

A Resilience Alternative for the Yazoo Backwater Area

This document provides information on natural infrastructure and non-structural measures to reduce flood risks and increase community resilience in the Yazoo Backwater Area (YBWA) of Mississippi. Large-scale implementation of these measures can be achieved through the strategic use of federal programs that are currently funded, accepting proposals, and available to assist communities in the YBWA.

Flooding in the YBWA is primarily restricted to the lowest lying areas. From 1978 to 2018, water levels in the YBWA reached the 10-year floodplain elevation just 2 times, and never reached the 20-year floodplain elevation.¹ During the unprecedented flooding in 2019, water levels in the YBWA were primarily restricted to the 20-year floodplain, rising less than a quarter of an inch into the 25-year floodplain for 8 days before receding.

Wetlands in the YBWA play an essential role in minimizing flood damages, providing vital habitat to hundreds of species of fish and wildlife, and supporting wildlife-related recreation. Recognizing these many benefits, the George W. Bush Administration acted to protect 67,000 acres of the YBWA's ecologically significant natural wetland infrastructure by issuing a Clean Water Act 404(c) Final Determination for the Yazoo Backwater Pumping Plant.² This 2008 action paved the way for the long-term protection of an additional 53,300 acres of YBWA wetlands through conservation easements and other voluntary mechanisms. These protected wetlands safeguard YBWA communities by storing tens of billions of gallons of floodwaters.

The following sections recommends areas where investment in natural infrastructure and non-structural measures would provide important flood risk reduction benefits and increase resilience in the YBWA. It also provides information on federal programs that implement those measures.

Federal Programs Available to Reduce Flood Risks and Increase Resilience in the Yazoo Backwater Area

Numerous federal programs are currently funded, accepting proposals, and available to advance the large-scale use of natural infrastructure and non-structural measures to reduce flood risks and increase resilience in the YBWA. These programs, and targets for their use, are outlined below. Successful deployment of these programs will require robust engagement with YBWA communities and collection of the data and information outlined in Section II.

¹ This period of record follows completion of the Yazoo Backwater Area Levee in 1978. By comparison, flooding in the YBWA reached 101.48 feet in 1973, which is well above the 100 year floodplain elevation. [U.S. Army Corps of Engineers Rivergages Website](#).

² While the 2019 flooding has prompted a renewed push for the Yazoo Pumps, preliminary Corps of Engineers' data shows that at least 68% of lands flooded in 2019 would have remained flooded if the Yazoo Pumps had been built and able to operate.

Reducing Flood Risks and Improving Resilience in the Yazoo Backwater Area
Federal Programs Currently Funded and Accepting Proposals

Federal Program	Structures	Agricultural Lands	Community Facilities	Roads, Bridges Utility Systems
Wetland Reserve Easements (WRE) USDA		✓		
Floodplain Easement Program USDA	✓	✓		
Hazard Mitigation Grant Program (HMGP) FEMA – Post-Disaster Recovery	✓		✓	✓
Community Facilities Grant Program USDA – Post-Disaster Recovery	✓		✓	
Pre-Disaster Mitigation Program (PDM) FEMA – Pre-Disaster Mitigation	✓		✓*	✓
Flood Mitigation Assistance (FMA) FEMA – Pre-Disaster Mitigation	✓		✓*	✓

*With some limitations. Additional programs, including the FEMA Community Development Block Grants-Disaster Recovery Program, could become available through supplemental appropriations.

Effective implementation of these programs would add to the region's rich natural resource base and create more resilient communities. These benefits could be amplified by an innovative marketing campaign to drive wildlife and cultural heritage-associated tourism to the YBWA developed in collaboration with the [Mississippi Delta National Heritage Area](#), the [Delta Blues Trail](#), the [Delta National Forest](#), and the [Theodore Roosevelt National Wildlife Refuge Complex](#). The Delta Interpretive Center, which will be housed in the newly constructed Theodore Roosevelt Wildlife Refuge Visitor Center, could be a centerpiece of this effort.³ Funding for such a campaign could be sought through the [Mississippi Delta National Heritage Area Grant Program](#).⁴

Diversifying the economy of the YBWA in this manner would assist in arresting and reversing the region's economic decline. In 2011, state residents and nonresidents spent \$2.63 billion on wildlife recreation in Mississippi. Of that total, \$650 million was spent on trip-related expenditures, \$1.7 billion

³ The Theodore Roosevelt Wildlife Refuge Visitor Center is [“one of the most significant investments in tourism infrastructure”](#) in the Delta.

⁴ The Mississippi Delta National Heritage Area, which includes all the YBWA counties, was established by Section 8008 of the Omnibus Federal Land Management Act of 2009, [Pub. L. 111–11](#) (16 USC 461 note) to preserve and promote the landscape, culture and history of the Mississippi Delta. Section 8008 authorizes appropriations of up to one million dollars a year through 2024, and establishes a management authority and a local coordinating entity to assist local governments, regional planning organizations, and nonprofit organizations in developing recreational and educational opportunities in the Heritage Area and increasing public awareness of, and appreciation for, natural, historic, scenic, and cultural resources of the Heritage Area.

was spent on equipment, and \$268 million was spent on licenses, leases, and other items. [U.S. Fish and Wildlife Service, 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, Table 47.](#) The demand for wildlife-related recreation is increasing nationwide, and directing more of this demand to the YBWA could produce significant economic benefits.

1. Wetland Reserve and Floodplain Easement Programs (USDA)

Target: Enroll at least **70,000 acres** of Yazoo Backwater Area lands in the Wetland Reserve Easement and Floodplain Easement Programs managed by the U.S. Department of Agriculture. Wetland reserve easements should target marginal croplands (those with 4W+ soils) adjacent to existing conservation lands, and marginal croplands inundated during the 2019 floods. Floodplain easements should target those same lands and/or frequently flooded residential properties, particularly “severe repetitive loss” and “repetitive loss” properties as defined by the Federal Emergency Management Agency.

Responsible Federal Agency and Partners: U.S. Department of Agriculture (Natural Resources Conservation Service) working with local landowners, homeowners, and non-governmental organizations.

Funding: Both programs are currently funded and accepting proposals for enrollment.

Benefits: Natural infrastructure is highly effective at reducing flood and storm risks for communities. Extensive public benefits include significantly reducing flood risks and emergency response costs, creating safer and healthier communities, and restoring vital floodplain habitat. A single acre of wetland can store 1.5 million gallons of floodwater. Wetlands purify water supplies, reduce nutrient loading into streams and rivers, and recharge groundwater supplies. Wetlands provide vital wildlife habitat, and restoring bottomland hardwood wetlands in the YBWA is a priority for achieving the forest bird population goals for the Lower Mississippi Valley Joint Venture. Protecting and restoring floodplain wetlands can significantly lower federal flood insurance rates for communities participating in the National Flood Insurance Program Community Rating System. Restoring enrolled lands creates jobs and economic outputs. Enrolling cropped wetlands in WRE reduces the costs of commodity, federal crop insurance, and noninsured crop disaster assistance programs. Landowners receive direct payments for enrolling their lands.

Wetland Reserve Easement Program (WRE):

- Cropped and forested lands can be enrolled in WRE. Enrolled lands are taken out of agricultural production and restored to wetlands.
- Enrollment provides direct payments to landowners, currently up to \$3,100 per acre. USDA also pays to restore the enrolled lands. Landowners can make additional profits by selling or leasing the land for hunting, fishing, or other uses compatible with maintaining the restoration. Landowners may also be eligible for a tax deduction.
- 4W+ lands are classified by USDA as “severely limited” for agriculture because they are saturated at least 50% or more of the growing season. Because of these limitations, the 2014 Farm Bill exempted 4W+ lands from WRE enrollment caps. 4W+ lands also do not count towards county-wide WRE caps.
- **More than 296,000 acres** in the YBWA are classified by USDA as 4W+ lands, and as a result could be enrolled in WRE. In 2019, **62,042 acres** of 4W+ lands were inundated in Issaquena, Sharkey, and Warren counties. Most 4W+ lands in the YBWA **adjoin existing conservation lands**.

- Detailed GIS-based information on 4W+ soils and conservation lands in the YBWA is provided in the Conservation Organization Scoping Comments.
- The WRE program is extremely popular in Mississippi. At least 186,000 acres have been enrolled in the WRE program in Mississippi (in both the Wetlands Reserve Program and WRE programs which are now combined), and there is strong interest in enrolling more acres into the program.

Floodplain Easements:

- Both cropland and residential properties may be enrolled in the USDA Floodplain Easement program. Cropped lands are taken out of agricultural production and restored. Structures located within the area of a floodplain easement are demolished and removed, or relocated outside of the affected floodplain, and the lands are then restored.
- Enrollment provides direct payments to landowners, currently up to \$3,100 per acre. USDA pays to restore the enrolled lands. USDA also pays the costs of demolishing and removing, or relocating structures out of the affected floodplain. Landowners can make additional profits by selling or leasing the land for hunting, fishing, or other uses compatible with maintaining the restoration. Landowners may also be eligible for a tax deduction.
- A significant amount of funding is currently available for the purchase of floodplain easements in Mississippi (and numerous other states).

Additional Information:

- **Easement Payment Schedule:** In Mississippi, payments for enrolling lands in the WRE and Floodplain Easement Programs are the same. Easement purchase prices on forested land are slightly less than on cropland. The payment schedule is established by USDA on a yearly basis and may fluctuate slightly from year to year.
- **Agency Capacity:** Enrolling 70,000 acres of easements would be facilitated by adding staff capacity within the USDA Natural Resources Conservation Service to assess and process easement proposals.
- **Jobs and Economic Activity:** Restoration work associated with easement enrollment would create jobs. In Mississippi, the Fish and Wildlife Service Partners for Wildlife Program created 29.7 jobs for each million dollars spent on restoration, and \$1.63 of economic activity for each dollar spent on restoration in FY2011. U.S. Fish and Wildlife Service, [The Contribution of Partners for Fish and Wildlife Program and Coastal Program Restoration Projects to Local U.S. Economies](#) (September 2013) at 18.
- **Groundwater Recharge:** Restoring enrolled lands would provide critically important groundwater recharge benefits to the YBWA. Irrigation in the Mississippi Delta, including the YBWA, has caused some of the most severe groundwater declines in the United States and highly damaging low-flow conditions in many Delta streams. Recent studies demonstrate the significant value of wetlands to groundwater recharge in the YBWA. Ying Ouyanga, et al., [Estimating impact of forest land on groundwater recharge in a humid subtropical watershed of the Lower Mississippi River Alluvial Valley](#), Journal of Hydrology: Regional Studies 26 (2019) 100631 (wetlands in the lower Yazoo River Basin provide the highest rates of groundwater recharge while agricultural lands provide the lowest rates); Michael Gratzer, et al., [Quantifying Recharge to the Mississippi River, Valley Alluvial Aquifer from Oxbow Lake-Wetland Systems](#),

(2017) (oxbow lake wetlands near Belzoni, MS produce “significant vertical recharge” into the Mississippi River Valley Alluvial Aquifer).

- **National Flood Insurance Program Rate Reductions:** Protecting floodplains has the largest impact on lowering National Flood Insurance Program (NFIP) rates for communities participating in the voluntary Community Rating System Program (CRS). Participation in the CRS can reduce NFIP rates from 15% to 45%. The CRS credits over 90 elements of comprehensive floodplain and watershed management, including providing significant credits for protecting the natural functions of riverine floodplains by preserving natural floodplain open space, acquiring flood-prone land and returning it to its natural state, and protecting and restoring natural floodplain functions and habitat.
- **Cost Avoidance Benefits:** Enrolling cropped wetlands in WRE reduces the costs of commodity, federal crop insurance, and noninsured crop disaster assistance programs. A recent study documents these avoidance benefits (present value of avoided costs less the Wetlands Reserve easement and restoration costs) in Mississippi at \$870 per acre. *Wetland Reserve Easement Program Economic Assessment: Estimated Commodity Program and Crop Insurance Premium Subsidy Cost Avoidance Benefits*, Prepared for the Nature Conservancy (June 2, 2018) (authored by retired U.S. Department of Agriculture economist Dr. Doug Lawrence).
- **Ad Valorem Tax Offsets:** To offset potential losses of ad valorem taxes that could result from placing YBWA county cropland under easements, landowners (or through enactment of legislation, USDA) could make a one-time payment to the county as easements are enrolled equal to a very small percentage of the cost of the easement. The county could then place the funds in trust and draw upon the interest of the trust to offset losses in ad valorem taxes.

2. Pre-Disaster Mitigation Programs (FEMA)

Target: Significantly expand pre-disaster mitigation planning and protection in the YBWA to reduce the risk of damage from future high water events and increase community resilience, and provide free Flood Risk Management Workshops in the YBWA for interested parties.

Responsible Federal Agency and Partners: Federal Emergency Management Agency working with the State of Mississippi, local governments, and non-governmental organizations.

Funding: FEMA’s Pre-Disaster Mitigation Grant Program and Flood Mitigation Assistance Programs are currently funded and accepting proposals. FEMA will provide free Certified Floodplain Management training upon request.

Benefits: Significant public benefits through creation of safer communities by improving resiliency, eliminating impacts of future flood events, and providing long-term solutions to flooding problems. Effective pre-disaster mitigation reduces loss of life and property damage from future floods, minimizes flood disaster disruptions, and allows more rapid recovery when flooding does occur. On average, \$1 spent on hazard mitigation through a federally funded mitigation grant saves \$6 in future disaster costs. Federal grants provide \$7 in benefits for each \$1 invested in riverine flood mitigation.

FEMA Pre-Disaster Mitigation Grant Program:

- The [Pre-Disaster Mitigation \(PDM\) program](#) provides funding to states, tribes, and local governments to reduce overall risk to the population and structures from future hazard events while also reducing reliance on federal funding to recover from future disasters. [The PDM program typically covers up to 75% of eligible activity costs, but small and impoverished communities may be eligible for coverage of up to 90% of eligible costs.](#)
- Following this current funding cycle, the PDM program will transition into the Building Resilient Infrastructure and Communities (BRIC) program established by the Disaster Recovery Reform Act of 2018. The BRIC program will be funded through a 6% equivalency set-aside of all disaster expenditures from the Disaster Relief Fund. This should significantly increase the amount of funding available for pre-disaster mitigation efforts.
- FEMA has \$250 million available for distribution under the PDM program for FY19. The [deadline](#) for submitting requests under this cycle is January 31, 2020.

FEMA Flood Mitigation Assistance Program:

- The [Flood Mitigation Assistance \(FMA\) Program](#) provides funding to states, tribes, and local governments to reduce or eliminate the risk of repetitive flood damage to buildings and structures insured under the National Flood Insurance Program. [FMA funding may cover up to 100% of costs to address severe repetitive loss properties and up to 90% of costs to address repetitive loss properties.](#) Other activities will be funded up to 75%.
- FEMA has \$70 million available for distribution under the FMA program for FY19. The [deadline](#) for submitting applications under the current cycle is January 31, 2020.

Free Certified Floodplain Management Training:

- FEMA can provide free Flood Risk Management Workshops and Certified Floodplain Manager (CFM) Exams to equip participants with important information on reducing flood risks and career skills. The CFM program seeks to reduce flood risk for people and encourage flood resilient development through multi-benefit floodplain management. The CFM program seeks to reduce flood risk for people and encourage flood resilient development through multi-benefit floodplain management. [Trainings include information on the National Flood Insurance Program, including its history, standards, regulations and administration; floodplain mapping; flood hazard mitigation; and floodplain management for environmental benefits.](#) FEMA could also provide additional relevant trainings in the YBWA through its [Integrated Emergency Management Course](#).
- The NGO community could work with foundations and others to obtain scholarship funding to defray out-of-pocket costs for attendees, including travel expenses, lost wages, and daycare.
- The state, local governments, or others could request that FEMA provide free Flood Risk Management Workshops at locations in the YBWA.

3. Post-Disaster Recovery Programs (FEMA, USDA, HUD)

Target: Prioritize disaster recovery funds to voluntary buy-outs and elevations of “severe repetitive loss” and “repetitive loss” properties in the YBWA, and improve essential community infrastructure. Key targets include the **198** severe repetitive loss properties in Issaquena and Sharkey counties (150 in Issaquena, 48 in Sharkey), and any of the **1,191** severe repetitive loss properties located in the YBWA

portions of Warren, Washington, and Humphreys counties (total severe repetitive loss properties are 833 in Warren, 314 in Washington, 44 in Humphreys).

Responsible Federal Agencies and Partners: Federal Emergency Management Agency, U.S. Department of Agriculture, U.S. Department of Housing and Urban Development (depending on program used), working with the State of Mississippi, local governments, property owners, and residents.

Funding: The FEMA Hazard Mitigation Grant Program is currently funded and may be accepting applications for the YBWA. The USDA Community Facilities Grant Program is currently funded and accepting applications. Supplemental appropriations targeted to the YBWA would be required to take advantage of the HUD Community Development Block Grants – Disaster Recovery program.

Benefits: Significant public benefits, including reducing flood risks and emergency response costs, creating safer and healthier communities, and restoring vital floodplain habitat. Increasing the resilience of roads and other community infrastructure improves community well-being and supports economic development. Homeowners are compensated for moving out of harm's way or elevating homes and other structures to avoid future flood damages.

FEMA Hazard Mitigation Grant Program (HMGP):

- The HMGP provides grants to state and local governments in areas covered by a Presidential disaster declaration. These grants can be used to purchase flood-damaged properties from willing sellers at pre-flood values and preserve the land as open space, or to elevate structures.
- The YBWA is eligible for HMGP grants through the April 23, 2019 [Federal Disaster Declaration 4429](#), which made FEMA's HMGP available to the entire state of Mississippi. This Disaster Declaration was most recently amended on September 20, 2019. FEMA accepts HMGP applications for **one year** after a federal disaster declaration with the possibility of up to a 180-day extension at the state's request.
- Any structure in the 100-year floodplain (*i.e.*, a Special Flood Hazard Area) valued at up to \$276,000 automatically qualifies for a FEMA-funded buy-out, and any structure in a Special Hazard Area valued at up to \$175,000 automatically qualifies for a FEMA-funded elevation. Other structures may also qualify if a benefit-cost analysis shows that a buy-out or elevation would be cost-effective.
- FEMA has funded **638 buy-outs in Mississippi, including 105 in Warren County**, since the 1980s.

USDA Community Facilities Grant Program:

- The USDA [Community Facilities Grant Program](#) provides grants to rural communities with up to 20,000 residents in areas covered by a Presidential disaster declaration. Funding under this grant program can be used to advance more than 100 types of projects, including the purchase, construction, or improvement of essential community facilities. Essential community facilities include such things as health care facilities, town halls, courthouses, community centers, fairgrounds, police and fire departments, libraries, museums, and food banks.
- USDA recently [announced the availability of \\$150 million to fund grants under this program.](#)

HUD Community Development Block Grants – Disaster Recovery (CDBG-DR):

- CDBG-DR grants supplement FEMA disaster recovery funds to help cities, counties, and states recover from Presidentially-declared disasters, especially in low-income communities. Activities funded through these flexible grants must meet one of three national objectives: benefit low-

and-moderate-income persons; aid in the prevention or elimination of slums or blight; or meet other community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community where other financial resources are not available to meet such needs.

- Mississippi is currently finishing up [two CDBG-DR grants for Hurricane Katrina recovery \(\\$5.06 billion and \\$423 million\)](#) and [a third CDBG-DR grant for recovery from the storms of 2008 \(\\$11.7 million\)](#), and appears to have some unspent monies remaining.
- The Bipartisan Budget Act of 2018 [approved \\$12 billion in funding for a new Community Development Block Grant disaster fund focused on helping CDBG-DR grant recipients “carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses”](#) including among many other things, supporting data-informed investments in high-impact mitigation projects, building state and local government capacity for comprehensively analyzing disaster risks, and supporting the adoption of policies that minimize future disaster costs. While Mississippi has not received an allocation under this fund to date, a second round of allocations will be taking place and future appropriations are likely.
- CDBG-DR grants require supplemental appropriations to HUD. Advocating for CDBG-DR funding for the YBWA could result in a significant source of additional funding to assist in recovery.

Additional Information:

- **Disaster Declaration:** The April 23, 2019 [Federal Disaster Declaration 4429](#) made FEMA's HMGP applicable to the entire state of Mississippi. Multiple amendments were made to that declaration, with the last amendment issued on September 20, 2019. [The Mississippi Emergency Management Agency has clarified that the declaration covers the 2019 YBWA flood.](#)
- **Severe Repetitive Flood Loss Properties:** “Severe repetitive loss properties” are properties covered by the National Flood Insurance Program that have flooded repeatedly and are priorities for elevation or removal. These structures, which are mostly homes, have been the subject of four or more damage claims of more than \$5,000 each, or two or more claims in which the insured structure sustained cumulative damage exceeding its fair market value. FEMA can provide the precise number of severe repetitive loss properties within the YBWA.
- **Repetitive Flood Loss Properties:** “Repetitive loss properties” are properties covered by the National Flood Insurance Program that have flood-related damage on two occasions where the cost of the repair equaled or exceeded 25% of the market value of the structure at the time of each such flood event; and the second incidence of flood-related damage increased the cost of flood-insurance compliance coverage. FEMA can provide the precise number of repetitive loss properties within the YBWA.
- **Typical Timeline for FEMA Buy-Outs:** Approximately 70% of FEMA buy-out projects are approved within two years of the associated disaster. More than half of all buyout projects have taken more than 5 years to closeout. [NRDC, Going Under: Long Wait Times for Post-Flood Buyouts Leave Homeowners Underwater \(September 2019\).](#)
- **History of FEMA Buy-Outs:** Since the 1980s, FEMA has funded 638 buy-outs in Mississippi, including 105 in Warren County. In all, FEMA has funded the buy-out of more than 43,360 properties through 3,839 “projects” in 49 states. Of these properties, 96% suffered from river flooding or intense rains, while 4% suffered from coastal flooding. The HMGP has funded 96%

of all FEMA buy-outs. Buy-outs disproportionately occur in white communities rather than communities of color, according to a 2019 NPR investigation. For example, after the 2008 floods in Iowa, “households in high social vulnerability areas were less likely to obtain full financial compensation” from federally funded buyout programs and waited longer to receive acquisition funds. [NRDC, Going Under: Long Wait Times for Post-Flood Buyouts Leave Homeowners Underwater \(September 2019\)](#) at 10, 8, 6.