* note 128, at 925 (describing the lake as formerly "one of the finest fishing lakes in the southeastern United States"). In 1937, for example, the Louisiana Conservation Department and the Mississippi Wildlife Commission permitted commercial fishing in the lake, and several thousand pounds of fish were caught. State Game and Fish Commission to the Legislature of Mississippi Biennial Report at 16 (1935-1937), available at <https://babel.hathitrust.org/cgi/pt?id=uc1.b3016156&view=1up&seq=22> [<https://perma.cc/BR86-AWWA?type=image>].

the Corps, in conjunction with state and local interests, determined that fishery resources might be improved by regulating the water entering the lake from the Muddy Bayou.¹⁴⁶

In 1970, the Corps approved construction of the Muddy Bayou Control Structure as an additional element of the Yazoo Backwater Feature of the MR&T Project.¹⁴⁷ The structure, which was completed in 1977, consists of a concrete dam and gate mechanism.¹⁴⁸ The structure gives the Corps some ability to control the interchange of water between Eagle Lake and the backwater area, which, in turn, helps preserve fish and wildlife resources in the lake.¹⁴⁹

Because the structure allows the Corps some control over the water level of the lake, it can also help reduce the lake levels when the backwater area is in flood stage. So long as the water elevation in the backwater area is below the height of the Muddy Bayou Control Structure, the Corps can keep the structure gate closed and prevent high water levels from entering Eagle Lake.

In 1977, the Corps and various state agencies signed an agreement, which set a schedule for operating the Muddy Bayou Control Structure.¹⁵⁰ The predictable water levels at Eagle Lake allowed owners to build homes and businesses along the rim of the lake, together with piers, boat houses and docks.¹⁵¹ The agreement anticipated the need to raise the lake level on occasion and predicted that the lake levels would exceed ninety feet in elevation approximately once every thirteen years.¹⁵²

B. *The 2011 Mississippi River Flood*

In 2010, the Corps discovered sand boils along the Mississippi River levee in the Buck Chute area, immediately adjacent to the lake.¹⁵³ The

146. SUPPLEMENTAL EIS, *supra* note 140, at Vol. No. 1 at SEIS-10.

147. CORPS MUDDY BAYOU CONTROL STRUCTURE WATER CONTROL MANUAL at B-1, B-5 (1985); SUPPLEMENTAL EIS, *supra* note 140, at Vol. No. 1 at SEIS-10.

148. BRAGG, *supra* note 33, at 151; CORPS, WATER RESOURCES DEVELOPMENT IN MISSISSIPPI at 64 (1981), available at <https://babel.hathitrust.org/cgi/pt?id=mdp.39015028277013&view=1up&seq=1> [<https://perma.cc/ZWT8-CQMT?type=image>]; CORPS MUDDY BAYOU CONTROL STRUCTURE WATER CONTROL MANUAL at B-1, B-5 (1985).

149. BRAGG, *supra* note 33, at 151; CORPS, WATER RESOURCES DEVELOPMENT IN MISSISSIPPI at 64 (1981), available at <https://babel.hathitrust.org/cgi/pt?id=mdp.39015028277013&view=1up&seq=1> [<https://perma.cc/JT3D-TWN4?type=image>]; CORPS MUDDY BAYOU CONTROL STRUCTURE WATER CONTROL MANUAL at B-1, B-5 (1985).

150. *Alford I*, 141 Fed. Cl. 421, 424 (Fed. Cl. 2019).

151. *Alford v. United States (Alford II)*, 961 F.3d 1380, 1382 (Fed. Cir. 2020).

152. U.S. Post-Tr. Br. in *Alford v. United States* at 30, ECF 89 (discussing testimony).

153. *Alford I*, 141 Fed. Cl. at 424.

sand boils were unexpected and large, and the Corps began to design a multi-million-dollar improvement to the levee to remediate them.

Before the Corps could finalize its design, the Mississippi River experienced the 2011 flood, which resulted in river stages and flow rates comparable to the levels reached during the 1927 flood.¹⁵⁴ For the first time in MR&T Project history, the Corps operated three floodways—Birds Point-New Madrid Floodway, the Morganza Floodway, and the Bonnet Carré Spillway—during a single flood event.¹⁵⁵

The high-water levels and the newly-discovered sand boils created a desperate situation at Eagle Lake, because a levee breach at that area would have flooded “a million acres and possibly between four thousand and six thousand homes and businesses.”¹⁵⁶ The Corps considered its options and determined the only way to prevent a levee failure was to raise the lake water level to counteract the pressure on the levee.¹⁵⁷ Experts predicted that the likelihood of breach exceeded ninety-five percent before the Corps flooded Eagle Lake.¹⁵⁸ The Corps estimated that if a levee breach occurred, properties around Eagle Lake would have been inundated up to approximately 107.5 feet. Waters at that level would have destroyed the homes around the lake. The Corps raised the water level to ninety feet, which prevented the near-certain levee failure, but damaged hundreds of piers, boathouses, and docks around the lake.¹⁵⁹

In April 2014, owners of approximately fifty properties surrounding the lake filed a class action complaint in the Court of Federal Claims alleging that the Corps’ intentional flooding of Eagle Lake in 2011 took their properties without just compensation in violation of the Fifth Amendment.¹⁶⁰ Plaintiffs alleged that the “government-induced flooding” constituted a temporary taking of a flowage easement and sought just compensation for the damage to their properties, together with fees and costs associated with the litigation.¹⁶¹

154. 2011 POST-FLOOD REPORT, *supra* note 2, at V-1.

155. *Id.* at ES-1.

156. *Alford I*, 141 Fed. Cl. at 424. The Corps’ estimate is reasonable considering a single levee breach near New Madrid during the 1927 flood inundated a million acres. 2011 POST-FLOOD REPORT, *supra* note 2, at II-8. A sand boil may form when high river levels push water under and through a levee. Sand boils can create levee instability when they remove sediment from under the levee.

157. *Alford I*, 141 Fed. Cl. at 424.

158. *Id.* at 424-25.

159. *Id.* at 424.

160. Complaint, *Alford v. United States*, Case No. 1:14-cv-304 (filed Apr. 16, 2014).

161. *Id.* at ¶¶ 80, 82, 83.

IV. EARLY FIFTH AMENDMENT FLOOD-BASED CASES

Before focusing on the issues raised in *Alford*, we turn first to several early flood-based takings claims. These early cases established that government flooding of private properties can violate the Fifth Amendment, but plaintiffs must experience at least one flood event before pursuing a claim. These early cases also established the groundwork for the but-for causation and relative benefit issues that we discuss below.

A. *Government Flooding of Private Property Can Violate the Fifth Amendment*

Years before Congress adopted the Jadwin Plan, the Supreme Court held that the Fifth Amendment could require the government to pay just compensation if federal flood control projects destroyed nearby private properties. The leading early case for this principle, *Pumpelly v. Green Bay Co.*, involved the State of Wisconsin's construction of a dam on the Fox River.¹⁶² The plaintiff in *Pumpelly* argued that the state's dam caused water to "overflow all his land, and that the overflow remained continuously from the completion of the dam, in the year 1861, to the commencement of the suit in the year 1867, and the nature of the injuries . . . worked an almost complete destruction of the value of the land."¹⁶³

The State of Wisconsin had argued that it had a right to improve navigation of the Fox River and that any damage to private property was a non-compensable "consequential result of" its project rather than some specific intent to appropriate plaintiff's property.¹⁶⁴ The U.S. Supreme Court rejected that position, concluding that "where real estate is actually invaded by superinduced additions of water, earth, sand, or other material, or by having any artificial structure placed on it, so as to effectually destroy or impair its usefulness, it is a taking, within the meaning of the Constitution."¹⁶⁵ The Supreme Court deemed the state's subjective intent irrelevant because the effect of the state's action was to destroy private property by flooding.

162. 80 U.S. 166 (1871).

163. *Pumpelly*, 80 U.S. at 177.

164. *Id.* at 177.

165. *Id.* at 181.

B. *Plaintiff's Property Must Experience at Least One Flood*

1. *Northern Transportation Company v. City of Chicago*

Although *Pumpelly* demonstrated that flood control projects could effect a violation of the Fifth Amendment, early cases suggested that the Supreme Court, at least at the turn of the century, intended a narrow holding. In its 1878 decision *Northern Transportation Co. v. City of Chicago*, for example, the Supreme Court considered a takings claim brought by a landowner who was unable to access its premises while the City of Chicago completed a public works project.¹⁶⁶ Plaintiff sought to recover “for the obstruction to the access of their lot.”¹⁶⁷ The Supreme Court rejected plaintiffs’ argument because there was no “physical invasion of the real estate of the private owner” and only a temporary bar to entry.¹⁶⁸

This holding did not survive long. The Supreme Court had reasoned that “acts done in the proper exercise of government powers, and not directly encroaching upon private property, though their consequences may impair its use, are universally held not to be a taking within the meaning of the constitutional provision.”¹⁶⁹ At the time, the Supreme Court claimed “an immense weight of authority” supported that broad rule, and called *Pumpelly* the “extremest qualification of [that] doctrine.”¹⁷⁰ The Supreme Court rejected this rationale in 1922 in *Pennsylvania Coal Co. v. Mahon*, a case that “gave birth to our regulatory takings jurisprudence.”¹⁷¹ By 1922, then, it was understood that construction or operation of a flood-control project might violate the Fifth Amendment if the project destroyed private property or severely impaired its use.

2. *Hurley v. Kincaid*

One important early case addressing the government’s potential liability in flood-based takings cases involved the anticipated operation of

166. *N. Transp. Co. v. City of Chicago*, 99 U.S. 635, 639 (1878).

167. *Id.* at 643.

168. *Id.* at 642.

169. *Id.*

170. *Id.*

171. *Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg’l Planning Agency*, 535 U.S. 302, 325 n.21 (2002) (citing *Penn. Coal Co. v. Mahon*, 260 U.S. 393 (1922), and recognizing the abrogation of *N. Transp. Co.*). The Supreme Court would revisit the issue of temporary flood-based takings claims in its 2012 decision in *Ark. Game & Fish Comm’n v. United States (AGFC I)*, 568 U.S. 23 (2012), which is discussed *infra*, § V(B)(1)(i)(a).

a component of the MR&T Project. In June 1929, R. Foster Kincaid sued the United States on the ground that the planned Boeuf Floodway would cause flooding on his property and reduce its value.¹⁷² No flooding had yet occurred, but Mr. Kincaid alleged that the federal actions “cast a cloud upon the title to his property, which has and will deprive him of its value without due process and contrary to the Fifth Amendment.”¹⁷³

The case is one of the first to address whether anticipated flooding alone can violate the Fifth Amendment. The district court answered in the affirmative, and concluded that the United States was required to pay immediate compensation (or pause construction of the project) because “[t]hose within the floodway will live under a constant menace, for no one can tell in what years meteorological conditions will require the use of their lands for the purpose intended by the plan; i.e., a floodway.”¹⁷⁴ The Fifth Circuit affirmed.¹⁷⁵

The U.S. Supreme Court reversed, holding that if flooding did occur in the future, Mr. Kincaid could “recover just compensation under the Tucker Act.”¹⁷⁶ “The Fifth Amendment does not entitle him to be paid in advance of the taking,” and any compensation that he may receive “will be the same as that which he might have been awarded had the defendants instituted the condemnation proceedings which [Kincaid] contended the [1928 Act] requires.”¹⁷⁷ This conclusion—that a Fifth Amendment claimant must allege actual flooding, not merely apprehension of flooding—remains good law and is repeated in several later cases.¹⁷⁸

172. CAMILLO & PEARCY, *supra* note 8 at 182; Kincaid v. United States (*Kincaid II*), 35 F.2d 235 (W.D. La. 1929).

173. *Kincaid II*, 35 F.2d at 238, 240.

174. Kincaid v. United States, 37 F.2d 602, 605 (W.D. La. 1929).

175. United States v. Kincaid, 49 F.2d 768 (5th Cir. 1931) (per curiam).

176. *Kincaid I*, 285 U.S. at 269.

177. *Id.*

178. See, e.g., Stueve Bros. Farms, LLC v. United States, 737 F.3d 750, 753 (Fed. Cir. 2013); Poinsett Lumber & Mfg. Co. v. United States, 91 Ct. Cl. 264, 266 (Ct. Cl. 1940); La. Delta Cattle Co. v. United States, 93 Ct. Cl. 662 (Ct. Cl. 1941) (mere adoption of a Jadwin Plan, in the absence of actual flooding, does not state a claim for relief); Bennington Cnty. Sav. Bank v. United States, 91 Ct. Cl. 160 (Ct. Cl. 1940) (mere adoption of a Jadwin Plan, in the absence of actual flooding, does not state a claim for relief); Kirch v. United States, 91 Ct. Cl. 196 (Ct. Cl. 1940) (mere construction of levee, without proof that it caused any flooding, cannot state a claim for a taking).

C. *Early Cases Discussing But-For Causation and Relative Benefits Issues*

1. *United States v. Sponenbarger*

One of the most important early Fifth Amendment flooding cases, *United States v. Sponenbarger*, did not involve any actual flooding.¹⁷⁹ Like Mr. Kincaid had argued ten years earlier, Ms. Sponenbarger alleged that the planned Boeuf Floodway would eventually cause flooding on her property.¹⁸⁰

The lower court rejected her claim because the United States had not then taken any action that reduced the pre-existing flood protection for Ms. Sponenbarger's property.¹⁸¹ The lower court also concluded that the portion of the MR&T Project that had been built actually decreased the risk of flooding on Ms. Sponenbarger's property.¹⁸² The Court of Appeals for the Second Circuit reversed, finding that the 1928 Act subjected Ms. Sponenbarger's property "to a planned and practically certain overflow in case of the major floods contemplated and described. No one can foretell when such may occur, but that is the only remaining uncertainty."¹⁸³

The Supreme Court rejected the Second Circuit's reasoning on four grounds, but only the first involves issues relevant to causation and relative benefits.¹⁸⁴ The Supreme Court first held that the United States cannot be liable for failing to protect against "major floods to which respondent's land has always been subject."¹⁸⁵ Although it did not use the term "causation," this rationale sounds similar to a but-for causation requirement: "[T]o hold the Government responsible for such floods would be to say that the Fifth Amendment requires the Government to pay a landowner for damages which may result from conjectural major floods, even though the same floods and the same damages would occur had the Government undertaken no work of any kind."¹⁸⁶

The Supreme Court emphasized the "history of recurrent floods" on properties located in the proposed Boeuf Floodway, noting that "[i]f major floods may sometime in the future overrun the river's banks despite—not because of—the Government's best efforts, the Government has not taken

179. 308 U.S. 256 (1939).

180. *Id.* at 260.

181. *Id.* at 263.

182. *Id.*

183. *Id.* at 264.

184. *Id.* at 265-70.

185. *Id.* at 265.

186. *Id.*

respondent's property."¹⁸⁷ The Court summarized this first rationale as follows: "The Government has not subjected respondent's land to any additional flooding, above what would occur if the Government had not acted; and the Fifth Amendment does not make the Government an insurer that the evil of floods be stamped out universally before the evil can be attacked at all."¹⁸⁸

The Supreme Court then pivoted to a related, but different, rationale: The fact that Ms. Sponenbarger's land enjoyed "far reaching benefits" as a result of "the Government's entire program, . . . precludes a holding that her property has been taken because of the bare possibility that some future major flood might cause more water to run over her land at a greater velocity than the 1927 flood."¹⁸⁹ This portion of the opinion suggests a different analysis—a comparison of the benefits arising out of the government action with its associated harms: "[I]f governmental activities inflict slight damage upon land in one respect and actually confer great benefits when measured in the whole, to compensate the landowner further would be to grant him a special bounty. Such activities in substance take nothing from the landowner."¹⁹⁰ The Supreme Court noted that, although liability may rest when the government directly subjects land to permanent intermittent floods, it "has never held that the Government takes an owner's land by a flood program that does little injury in comparison with far greater benefits conferred."¹⁹¹ The Supreme Court held that Ms. Sponenbarger's claim failed under this rationale because the "program of the 1928 Act has greatly reduced the flood menace to respondent's land by improving her protection from floods."¹⁹²

2. *Danforth v. United States*

Shortly after issuing the *Sponenbarger* decision, the Supreme Court issued *Danforth v. United States*, a direct condemnation action, which had been initiated in the District Court for the Eastern District of Missouri.¹⁹³ Mr. Danforth had accepted the United States' initial offer to acquire a perpetual flowage easement over his property, which was located in the

187. *Id.* at 266.

188. *Id.*

189. *Id.*

190. *Id.* at 266-67.

191. *Id.* at 267.

192. *Id.*

193. 308 U.S. 271, 276 (1939).

Birds Point-New Madrid Floodway.¹⁹⁴ Litigation followed after Mr. Danforth attempted to revoke his acceptance.¹⁹⁵

Consistent with *Sponenbarger*, the Supreme Court held that the mere enactment of legislation did not effect a physical taking.¹⁹⁶ The Supreme Court then stated that completion of the federal project would constitute a taking, but only if the government action “put upon this land a burden, actually experienced, of caring for floods greater than it bore prior to the construction.”¹⁹⁷ This rationale, similar to the one articulated in *Sponenbarger*, sounds like but-for causation.

The Supreme Court continued its analysis by holding that plaintiffs could not, in any event, blame every flood on the government: “We cannot conclude that the retention of water from unusual floods for a somewhat longer period or its increase in depth or destructiveness by reason of the set-back levee, has the effect of taking” because such impacts would be the “incidental consequence” of the set-back levee construction.¹⁹⁸ Because the landowner’s property had the same level of flood protection after the government construction that existed before construction, no taking occurred.¹⁹⁹

Neither *Sponenbarger* nor *Danforth* use the terms “but-for causation” or “doctrine of relative benefits.” Yet it is clear that these early flood-based claims suggest the existence of both principles.

V. BUT-FOR CAUSATION

Actual, or *sine qua non*, causation is evidence that the damage to plaintiff’s property would not have occurred but for the government’s antecedent act.²⁰⁰ This type of causation, which we refer to as actual causation or but-for causation, “means the former event caused the

194. *Id.* at 280.

195. *Id.* at 280-81.

196. *Id.* at 286.

197. *Id.*

198. *Id.* at 286-87.

199. *Id.* The Supreme Court’s discussion of an “incidental consequence” sounds similar to language used in proximate causation analyses, which often include consideration of incidental damages and intervening acts. Modern courts evaluate issues typically encountered in proximate cause analyses as part of a two-part jurisdictional test set forth in *Ridge Line, Inc. v. United States*, 346 F.3d 1346 (Fed. Cir. 2003).

200. *Boeing Co. v. Cascade Corp.*, 207 F.3d 1177, 1183 (9th Cir. 2000) (“‘But for’ causation is a short way of saying ‘[t]he defendant’s conduct is a cause of the event if the event would not have occurred but for that conduct.’ It is sometimes stated as *sine qua non* causation, i.e., ‘without which not.’”). As *Caquelin v. United States*, 959 F.3d 1360, 1371 (Fed. Cir. 2020) demonstrates, this type of causation is “hardly unique to takings law.”

latter.”²⁰¹ “The concept of actual cause ‘is not a metaphysical one but an ordinary, matter-of-fact inquiry into the existence . . . of a causal relation as laypeople would view it.’”²⁰² As the U.S. Supreme Court stated in *Price Waterhouse v. Hopkins*, “[i]n determining whether a particular factor was a but-for cause of a given event, we begin by assuming that the factor was present at the time of the event, and then ask whether, even if that factor had been absent, the event nevertheless would have transpired in the same way.”²⁰³

Although early decisions do not often use the term, it is now well-settled that any Fifth Amendment claimant bears the burden of proving that the challenged government action actually caused the property damage alleged:

It is a fundamental principle of takings law that a government action is not a taking of property if, even in the absence of the challenged government action, the plaintiff would not have possessed the allegedly taken property interest. That causation principle focuses on comparing the plaintiff’s property interest in the presence of the challenged government action and the property interest the plaintiff would have had in its absence.²⁰⁴

We begin our discussion with the Federal Circuit’s decision in *St. Bernard Parish Government v. United States*, which describes the modern standard for but-for causation. We then discuss the role of actual causation in Fifth Amendment cases involving the MR&T Project generally, and in *Alford v. United States* specifically, before turning to some important unresolved issues in this area.

A. *St. Bernard Parish Government v. United States*

In *St. Bernard Parish Government*, several thousand landowners in the Lower Ninth Ward of New Orleans and nearby St. Bernard Parish alleged that the United States violated the Fifth Amendment when their properties flooded during Hurricane Katrina.²⁰⁵ Plaintiffs’ claims focused on the Corps’ construction of a seventy-six-mile-long navigation channel

201. *Paroline v. United States*, 572 U.S. 434, 444 (2014).

202. *Id.* (quoting 4 FOWLER V. HARPER, FLEMING JAMES, JR. & OSCAR S. GRAY, TORTS § 20.2 at 100 (3d ed. 2007)).

203. *Price Waterhouse v. Hopkins*, 490 U.S. 228, 240 (1989), *superseded on other grounds*, *Desert Palace, Inc. v. Costa*, 539 U.S. 90 (2003); W. KEETON, D. DOBBS, R. KEETON, & D. OWEN, PROSSER & KEETON ON TORTS, § 41 at 266 (5th ed. 1984).

204. *Caquelin*, 959 F.3d at 1371. The plaintiffs in *Caquelin* alleged a taking as a result of application of the Trails Act, 16 U.S.C. § 1247(d), and so did not make a flood-based claim. Yet the case does cite flood-based takings cases to support this axiom. *Id.* at 1371.

205. *St. Bernard Par. Gov’t*, 887 F.3d 1354, 1357 (Fed. Cir. 2018).

(known as the Mississippi River-Gulf Outlet or MRGO) and the Corps' subsequent failure to maintain that channel.²⁰⁶

The Corps had constructed the MRGO through coastal wetlands in St. Bernard Parish.²⁰⁷ The Corps did not armor the channel banks, leaving them vulnerable to erosion from wave wash.²⁰⁸ Although the Corps designed the channel to be no more than 600 feet wide, the MRGO eventually reached an average width of 1,970 feet.²⁰⁹

In 1965, as the Corps was in the process of constructing the MRGO, Congress authorized construction of the Lake Pontchartrain and Vicinity Hurricane Project (LPV).²¹⁰ The LPV included miles of levees running parallel to the MRGO, which were intended to reduce coastal flooding in populated areas.²¹¹

Hurricane Katrina struck the Gulf Coast in 2005 and proved to be a catastrophic storm in St. Bernard Parish and the Lower Ninth Ward.²¹² Approximately seventy percent of the LPV levees failed, thousands of homes were damaged or destroyed, and 1,833 lives were lost.²¹³ The plaintiffs in *St. Bernard Parish Government* demanded that the United States pay billions of dollars in just compensation on the theory that the MRGO caused, or exacerbated, the flooding.

The trial court held the United States liable for a flood-based taking, concluding that the MRGO caused increased storm surge, destroyed protective wetlands, and funneled water into populated areas.²¹⁴ The Federal Circuit reversed on but-for causation grounds: "In order to establish causation, a plaintiff must show that in the ordinary course of events, absent government action, plaintiffs would not have suffered the injury."²¹⁵

The most important aspect of the Circuit's decision is its holding that but-for causation requires consideration of the entire government action, not disaggregated pieces of a larger project: A court must consider all government actions "directed to the same risk that is alleged to have

206. *Id.* at 1357.

207. *St. Bernard Par. Gov't v. United States*, 121 Fed. Cl. 687, 691 (Fed. Cl. 2015).

208. *Id.* at 691.

209. *Id.* at 691-92.

210. *St. Bernard Par. Gov't*, 887 F.3d at 1358.

211. *Id.* at 1357. Unlike the MRGO, the LPV was designed to "control flooding resulting from hurricanes. . . . The levee system was designed to, and did, reduce the risk of flooding in New Orleans." *Id.* at 1358.

212. *Id.* at 1358.

213. *St. Bernard Par. Gov't*, 121 Fed. Cl. at 712.

214. *Id.* at 724-38.

215. *St. Bernard Par. Gov't*, 887 F.3d at 1362.

caused the injury to plaintiffs.”²¹⁶ Thus, “[w]hen the government takes actions directly related to preventing the same type of injury on the same property where the damage occurred, such action must be taken into account even if the two actions were not the result of the same project.”²¹⁷ Two government actions that are not formally related must nevertheless be considered during the but-for causation analysis if they are “related to the same risk, such as flooding from the same river.”²¹⁸

The *St. Bernard Parish Government* plaintiffs’ claims failed because they “made no effort to show that the combination of MRGO and the LPV levees caused more flooding than would have occurred without any government action” and instead focused on the “MRGO in isolation.”²¹⁹ The claims failed because plaintiffs did not show but-for causation, that is, “what would have occurred if the government had not acted.”²²⁰

B. *But-For Causation Issues in Flood-Based Takings Cases*

1. How Should the Court Define the No-Government Action Hypothetical?

The primary difficulty in assessing but-for causation is properly defining the no-government action hypothetical. This is particularly true in flood-based takings claims arising out of operation of the MR&T Project. One may be tempted to focus on the operation of the particular structure closest to the flooding event, but that structure exists as one element of a much larger flood-control project, which includes hundreds of components. In addition, focusing on the government’s operation alone ignores another action—the construction of the project. As we discuss below, the proper no-government action hypothetical must consider all of the project components and the entirety of the government action.

216. *Id.* at 1365.

217. *Id.* at 1366.

218. *Id.* at 1365. (“[T]here is no question that the LPV project was directed to decreasing the very flood risk that the plaintiffs allege was increased by the MRGO project.”).

219. *Id.* at 1358.

220. *Id.* at 1362. The Circuit rejected plaintiff’s position on a separate, independent ground—“the government cannot be liable on a takings theory for inaction.” *Id.* at 1357. Plaintiffs had based their argument, in part, on the Corps’ failure not to armor the banks of the MRGO, which caused both the channel width and the potential impact on flooding to increase. The Circuit held that government inaction could never support a takings claim and that asserting liability in takings for the lack of an affirmative action resembles negligence in tort. *Id.* at 1360 (“[T]he theory that the government failed to maintain or modify a government constructed project may state a tort claim.”). Therefore, in analyzing causation, only the government’s affirmative actions are relevant. *Id.* at 1367.

a. Causation in *Alford v. United States*

In *Alford*, the narrowest no-government action hypothetical would imagine a scenario where the Corps constructed all of the MR&T Project components but did not open the Muddy Bayou Control Structure during the 2011 storm. This hypothetical disassociates the MR&T Project into its component parts and treats the operation and construction of the Muddy Bayou Control Structure as two separate acts. This treatment is highly suspect, as discussed below. But even under this narrow hypothetical, the *Alford* plaintiffs could not show but-for causation because the MR&T Project levees near Eagle Lake almost certainly would have failed but-for the Corps' operation of the Muddy Bayou Control Structure. When the levees failed, flood waters would have decimated plaintiffs' properties, resulting in far more flood damage than they actually experienced.

A less narrow hypothetical would consider the relevant government action as the construction and operation of the Muddy Bayou Control Structure. This scenario disassociates the Muddy Bayou Control Structure from the levees and other MR&T Project structures in the Mississippi River but treats the construction and operation of the Muddy Bayou Control Structure as a single government action. Without the Muddy Bayou Control Structure, nothing would have prevented the backwater from entering Eagle Lake, and the lake waters would have reached at least ninety feet naturally. Because the flooding under an open gate or no gate scenario is the same, there could be no but-for causation under the second hypothetical.

The broadest hypothetical would treat the relevant government action as the construction and operation of the entire MR&T Project and consider the flooding that would occur under a true no-government action scenario. In this hypothetical, both river water and backwater would freely enter the lake and the plaintiffs' properties would have experienced far more flooding than actually occurred during the 2011 storm. The actual scenario and three hypothetical conditions are summarized in Table 1.

Scenario	MR&T Project Levees	Muddy Bayou Control Structure	Condition During 2011 Flood
Actual	In place	In place, and operated	Lake level reached 90 feet
Hypothetical #1 (narrowest)	In place, but likely breach	In place, not operated	Lake level would likely reach 107 feet
Hypothetical #2 (middle ground)	In place	Not constructed	Lake level would reach 90 feet
Hypothetical #3 (broadest)	Not constructed	Not constructed	Lake level would likely reach or exceed 107 feet

Table 1. MR&T Project Hypotheticals: Conditions During 2011 Flood

The trial court believed the causation issue mattered but declined to evaluate any hypothetical scenarios.²²¹ The court noted that “[i]f the levee had broken, would plaintiffs have suffered more serious damage than they actually did? It seems to this Court that the answer is clearly yes!”²²² But the court refused to “conflate the real world with a theoretical one. The levee did not break. A million acres were dry and snug.”²²³

The Federal Circuit found it unnecessary to address but-for causation because it rejected plaintiffs’ claim on relative benefits grounds. But case law, particularly the Federal Circuit’s decision in *St. Bernard Parish Government*, suggests that the third, and broadest, hypothetical is the only correct scenario because that is the only scenario that evaluates the entire government action “related to the same risk, such as flooding from the same river.”²²⁴

Although different cases may raise unique issues, the existing cases suggest at least two fundamental rules. When defining the government

221. *Alford I*, 141 Fed. Cl. 421, 426 (Fed. Cl. 2019).

222. *Id.*

223. *Id.*

224. *St. Bernard Par. Gov’t*, 887 F.3d at 1365. (“[T]here is no question that the LPV project was directed to decreasing the very flood risk that the plaintiffs allege was increased by the MRGO project.”).

action to be removed in the but-for hypothetical scenario, courts must (a) treat project construction and operation as parts of the same government action and (b) consider the project as a whole, rather than disaggregated pieces. We discuss both points below.

i. Construction and Operation Should be Treated as a Single Government Action

The first proposed hypothetical discussed above (the narrowest) would eliminate the Corps' act of opening the Muddy Bayou Control Structure in 2011 but assume that the Corps constructed the entire MR&T Project. This scenario is the functional equivalent to a world where the United States constructed the MR&T Project but operated it differently. The problem with this scenario is that it does not evaluate a no-government-action hypothetical; it evaluates a different-government-action hypothetical. That hypothetical does not assess the necessary but-for condition; it assesses a what-if-the-government-decided-to-act-differently condition.

The first proposed hypothetical condition also disassociates operation of a project from the construction of the project by treating operation and construction as two separate government acts. But that disassociation is false because—barring some highly unusual set of facts—the government would not construct a project and then never operate it. Project construction and operation aim to solve the same problem and thus must be considered as a single action when evaluating the no-government action hypothetical.

For example, in *Arkansas Game and Fish Commission v. United States*, the government built a dam and then released water in a deviation from an established policy.²²⁵ The proper but-for causation analysis required a comparison between the flooding that actually occurred during the deviation period and the flooding that would have occurred during the deviation period if the dam had never been built.²²⁶ As the Federal Circuit explained, “the causation analysis considers causation based on the entirety of the government action, not merely the deviation from the original water-release policy.”²²⁷

225. *AGFC I*, 568 U.S. 23 (2012).

226. *Ark. Game & Fish Comm'n v. United States*, 736 F.3d 1364, 1372 n.2 (Fed. Cir. 2013); *St. Bernard Parish Gov't*, 887 F.3d at 1364-65.

227. *St. Bernard Parish Gov't*, 887 F.3d at 1364-65. Because the actual flooding in *Arkansas Game and Fish Commission* was worse than it would have been in a hypothetical pre-dam scenario, the court concluded the United States caused the flooding. *Ark. Game & Fish*, 736 F.3d at 1372.

ii. One Must Look to the Project as a Whole, Not Individual Pieces of the Project

The second proposed no-government action hypothetical (the middle ground) would eliminate the Muddy Bayou Control Structure but assume that the Corps constructed the rest of the MR&T Project. The problem with this approach is that it segregates the Muddy Bayou Control Structure from the rest of the MR&T Project, despite the fact that the Corps operates the entire MR&T Project elements together for the same purposes. The Muddy Bayou Control Structure exists as a result of the MR&T Project, and it operates as a component of that larger project. To disassociate that single component from the rest of the project makes no more sense than treating construction and operation of a single project as separate government actions.

Developing a no-government-action hypothetical like the third one proposed above (the broadest)—eliminating the construction and operation of the entire MR&T Project—comports with the reality of how a large project like the MR&T Project is constructed and operated. The United States’ actions to reduce the likelihood of flooding from the Mississippi River is reflected in the entire MR&T Project, and it is that whole project that represents the governments’ “actions . . . directly related to preventing the same type of injury on the same property where the damage occurred.”²²⁸ In short, but-for causation requires elimination of the entire government project, not isolated pieces of the whole.

2. Does the Baseline Flooding Risk Reset?

One of the more challenging unresolved issues in this area is how to describe the no-government action hypothetical when the government first reduces the risk of flooding and then later increases the risk of flooding. Suppose, for example, that a property has a natural risk of flooding of once every two years. The government takes some action, which reduces the risk of flooding to once every ten years. The government later takes a second action, which increases the risk of flooding to once every five years. After the government’s risk-increasing action, the property is more protected than it was in its natural state, but it is more likely to flood than it was immediately after the government took its initial risk-decreasing action. When the property floods after the government’s second action, what is the proper baseline to evaluate but-for causation?

228. *St. Bernard Parish Gov’t*, 887 F.3d at 1366.

Although not presented in *Alford*, this scenario will arise in many future flood-based takings claims, particularly ones involving dynamic flood-control projects like the MR&T Project. Whether litigants can prove but-for causation in these cases depends on how one defines the baseline condition. If the baseline condition is the property in its natural state, the government's actions did not increase flooding on the private properties. The property would flood in its natural state, and the government's actions, considered independently or in toto, did not increase that risk of flooding. But if the baseline condition resets after the government took its initial risk-reducing action, the government's later risk-increasing action does increase flooding on nearby properties.

This baseline problem is unresolved. But the most coherent answer is that the baseline condition does not reset after the government's first risk-decreasing action. We begin our discussion by addressing the Court of Claims' decision in *John B. Hardwicke Co. v. United States*. We then discuss the case *Ideker v. United States*, which addresses the issue at some length. Finally, we turn to the problems inherent in an approach that resets the baseline condition.

a. *Hardwicke v. United States*

The plaintiffs in *Hardwicke* owned property in the natural flood plain of the Rio Grande River in Texas below two dams, Falcon Dam and Anzalduas Dam, which lie between Texas and Mexico.²²⁹ In its natural state, without either dam, plaintiffs' property was expected to flood once every two years and was considered unsuitable for farming.²³⁰

To reduce the risk of flooding, the United States and Mexico made plans in 1932 to construct two dams.²³¹ A 1933 Convention formalized "detail-plan preparation and construction of projects" under the International Boundary Commission, later renamed to the International Boundary and Water Commission (IBWC).²³² Construction was initially

229. *John B. Hardwicke Co. v. United States*, 467 F.2d 488, 488-89 (Ct. Cl. 1972).

230. *Id.* at 489.

231. *Id.* Development on the Rio Grande between the United States and Mexico dates back to 1848. *History of the International Boundary and Water Commission*, INT'L BOUNDARY & WATER COMM'N (July 31, 2020), https://www.ibwc.gov/About_Us/history.html [<https://perma.cc/U6EX-P5VE?type=image>].

232. Departments of State, Justice, Commerce, and the Judiciary Appropriation Bill for 1947: Hearings Before the Subcomm. of the S. Comm'n on Appropriations on H.R. 6056, 79th Cong. 401-06 (1947) (statement of Michael Straus, Commissioner of the Bureau of Reclamation, Department of the Interior) (hereinafter referred to as Hearings on H.R. 6056); *see also* 82 Cong. Rec. 8796 (1951) (discussing convention language that "contemplated" two diversion dams); Treaty between the United States of America and Mexico Respecting Utilization of Waters of the

delayed until the two governments signed a treaty in 1944.²³³ Perhaps because the situation was the “first instance that [the Bureau of Reclamation] ha[d] ever been confronted with an international dam,” the project met with several subsequent delays.²³⁴

Congress appropriated funds for Falcon Dam—the lower of the two dams—in 1952.²³⁵ That appropriation included a “construction section,” which noted Congress’ understanding that “the Anzalduas Dam [was] expressly provided for in the 1944 Treaty.”²³⁶ The construction and operation of the Falcon Dam (in 1954) reduced flooding on plaintiffs’ property to approximately once every ten years, and rendered it possible, “for the first time,” to farm the Rio Grande Valley successfully.²³⁷

Funding issues delayed construction of Anzalduas Dam, but Congress eventually appropriated the necessary money because the second dam had “always been in the plans.”²³⁸ Construction of Anzalduas Dam was completed in April 1960 and placed in operation the following year.²³⁹ With both dams in place, the likelihood of flooding on plaintiffs’ property changed to approximately once every eight years, as summarized below:²⁴⁰

Time Frame	Condition of Dams	Flooding Risks
Pre-1952	No dams	Once every two years
1952-1961	Falcon Dam	Once every ten years
Post-1961	Falcon and Anzalduas Dams	Once every eight years

Table 2. Impact of Dams on Flooding Risks of the Rio Grande River

Colorado and Tijuana Rivers and of the Rio Grande, U.S.-Mex., Feb. 3, 1944, 59 Stat. 1219; see also *Hardwicke*, 467 F.2d at 489.

233. *Hardwicke*, 467 F.2d at 489.

234. Hearings on H.R. 6056, *supra* note 232, at 401-65.

235. *Hardwicke*, 467 F.2d at 489.

236. *Id.*

237. *Id.*

238. 82 Cong. Rec 8796 (1951); see also Hearings on H.R. 6056, *supra* note 232, at 401-65.

239. *Diversion Dams and Related Structures*, IBWC (July 31, 2020), https://www.ibwc.gov/Mission_Operations/Diversion_Dams.html [<https://perma.cc/CAS9-CLEE?type=image>]; *Hardwicke*, 467 F.2d at 489.

240. *Hardwicke*, 467 F.2d at 489.

A large storm struck the valley in August 1967, and the IBWC closed the gates of the Anzalduas Dam.²⁴¹ The *Hardwick* plaintiffs' property flooded and they filed suit, claiming that the construction and operation of Anzalduas Dam violated the Fifth Amendment.²⁴²

As presented to the court, the causation issue was whether the construction and operation of the second dam (Anzalduas Dam) caused flooding on plaintiffs' property.²⁴³ The overall government action reduced plaintiffs' flood risk (from once every two years to once every eight years), but if the baseline reset after construction of Falcon Dam, the government action increased plaintiffs' flood risk (from once every ten years to once every eight years).

To answer this question, the court relied heavily on *Miller v. United States*, a direct condemnation case that addressed the appropriate measure of compensation.²⁴⁴ That case involved the United States' condemnation of a strip of land across Miller's property to relocate a railroad track.²⁴⁵ Although Congress had authorized the railroad project in August 1937, it waited until December 1938 to file its eminent domain complaint in district court.²⁴⁶ As word of the government's project spread, nearby development occurred, which had the effect of increasing the value of Miller's property.²⁴⁷ The question arose whether the government had to pay the higher value that resulted from the market's reaction to the announcement of the government project.²⁴⁸ The Supreme Court concluded that the answer depended on the original scope of the planned condemnation. If the government planned to condemn several properties, owners of the later-condemned properties could not obtain the value increase caused by the announcement of the government's project.²⁴⁹ But if the government changed its mind and decided, after the fact, to condemn additional properties, the government must "pay their market value as enhanced by this factor of proximity."²⁵⁰

241. *Id.* at 490; *see also* IBWC, FINAL AGENCY FINANCIAL REPORT: FY 2018 (2019), https://www.ibwc.gov/Files/FY2018_AFR_0500819.pdf [<https://perma.cc/QA4Q-MCKN?type=image>] (discussing "devastating" Hurricane Buelah, which struck the region in 1967).

242. *Hardwicke*, 467 F.2d at 490.

243. *Id.* at 491.

244. *United States v. Miller*, 317 U.S. 369 (1943).

245. *Id.* at 370.

246. *Id.* at 370-71.

247. *Id.* at 371.

248. *Id.* at 375.

249. *Id.* at 376-77.

250. *Id.* Several courts have cited the *Miller* decision for this "scope of the project" rule. *See, e.g., Love Terminal Partners, L.P. v. United States*, 889 F.3d 1331, 1346-47 (Fed. Cir. 2018);

The *Hardwicke* court concluded that the valuation principles espoused in *Miller* also applied “when, in a flooding case, the question is whether property is taken at all.”²⁵¹ The court examined the question from the perspective of prospective purchasers, who could have known, before 1950, that the two dams would eventually be constructed.²⁵² Thus, there was never a “time when plaintiffs or their predecessors in title could have reasonably supposed that” the subject property would benefit from the existence of Falcon Dam and not also experience the increased risk of flooding resulting from the existence of the Anzalduas Dam.²⁵³ In other words, although the government constructed the two dams at different times, plaintiffs should have contemplated the construction of both dams from the outset.

Because the two dams were planned together, the baseline condition did not reset, and the *Hardwicke* plaintiffs could not prove but-for causation.²⁵⁴ Had the situation been different—that is, if the Anzalduas Dam was not part of the original plan—the *Hardwicke* court suggested in dicta that a different situation might result.²⁵⁵

b. *Ideker v. United States*

The *Hardwicke* dicta remained abeyant for several years.²⁵⁶ The Federal Circuit has not addressed the issue, but it acknowledged the dicta in *St. Bernard Parish Government*: “*Hardwicke* suggested that if the risk-reducing government action preceded the risk-increasing action, the risk-reducing action would only be considered in assessing causation if the risk-increasing action was ‘contemplated’ at the time of the risk-reducing

Navajo Tribe of Indians v. United States, 9 Cl. Ct. 227, 255 n.25 (Cl. Ct. 1985); United States v. Cors, 337 U.S. 325, 334 (1949).

251. John B. Hardwicke Co. v. United States, 467 F.2d 488, 490 (Ct. Cl. 1972).

252. *Id.*

253. *Id.* at 491.

254. *Id.*

255. *Id.*

256. A few earlier cases favorably cited *Hardwicke*, but *Ideker* was the first to apply the dicta discussed here. *Love Terminal Partners*, for example, cited *Hardwicke* favorably for the proposition that the “*Miller* rule applies to the question of whether property has been taken in the first place,” noting that the *Miller* court rejected the idea that a taking claimant could “garner the benefit conferred by [one part of the Rio Grande water-control program], without deduction for the probable detriment when [another part of the Rio Grande water-control program] comes into being too.” *Love Terminal Partners, L.P. v. United States*, 889 F.3d 1331, 1347 (Fed. Cir. 2018) (quoting *Hardwicke*, 467 F.2d at 490-91). The *Love Terminal Partners* court applied the *Miller* rule and rejected plaintiffs’ position “that they deserve compensation because [a statutory action] would have made their property more valuable—if only it had not restricted use of the property [for particular purposes].” *Id.*

action.”²⁵⁷ The Circuit did not resolve the issue: “Whether the *John Hardwicke* approach is correct or whether the *Miller* doctrine is even relevant to determining causation is not raised in this case.”²⁵⁸

The *Hardwicke* dicta gained a new life in 2018 in *Ideker v. United States*, a flood-based takings case brought by owners of land on or near the Missouri River.²⁵⁹ The Missouri River, like the Mississippi River, experienced “common and widespread” historic flooding.²⁶⁰ Spring flooding on the river usually lasted one to two weeks, but summer floods would last longer and cover a much larger part of the floodplain.²⁶¹

The Federal Government initiated an effort to control flow on the Missouri River in the early 1900s in order to support “human settlement and as a resource to support economic development.”²⁶² The Corps implemented that effort by constructing six dams,²⁶³ a series of levees, and several river structures (collectively called the Missouri River Bank Stabilization and Navigation Project (BSNP)).²⁶⁴

In the decades after construction, the BSNP was found to have caused numerous negative impacts to fish and wildlife habitat, including “loss of shallow water habitat,”²⁶⁵ elimination of the river ecosystem previously present in chutes and side channels,²⁶⁶ and an increase in sedimentation.²⁶⁷ In 1990, the Corps began negotiations with the United States Fish and Wildlife Service (FWS) pursuant to Section 7 of the Endangered Species Act (ESA), which requires all federal agencies that “permit, fund, or carry out activities involving fish and wildlife [to] consult with the FWS to ensure that their actions will not jeopardize the continued existence of any listed species.”²⁶⁸ When FWS and the Corps were unable to reach an agreement, numerous lawsuits were filed to address management of the

257. *St. Bernard Par. Gov't v. United States*, 887 F.3d 1354, 1367 n.14 (Fed. Cir. 2018), *cert. denied*, 139 S. Ct. 796 (2019).

258. *Id.* at 1367 n.14.

259. *Ideker Farms, Inc. v. United States (Ideker I)*, 136 Fed. Cl. 654 (Fed. Cl. 2018).

260. *Id.* at 660.

261. *Id.* at 660-61.

262. *Id.* at 661.

263. Fort Peck Dam in northeastern Montana; Garrison dam in central North Dakota; Oahe, Big Bend, and Fort Randall dams in South Dakota; and Gavins Point dam along the Nebraska and South Dakota border. *Id.*

264. *Id.* at 661.

265. *Id.* at 663.

266. *Id.* at 663-64.

267. *Id.* at 664.

268. *Id.* at 666 (citing the Endangered Species Act, 16 U.S.C. § 1531 *et seq.*).

river.²⁶⁹ In 2004, the district court ordered the Corps to revise its operations to address the FWS' environmental concerns.²⁷⁰

The 2004 changes included several physical modifications to BSNP structures to "restore the River to a more natural state, i.e., before it was so highly engineered."²⁷¹ When some farms flooded in several years after 2004, several landowners filed a flood-based takings case against the United States.²⁷² Plaintiffs conceded that they could not prove but-for causation under the *St. Bernard Parish Government* standard, but argued that the baseline condition reset after the Corps took its risk-reducing actions under the *Hardwicke* dicta because, "until 2004 no one contemplated that the Corps' would change its flood protection priority approach."²⁷³

The *Ideker* court agreed with plaintiffs' position.²⁷⁴ The court held that the "flood decreasing actions and the flood increasing actions are related for purposes of *St. Bernard Parish*,"²⁷⁵ but concluded that the Corps' post-2004 changes made to the BSNP "increased flooding to a degree that would not have been contemplated when the River and Mainstem System structures were planned."²⁷⁶ The court therefore held that, under the *Hardwick* dicta, the Corps was the but-for cause of the flooding.

c. Problems with the *Hardwicke* Dicta

i. The Dicta Equates Landowners' Subjective Expectations with Causation Principles

The most compelling argument for adoption of the *Hardwicke* dicta is that landowners who purchased their properties after the government's risk-reducing action (and before the government's risk-increasing action) had an expectation that the government would maintain the same flood-risk levels in the future. The *Alford* plaintiffs made a similar argument

269. *Id.* at 667 (citing, among other cases, *In re Operation of Mo. River Sys. Litig.*, 363 F. Supp. 2d 1145 (D. Minn. 2004)).

270. *Ideker I*, 136 Fed. Cl. at 667.

271. *Id.* at 668-70.

272. *Id.* at 670.

273. *Ideker Farms, Inc. v. United States (Ideker II)*, 142 Fed. Cl. 222, 228; 230 (Fed. Cl. 2019).

274. *Id.* at 231-33. The trial court rejected plaintiffs' position for flooding in 2011, concluding that even if the *Hardwicke* dicta applies, plaintiffs failed to show but-for causation with respect to flooding that year.

275. *Ideker II*, 142 Fed. Cl. at 232.

276. *Id.*

when they complained that they had spent money to construct docks and piers with the expectation that the frequency of past lake levels would predict future levels.

The problem with this argument is that it is based solely on plaintiffs' expectations about future flood protection, and no basis exists to treat those expectations as a proxy for but-for causation. But-for causation instead compares the actual flooding with the flooding that would have occurred if the government had not acted. It does not compare the flooding that might have occurred under a landowner's subjective view of what flooding she desires. A landowner's subjective expectations are simply irrelevant to the but-for causation inquiry.

In *Accardi v. United States*, for example, plaintiffs argued that their property experienced more flooding in 1974 than what would have occurred prior to the construction or operation of the Clair Engle Lake Dam, which had been built a decade earlier.²⁷⁷ The *Accardi* plaintiffs argued that they had developed a "justifiable reliance" that the United States would maintain a lower release rate from the dam, which would not have flooded their properties.²⁷⁸ Plaintiffs argued the court should apply an exception to *Sponenbarger* "where a landowner has come to rely upon a controlled flow which is subsequently altered."²⁷⁹ The court rejected that argument because "Plaintiffs' legal position is plainly contrary to the rationale of *Sponenbarger* and repeated decisions in this court."²⁸⁰ Because the United States did not make flooding worse than it would have been if the government had not acted at all, no liability existed.²⁸¹

The *Hardwicke* court's reliance on *Miller*, a case addressing valuation, not causation, to support its reasoning demonstrates the jurisprudential weakness in the *Hardwicke* dicta. The *Miller* court assessed how to compute fair market value, a principle defined in terms of a hypothetical agreement between a "willing and reasonably knowledgeable seller to a willing and reasonably knowledgeable buyer."²⁸² It is reasonable to investigate the expectations of hypothetical buyers and sellers in the context of a fair market value assessment. But no basis exists

277. *Accardi v. United States*, 599 F.2d 423, 429-30 (Ct. Cl. 1979) (per curiam).

278. *Id.* at 430.

279. *Id.*

280. *Id.*

281. *Id.* at 429-30 ("[P]laintiffs have wholly failed to show that [the government]'s construction or operation of [an irrigation project] subjected their lands to any additional flooding above what would have [otherwise] occurred.").

282. UNIFORM APPRAISAL STANDARDS FOR FEDERAL LAND ACQUISITIONS at 13 (Appraisal Inst. ed. 2000).

to import consideration of those expectations in the context of a but-for causation analysis.

To be certain, a landowner's reasonable investment-backed expectations may matter in a flood-based takings case, but only if the landowner proves but-for causation and the case proceeds to a liability analysis. When a court evaluates liability in a temporary flood-based takings case, one of the issues it must evaluate is whether the "governmental action has interfered with distinct investment-backed expectations."²⁸³ A court can and should consider reasonable expectations to assess the merits of the liability question, but not with respect to the but-for causation analysis.

ii. The Dicta Endorses a Property Interest that Does Not Exist

Another justification for adoption of the *Hardwicke* dicta is that landowners have a property right to demand a particular level of flood protection: If the government takes a risk-reducing action, the argument goes, the landowners have a right to demand that level of flood protection in the future (especially if they bought their property before the risk-increasing action). If correct, the government's original risk-reducing action resets the baseline level of protection by giving landowners a new compensable property right to demand that level of protection forever more.

But this argument is even less compelling than the first because a landowner has no compensable property right to require the government to provide a particular level of flood protection: The "Fifth Amendment does not make the Government an insurer that the evils of floods be stamped out universally before the evil can be attacked at all."²⁸⁴

The government's decision to provide flood protection may be of value to landowners (often it is of significant value), but it does not create a compensable property right in private individuals. The government often grants gratuities to individuals, but those grants, though valuable, do not constitute compensable property rights that might support a takings claim.²⁸⁵

283. *Avenal v. United States*, 100 F.3d 933, 937 (Fed. Cir. 1996).

284. *United States v. Sponenbarger*, 308 U.S. 256, 266 (1939).

285. *See, e.g., Alves v. United States*, 133 F.3d 1454, 1457 (Fed. Cir. 1998) (grazing permits are not compensable property rights); *Conti v. United States*, 291 F.3d 1334, 1338 (Fed. Cir. 2002) (revocable license is not a compensable property right).

iii. The Dicta Would Discourage Future Federal Flood Control Activities

Adoption of a but-for causation analysis that resets the flooding baseline whenever the government takes some risk-reducing action would have serious negative consequences because that approach would increase the risk of takings liability and discourage future flood control activities. As highlighted above, the MR&T Project is unfinished. Studies demonstrate a need to construct or improve hundreds of miles of levees, dikes, and revetments and the Corps has not yet completed new structures related to the Yazoo Backwater Feature. A conclusion that the baseline resets when the Corps undertakes any risk-reducing action would allow millions of landowners to argue that the Corps owes them a high level of flood protection in perpetuity. Such a conclusion would risk billions of federal tax dollars in future lawsuits and curtail the level of flood protection the United States can afford to provide.

iv. The Dicta Assumes Flood-Control Projects Are Static

The *Hardwicke* dicta rests primarily on a belief that it is unfair when the government reduces the risk of flooding and then subsequently increases that risk, because abutting landowners may have relied on their original flooding expectations. That is, because the government provided a certain level of flood protection for some period of time, the abutting landowners may expect that flood risk to remain constant in the future.

But the expectation that flood risks in place at one time will continue indefinitely may be unreasonable, particularly for complicated, ever-changing projects like the MR&T Project. As we discuss above, certain elements of the original Jadwin Plan, including the Boeuf and Eudora Floodways, were eliminated in the early years of construction. The Corps has also modified the MR&T Project on numerous occasions since construction started. As environmental conditions continue to change, the Corps will almost certainly continue to modify MR&T Project operations, add new structural components, and make improvements. Resetting the baseline condition by adopting the *Hardwicke* dicta ignores these project realities.

v. A Better Way to Address Equity Concerns

At the core of the *Hardwicke* dicta is a belief that, because the government provided some flood protection, the law should require the government to maintain some duty of protection in the future. But to state that principle is to expose its flaw, for it suggests nothing more than a tort

argument: Having provided some flood protection, the government has some duty of care to provide that same level of flood protection forever; the subsequent risk-increasing action allegedly violates that duty; and plaintiffs' property flooded as a result of that breach of care.

But a Fifth Amendment case is not a tort case. In contrast to tort cases, courts "do not assign blame" in takings cases.²⁸⁶ Takings cases do not involve assessments of whether government actions fit within some standard of care, and proof of negligence cannot prove takings liability. The but-for causation analysis in flood-based takings cases does not call for a balancing of equities; it calls for a comparison of flooding levels in a no-government action hypothetical with actual flooding levels. Although the equity argument does not support adoption of the *Hardwicke* dicta, it does suggest a solution. Under current law, the United States is immune from tort claims alleging "damage from or by floods or flood water at any place."²⁸⁷ As discussed above, there are good reasons for this rule. But if Congress is convinced equities demand otherwise, it should reassess whether it should modify that rule.

3. How Should Parties Address But-For Causation?

Evaluating flooding that would have occurred in a no-government-action hypothetical world is difficult, particularly in flood-based takings cases involving large projects like the MR&T Project. The government built portions of the MR&T Project decades ago, often on the skeletons of smaller pre-existing construction efforts. Defining the hypothetical no-government action requires parties to understand, with some precision, what the river looked like decades earlier. That assessment may require expert analyses, including use of decades-old documents, aerial photography, and historians.

After defining the hypothetical condition, parties must then evaluate the hypothetical flooding on particular parcels in the absence of the government action. This is an especially difficult task in cases where the mechanism of flooding is not obvious.²⁸⁸ Assessing hypothetical flooding often demands preparation of multiple expert analyses and use of expensive computer modeling.

286. *Nicholson v. United States*, 77 Fed. Cl. 605, 615 (Fed. Cl. 2007).

287. 33 U.S.C. § 702c (1928).

288. In *United States v. Kansas City Life Insurance Co.*, 339 U.S. 799, 810 (1950), for example, the Supreme Court concluded that it was irrelevant whether the taking occurred "due to its invasion by water from above or from below," indicating that allowing flood waters onto the property was no different from cutting off drainage capacity.

Because causation is distinct from correlation, proof of a temporal relationship between some government action and damage alone can never establish actual causation. That axiom is important because simply showing that a property flooded after some government action says nothing about why the damage occurred. Thus, several courts have correctly noted in Fifth Amendment cases that a plaintiff cannot prove actual causation using *post hoc ergo propter hoc* reasoning (literally, “after this, therefore because of this”).²⁸⁹

The Supreme Court has long-recognized the type of difficult analyses raised in flood-based takings cases, but it has always required precise proof of but-for causation. In *United States v. Archer*, for example, the Supreme Court remanded for additional fact finding:

[T]here are effects caused by the United States and effects caused by the state which are not distinguished. We think there should be more precision. Great problems confronted the national and state governments; great and uncertain natural forces were to be subdued or controlled, great disasters were to be averted, great benefits acquired. There might be liability to the individual; if so, the liability should be clear, the cause of it direct and certain.²⁹⁰

Lay testimony is often insufficient for such causative proof, and the Court of Claims has often noted that “[c]ausation of flooding is a complex issue which must be addressed by experts.”²⁹¹

The difficulty in establishing but-for causation in flood-based takings claims can best be met, then, by understanding the history of flooding and using expert testimony and computer modeling to compare the flooding that actually occurred to the flooding that would have occurred on plaintiff’s property had the government made no effort to control flooding.

289. *Loesch v. United States*, 645 F.2d 905, 914 (Ct. Cl. 1981) (“Erosion on rivers and streams is an extremely complex matter from the point of view of its genesis, in effects and its prevention” and plaintiffs’ *post hoc, ergo propter hoc* approach to causation was “unpersuasive.”); *Alost v. United States*, 73 Fed. Cl. 480, 495 n.14 (Fed. Cl. 2006), *aff’d*, 25 F. App’x 823 (Fed. Cir. 2007) (“The court agrees with the government that this type of *post hoc ergo propter hoc* reasoning is not sufficient to establish causation.”); *see also* *Owen v. United States*, 20 Cl. Ct. 574, 584 (Cl. Ct. 1990) (same); *Rhoads v. United States*, 6 Cl. Ct. 278, 280 (Cl. Ct. 1984) (finding landowner’s testimony that there was no erosion prior to construction of dam unpersuasive).

290. 241 U.S. 119, 129 (1916).

291. *Hendricks v. United States*, 14 Cl. Ct. 143, 149 (Cl. Ct. 1987) (citing *Herriman v. United States*, 8 Cl. Ct. 411, 420 (Cl. Ct. 1985)); *Loesch*, 645 F.2d at 914. Consequently, lay testimony in flood-based takings cases is “entitled to little weight in determining causation.” *Alost*, 73 Fed. Cl. at 495; *Leeth v. United States*, 22 Cl. Ct. 467, 486-87 (Cl. Ct. 1991) (“While a lay person merely through observation can identify that a backwater effect is occurring at a particular point, the source of that effect cannot be identified by that lay person because it would ‘look the same’ regardless of its cause.”); *Herriman*, 8 Cl. Ct. at 420.

VI. DOCTRINE OF RELATIVE BENEFITS

The most important aspect of the *Alford* decision is its discussion, and application, of the doctrine of relative benefits. We discuss the background of the doctrine, its application in *Alford*, and the several unresolved issues in the context of flood-based takings cases.

A. *Development of the Doctrine of Relative Benefits*

As noted above, the Supreme Court outlined a test to compare benefits and harms in *Sponenbarger*, concluding that the Fifth Amendment does not require payment of compensation if government activities “inflict slight damage upon land in one respect and actually confer great benefits when measured in the whole.”²⁹² The *Sponenbarger* decision is not an ideal vehicle to describe the contours of the doctrine because that case did not involve any actual flooding (and because the Supreme Court rejected *Sponenbarger*’s claim on multiple grounds). Although the decision contemplates a comparison of benefits and burdens, it offers little details on how that comparison should proceed. In addition, because the Supreme Court does not clearly distinguish between but-for causation and the doctrine of relative benefits, the decision leaves uncertain the relationship between the two principles.²⁹³

1. Relationship Between Relative Benefits and Valuation

After *Sponenbarger*, some courts have suggested that the doctrine of relative benefits might be a valuation principle, intended to offset just

292. *United States v. Sponenbarger*, 308 U.S. 256, 266-67 (1939). Although later courts often refer to the doctrine of relative benefits as the “*Sponenbarger* test,” the concept appears in earlier cases. In *Archer v. United States*, 53 Ct. Cl. 405, 416 (Ct. Cl. 1918), for example, the Court of Claims concluded that the government’s construction of a dike was the but-for cause of the injury. But the court rejected the majority of his takings claim because the dike prevented a “cut-off” in the river, which would have caused additional flooding to plaintiffs’ land. *Id.* at 415.

293. The doctrine of relative benefits is somewhat similar to the “doctrine of average reciprocity of advantage” that may preclude liability in some regulatory takings claims. *See Penn. Coal Co. v. Mahon*, 260 U.S. 393, 393 (1922); *St. Louis & S. F. Ry. v. Mathews*, 165 U.S. 1 (1897); *McKeen v. City of Minneapolis*, 212 N.W. 202 (Minn. 1927); *Pierce Cnty. v. Thompson*, 144 P. 704 (Wash. 1914). In *Mahon*, for example, Justice Holmes wrote that when application of a regulation diminishes the value of property (by limiting potential uses, for example), but simultaneously increases the same property’s value (by, for example, restricting uses on other nearby properties that might have otherwise caused a value reduction), no compensation is due. *Mahon*, 260 U.S. at 415; *see also* Lynda J. Oswald, *The Role of the “Harm/Benefit” and “Average Reciprocity of Advantage” Rules in a Comprehensive Takings Analysis*, 50 VAND. L. REV. 1449, 1489 (1997) (discussing the average reciprocity of advantage rule losing potency because it no longer distinguishing valid police power actions and rubberstamping legislative acts).

compensation, rather than a liability test. In *Johnson v. United States*, for example, plaintiffs owned land on the International Boundary Line dividing the United States and Canada.²⁹⁴ Plaintiffs filed a takings claim after the United States constructed a chain link fence that physically obstructed access to, and thereby impaired the commercial value of, plaintiffs' property.²⁹⁵ The court disagreed and concluded that the value of plaintiffs' property was actually enhanced by the United States' facilities and its requisite, appurtenant fences.²⁹⁶ The court cited *Sponenbarger's* relative benefits test, but treated the issue as a valuation issue: "[P]laintiffs cannot base a taking claim on the theory that they may garner the benefits conferred by the [construction of the federal road] without deduction for whatever detriment that may arise out of the presence of the [appurtenant fences]."²⁹⁷

Hendler v. United States also suggests that the *Sponenbarger* principle is relevant in evaluating the quantum of just compensation due.²⁹⁸ The *Hendler* court treated the doctrine as one grounded in the "equitable principle that the Government's obligation is, to the extent possible following the Government's intrusion, to restore the landowner to the position he was in absent any government action."²⁹⁹ The Circuit reasoned this balancing of harms and benefits made equitable sense in flood-based takings claims:

In a case in which the problem was not created by the Government, and the Government's intrusion was necessary to correct the problem for the benefit of the general public, it can be argued that it is not inequitable to balance against the harm caused by the landowner by the Government's remedial action any special benefits that happen as a result to accrue to the land. Thus, in the flooding cases . . . , in which dams are built to control natural flooding, the result, even though it denies recovery for property actually taken, is seen as not being ultimately inequitable.³⁰⁰

294. *Johnson v. United States*, 202 Ct. Cl. 405, 408 (Ct. Cl. 1973).

295. *Id.* at 408-09, 416.

296. *Id.* at 422.

297. *Id.* The court in *Miller v. United States*, 550 F. Supp. 669, 674 n.3 (Cl. Ct. 1982) took a similar approach, referring to the *Sponenbarger* principle as an "offset" and noting that the United States "would be entitled to offset benefits to the land resulting from its project against any detriment to the property to see if a taking has occurred."

298. *Hendler v. United States*, 175 F.3d 1374, 1382 (Fed. Cir. 1999).

299. *Id.*

300. *Id.* at 1382-83.

Although these courts treated the relative benefits issues as a valuation principle, other courts, as we discuss below, have struggled to differentiate the issue from but-for causation.

2. Relationship Between Relative Benefits and But-For Causation

As case law developed after *Sponenbarger*, some courts treated the relative benefits doctrine separate from a but-for causation analysis. For example, in *Ark-Mo Farms, Inc. v. United States*, plaintiff sued for flooding from 1968 to 1973, which it alleged resulted from operation of Dam No. 2 of the McClellan-Kerr Arkansas River Navigation System Project.³⁰¹ The court rejected plaintiff's takings claim because the federal action increased the duration of raised water levels at lower elevations, but decreased the peaks, duration, and frequency of flooding overall.³⁰² Citing *Sponenbarger*, the court stated that "[i]t is a case of at most 'little injury in comparison with far greater benefits conferred.'"³⁰³

Similarly, in *Laughlin v. United States*, the court held that "[e]ven if a causal relationship exists between the Government's action and plaintiff's damage . . . no liability attaches if the Government's conduct bestowed more benefit than detriment on plaintiff's property."³⁰⁴ The *Laughlin* court analyzed the issue by considering the flooding on plaintiff's property since the early 1900s through present day both in reality and hypothetically, if the government had never taken any actions in the area.³⁰⁵ Based on its consideration of the parties' evidence, the court concluded that "absent the system of dams and levees, plaintiff's land would have been flooded during the 1983-1987 interval."³⁰⁶ Even if plaintiff had proven causation, his claim failed because plaintiff could not "overcome the relative benefits balancing test."³⁰⁷

Other courts seemed to blur the line between but-for causation and the doctrine of relative benefits. In *Herriman v. United States*, for example, plaintiffs' property was located near two federal dams—the Eufaula Dam

301. *Ark-Mo Farms, Inc. v. United States*, 530 F.2d 1384, 1386 (Ct. Cl. 1976).

302. *Id.*

303. *Id.* (quoting *Sponenbarger*, 308 U.S. at 267); see also *Bartz v. United States*, 224 Ct. Cl. 583, 633 F.2d 571, 577-78 (Ct. Cl. 1980) (referencing *Sponenbarger* to deny benefits in a takings case because, although a government dam repeatedly flooded plaintiffs' properties, their land was greatly benefited by the government project, such that the benefits far exceeded the value of the land taken).

304. *Laughlin v. United States*, 22 Cl. Ct. 85, 111 (Cl. Ct. 1990).

305. *Id.* at 112.

306. *Id.* at 113.

307. *Id.* at 114.

to the west, and the Robert S. Kerr Lock and Dam to the east.³⁰⁸ Herriman argued that the Corps' dam operations caused "longer periods of flooding than [had existed] pre-Eufaula" Dam.³⁰⁹ To evaluate but-for causation, the court looked at pre- and post-Eufaula Dam data and held that "[a]bsent Eufaula [Dam], more of plaintiffs' property would have been flooded by [high discharges] for a somewhat longer period of time than without the dam."³¹⁰

The *Herriman* court also considered the doctrine of relative benefits, but mixed it with its causation analysis.³¹¹ By looking at expert computer modeling and past rainfall events, the court considered pre- and post-dam crop yields.³¹² The *Herriman* court reasoned that it would consider the doctrine of relative benefits only if plaintiffs proved "that the construction and operation of Eufaula and Kerr were the direct and proximate cause of the prolonged submersion of their property."³¹³ But the court's conclusion blurred the line between relative benefits and but-for causation: "Because plaintiffs have failed to carry their burden on causation, the weight of evidence shows that the operation of Eufaula and Kerr conferred a net benefit in that there was no detrimental effect caused by the operation of Eufaula-Kerr."³¹⁴

B. Doctrine of Relative Benefits Issues in Flood-Based Takings Cases

1. How Does the Doctrine of Relative Benefits Differ from But-For Causation?

The *Alford* trial court rejected the application of the doctrine of relative benefits.³¹⁵ The court reasoned that "[i]t is certainly true that in the hypothetical world where the [levee] breach occurred, the plaintiffs would have been far worse off, along with 10,000 other citizens."³¹⁶ But the court thought that hypothetical situation irrelevant because the Corps "studied the problem for a long time" and adopted an approach that damaged plaintiffs' boat docks.³¹⁷

308. *Herriman v. United States*, 8 Cl. Ct. 411, 412 (Cl. Ct. 1985).

309. *Id.* at 414.

310. *Id.* at 416.

311. *Id.* at 418.

312. *Id.* at 419.

313. *Id.* at 420.

314. *Id.*

315. *Alford I*, 141 Fed. Cl. 421, 425 (2019).

316. *Id.*

317. *Id.* at 426.

The Federal Circuit reversed, holding that “the relative benefits doctrine compels a conclusion that there was no liability: The plaintiffs’ properties would have been ‘far worse off’ and ‘suffered more serious damage’ if the government had not acted.”³¹⁸ The Circuit’s analysis was quite straightforward: “Each of the plaintiffs suffered considerably less damage due to the government’s planned flooding of Eagle Lake than if the levee had breached.”³¹⁹ Although simply stated, two aspects of the *Alford* decision should guide future takings cases, particularly cases involving the MR&T Project: (a) the doctrine of relative benefits is distinct from but-for causation and (b) the relative benefits analysis likely requires a broader view of the government actions than does the but-for causation analysis. We address both points below.

a. The Doctrine of Relative Benefits is Distinct from But-for Causation

The Circuit held first that the relative benefits doctrine “is closely related to, but distinct from, the issue of causation.”³²⁰ Relying heavily on *Sponenbarger*, the Circuit described the doctrine in broad terms: “[C]ases discussing the relative benefits doctrine examine the overall benefits of the government action with respect to the particular property as compared to the detriment that was suffered.”³²¹ The Circuit explicitly rejected the trial court’s refusal to evaluate a hypothetical situation: “Courts applying the relative benefits doctrine have consistently considered what would have occurred absent government action.”³²²

The fact that the United States acted intentionally, with knowledge of the likely harm to private properties, was irrelevant: “Nor is the relative benefits doctrine rendered inapplicable because the government’s action was intentional, and the government was aware that its actions would have damaged the plaintiffs’ properties.”³²³

318. *Alford II*, 961 F.3d 1380, 1386 (Fed. Cir. 2020) (quoting *Alford I*, 141 Fed. Cl. at 425-26).

319. *Id.* at 1385.

320. *Id.*

321. *Id.* at 1384.

322. *Id.* at 1385.

323. *Id.*

b. The Relative Benefits Doctrine Must Consider Any Government Actions Directed at Mitigating Flooding on the Subject Property

The second important holding in *Alford* is the Federal Circuit's conclusion that the doctrine of relative benefits requires consideration of the "overall benefits of the government action."³²⁴ As with but-for causation, a definitional problem arises—what is the relevant government action for purposes of the doctrine of relative benefits? The Circuit's decision leaves the question somewhat unresolved but provides the following guidance: "The relative benefits doctrine considers only government actions directed to the particular property at issue and considers only government activities directed to mitigating the type of problem that caused the damage."³²⁵

To make this assessment, the court must consider all the harms and benefits arising during the entire history of the federal action effecting flooding on plaintiff's property. But-for causation analysis focuses on whether the government's actions actually caused the particular instance or instances of flooding that plaintiff alleges as part of her complaint. But a relative benefits analysis looks beyond the particular flooding event (or events) of which plaintiff complains and instead considers the harms and benefits from the government's actions over the history of the project.

The relative benefits analysis will often consider the same no-government-action hypothetical that applies in a but-for causation analysis. But the timeframe in the two analyses will differ. Whereas but-for causation focuses on the flooding events at issue in plaintiff's case, the relative benefits analysis expands that time horizon to consider the harms and benefits of the government project over potentially much longer period of time.

In the context of *Alford*, for example, but-for causation focuses on the 2011 flood. Relative benefits doctrine looks at the decades of MR&T Project construction and operations—nearly 100 years of protection provided by the Mississippi River mainline levees and decades of additional protection provided by the construction and operation of the Muddy Bayou Control Structure.

324. *Id.* at 1384.

325. *Id.* at 1386. The Federal Circuit's limitation is reminiscent of *Van Buren*, where the Federal Circuit held the doctrine of relative benefits requires consideration of "special benefits" to the landowner, rather than "general benefits" to the community at large. *City of Van Buren v. United States*, 697 F.2d 1058, 1062 (Fed. Cir. 1983).

All told, the MR&T Project has prevented lake level from reaching ninety feet or higher dozens of times since construction.³²⁶ Considering the entire history of flood protection is the only fair way to define the benefit of the government’s flood control program to these properties. The harm from the government action was one flood in 2011, which was far lower than it would have been if the government had not acted. That comparison is easy no matter how one defines the no-government hypothetical condition:

Scenario	MR&T Project Levees	Muddy Bayou Control Structure	Condition Over Time
Actual	In place	In place, and operated normally	Lake level reached 90 feet once (in 2011)
Hypothetical #1 (narrowest)	In place, but likely breach in 2011	In place, not operated in 2011	Lake level would likely reach 107 feet once (in 2011)
Hypothetical #2 (middle ground)	In place	Not constructed	Lake level would reach or exceed 90 feet more than a dozen times since 1976
Hypothetical #3 (broadest)	Not constructed	Not constructed	Lake level would exceed 90 feet on dozens of occasions and reach or exceed 107 feet in 2011

Table 3. MR&T Project Hypotheticals: Conditions over Time

The Federal Circuit did not explicitly resolve how to evaluate the harms and benefits, stating that the *Alford* parties “have taken a narrower view, focusing not on the overall benefits of the government project on the

326. U.S. Post-Trial Brief at 21, ECF 89 (discussing testimony).

plaintiffs' properties, but on only the benefits to the plaintiffs' properties from the government's 2011 decision to raise the water level of Eagle Lake."³²⁷ The Federal Circuit's comment likely stems from the fact that the trial court had excluded the United States' relative benefits evidence at trial because the court deemed it irrelevant. Even ignoring the decades of benefit provided by the MR&T Project, though, the Federal Circuit held that the *Alford* plaintiffs' claims failed because an almost certain levee breach meant that the benefits "outweighed the damage caused by the government's flooding of Eagle Lake."³²⁸

Future flood-related takings cases should focus the doctrine of relative benefits on the entire history of benefits and harms resulting from the entire government action—that is, the broadest hypothetical conditions identified in the table above. In cases arising out of operation of the MR&T Project, the analysis must include the benefits and harms resulting from the construction of the MR&T Project and its operation over the years.

Like but-for causation, the relative benefits analysis cannot focus on operation of individual MR&T Project components; it must consider the project as a whole. This may require the court to consider a hypothetical scenario that removes several different MR&T Project components. The court must then weigh the entirety of the project benefits with the entirety of the project harms to determine whether the doctrine of relative benefits applies. Given the long, successful history of the MR&T Project in preventing floods on adjacent properties, the doctrine of relative benefits will preclude liability in many flood-based takings cases. A 2012 report prepared by the USGS, for example, cited a study showing that "[i]n the lower Mississippi River, the increase in channel capacity associated with the [Corps] channel cutoff program, in combination with 3,000 km of levees, has reduced flood-plain inundation by approximately 90 percent relative to the preengineered condition."³²⁹

2. Does the Doctrine of Relative Benefits Include a "Slight Damages" Exception?

Although *Sponenbarger* itself suggested a comparative test, at least one decision issued before the Circuit's *Alford* decision suggested the doctrine of relative benefits only applies when plaintiffs' properties experience "slight damage." In *Quebedeaux v. United States*, plaintiffs'

327. *Alford II*, 961 F.3d at 1384.

328. *Id.* at 1385.

329. USGS CIRCULAR 1375, *supra* note 22, at 26.

properties flooded in 2011 when the Corps operated the Morganza Floodway, an element of the MR&T Project.³³⁰ In denying the United States' motion to dismiss plaintiffs' Fifth Amendment takings case, the trial court stated that the "*Sponenbarger* doctrine applies only where the government has inflicted only 'slight damage' on the property allegedly taken."³³¹

The Federal Circuit's decision in *Alford* makes clear that the relative benefits doctrine requires a balancing of benefits and harms, and there is no "slight damages" exception to its application.³³²

3. How Should Parties Address the Doctrine of Relative Benefits?

In most MR&T Project flood-based takings cases, evaluating the doctrine of relative benefits will present difficult evidentiary challenges. Like the evidence related to but-for causation, expert analyses will be required in most cases to assess the benefits and burdens associated with construction and operation of the MR&T Project. The difficulties may be more pronounced in the context of relative benefits, because consideration must be given for years, perhaps decades of time. Parties may need to rely on expert historians to examine the pre-MR&T Project conditions and hydrologists may need to look at decades of data to evaluate flooding under hypothetical scenarios.

Once the difficult hydrology issues are evaluated, the parties will likely need to assess valuation issues in order to weigh benefits and burdens properly. Just compensation in Fifth Amendment cases is often evaluated by finding the difference between the fair market value of plaintiffs' property with and without the government project. By comparing the market values under the two scenarios (that is, the actual condition and the no-government action hypothetical), an expert could estimate the fair market value of the property in both conditions. If the fair market value of the property in the before condition (with the MR&T Project in place) less the fair market value of the property in the after condition (without the MR&T Project in place) is a negative number, the benefits associated with the government action over time exceed the related burdens, and no taking can be said to have occurred.

330. *Quebedeaux v. United States*, 112 Fed. Cl. 317, 319 (Fed. Cl. 2013).

331. *Id.* at 322-23. The *Quebedeaux* court did not resolve the issue, finding that the analysis was too fact-intensive to resolve in the context of a motion to dismiss. *Id.*

332. Thus, the "slight damage" language used in *Sponenbarger* intends a comparative test—slight damages as compared to the benefits experienced as a result of the entire government action.

Several Supreme Court Justices suggested a similar valuation-based approach in *Horne v. Department of Agriculture*, a non-flooding takings case, which nevertheless cited *Sponenbarger*.³³³ In an opinion concurring-in-part with the majority decision, Justices Breyer, Ginsburg, and Kagan cited *Sponenbarger* as one of several cases where the Supreme Court has “set[] off from the value of the portion that was taken the value of any benefits conferred upon the remaining portion of the property.”³³⁴

VII. CONCLUSION

The Mississippi River will eventually overflow its banks again. The water will flood nearby properties, inundate homes, and damage farmland. The MR&T Project has, for decades, reduced the risk of flooding on millions of acres of property. But future flood events will inevitably occur. Resolving who should pay for those flooding impacts implicates billions of dollars and affects millions of lives.

Assessing flood-based takings claims will often require consideration of several issues not discussed in this article, including the doctrine of necessity and a multi-factor liability analysis.³³⁵ Those issues are important and may preclude many flood-based takings cases. Before addressing those issues, though, it is essential that a court resolve who bears legal responsibility for causing the floods in the first instance and whether the benefits resulting from the government action exceed the related harms. Those are difficult questions. In the context of claims involving the MR&T Project, those questions are particularly difficult due to the long history of the project and the complex hydrologic assessments involved. As the *Alford* decision underscores, however, assessments of but-for causation and the doctrine of relative benefits are necessary in order to resolve these important claims.

333. 576 U.S. 350 (2015).

334. *Id.* at 373 (Breyer, J., concurring).

335. *Trinco Inv. Co. v. United States*, 722 F.3d 1375, 1378-79 (Fed. Cir. 2013) (discussing the doctrine of necessity); *AGFC I*, 568 U.S. 23, 38-39 (2012) (discussing multi-factor merits test); *see also* *Ridge Line v. United States*, 346 F.3d 1346, 1356 (Fed. Cir. 2003) (discussing foreseeability and substantiality requirements); *Owen v. United States*, 851 F.2d 1404 (Fed. Cir. 1988) (discussing the federal navigational servitude).