

# 11. Implementation Strategies

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## 11.1. Overview

The MUSR RFMP process identified a large number of projects stakeholders want to see implemented to improve flood management with the Regions. To implement flood system improvements, project proponents must navigate a myriad of funding, political, and regulatory challenges. Also many of the projects identified will need to meet multiple objectives (i.e. reduce flood risk, promote ecosystem restoration, etc.) in order to fully leverage every local dollar spent against State and Federal dollars.

Potential projects identified by stakeholders during development of the MUSR RFMP include both structural system improvements (such as levee/channel/bypass improvements) and non-structural improvements (such as improved flood warning systems, coordinated emergency response operations, programmatic permitting, etc.). In addition, non-structural projects also include additional recommended studies and/or evaluations for areas where information on the existing flood management facilities is lacking or the preferred path for moving forward is unclear. This chapter recommends strategies for project implementation.

## 11.2. Implementation Strategies Summary

In many of the RFMP chapters, implementation strategies are suggested for the challenges that are identified and discussed. Those and other implementation strategies are summarized here.

***Enhanced Inundation Mapping to Facilitate Development of Nonstructural Alternatives:*** The MUSR regions are largely rural, with the at-risk populations and critical facilities and infrastructure widely dispersed throughout the Regions. Therefore implementing non-structural solutions will be an integral component of the overall regional suite of flood risk reduction measures. Currently the Regions lack reliable inundation mapping data which hinders development of non-structural alternatives. It is recommended that the next phase of the RFMP include funding to develop inundation mapping (base flood elevations) using the tools developed by DWR through its CVFED program.

***System-Wide Improvement Frameworks (SWIFs):*** The majority of levees systems within the Regions are ineligible for PL 84-99 rehabilitation assistance due to deficiencies identified by USACE Period Inspection Reports (PIRs). SWIFs provide an avenue to maintain eligibility in the RIP and thus receive rehabilitation assistance while addressing long-term maintenance or repair deficiencies. Several LMAs in the Regions have indicated their willingness to pursue SWIFs in order to regain PL84-99 eligibility. SWIFs have the added benefit of providing the opportunity for LMAs to engage at the federal, and state levels to address complex system issues in a more long-term, comprehensive approach. It provides a process to identify solutions that optimize resources by prioritizing improvements and corrective actions based on risk; and to

coordinate overlapping or competing programs and requirements. It also provides a forum for discussions between LMAs, the CVFPB and USACE to better align thoughts and ideas on the appropriate corrective action plans needed for developing SWIFs. This should lead to SWIFs which are better formulated to meet goals, duties and responsibilities of all parties involved. This comprehensive assessment and approach would also provide more opportunities to package flood system repairs with habitat enhancement projects. Therefore, if allowed by DWR, the next phase of RFMP funding should be utilized to advance the SWIF process.

***Governance:*** The MUSR Regions lack strong regional and sub-regional governance entities equipped to lead the implementation of needed flood risk reduction projects. The next phase of RFMP should explore the viability of establishing governance framework(s) which could lead to the formation of regional planning and implementation entities designed to effectively engage in regional flood management issues. An important governance issue which should be addressed during this process is whether consolidation or amalgamation of LMAs could provide an enhanced approach to system maintenance and operations. During the RFMP process we heard loudly that rural LMAs lack the resources and expertise to deal with the growing regulatory oversight of O&M activities. This discussion should occur in parallel with SWIF development because a comprehensive assessment of O&M issues is needed to facilitate dialogue on LMA regional governance. Without that information, the ‘fear of the unknown’ will stymie attempts to create a regional approach to system operations and maintenance.

***Improve Regional Flood Emergency Preparedness:*** Create a sustainable, regional, integrated response structure and partnership, the foundation of which is high quality, thorough, and user friendly local flood emergency action plans to guide field response to an incipient flood problem or threat. Implementation steps should include:

- Develop a set of GIS-based local flood safety plans for the region with a common standard and mapping format.
- Create a region-wide unified command structure and enhanced multi-agency communication and coordination system.
- Develop and implement a regional flood response training and exercise program.
- Implement a regional stockpile system using breach scenario analysis to supplement criteria for standard resource inventory.

***Corridor Management Plans:*** Chapter 6 discusses a range of challenges associated with balancing the conservation goals outlined in the 2012 CVFPP, with the need to make improvements to the flood management system while sustaining existing land uses. Corridor Management Plans (CMP) could be utilized to build upon the vision and strategies developed during the RFMP process, and move them forward. CMPs would incorporate the MUSR RFMP strategies for managing flood protection facilities, conveyance channels, and floodplains, and could include components such as a maintenance plan; a restoration plan; and policies for compatible land uses such as agriculture and recreation within the corridor. In addition to addressing habitat restoration and flood facility maintenance, CMPs can be a foundation for securing programmatic regulatory agency approvals for ongoing maintenance activities and habitat restoration. For MUSR, CMPs would build upon the coordination, collaboration, and

cooperative working relationships developed during the RFMP between interested parties and stakeholders, State, federal, and local agencies, NGOs, maintenance districts, agricultural interests, and landowners,.

***Comprehensive Bypass Management Plan:*** Chapter 10 discusses the need to improve management of the flood bypasses in the Regions. A long-term Comprehensive Bypass Management Plan should be developed which at a minimum would:

- Establish a program for regular sediment removal;
- Establish a program for managing vegetation with the bypass system. The vegetation management program should assess the value of maintaining trees parallel to the levees to act as wave breaks to reduce wave action;
- Establish an active enforcement program to ensure compliance with existing flood flowage easements;
- Developing safe harbor agreements with private landowners within the bypasses;
- Identifies strategies for providing operations and maintenance funding;
- Recognize and protect the benefits and value of existing habitat provided by adjacent private property agricultural lands. This habitat should be considered when evaluating impacts from managing the bypass to convey flood flows;
- Promote ‘flood bypass appropriate’ habitat enhancement which maximizes habitat values without adversely impacting flood flow conveyance; and.
- Incentivize and encourage wildlife-friendly, flood flow neutral, farming practices within the Sutter Bypass since the majority of the Bypass is privately-owned and actively farmed.

### **11.3. Project List Review Workshops**

The Draft MUSR RFMP projects list was distributed as part of the Draft RFMP for review (see Appendix E for original project list, and maps showing locations of projects). Given the large number of projects, reviewers of the Draft RFMP requested that additional workshops be held to discuss the projects list. Two workshops were held (September 18, 2014 and October 8, 2014) which were designed to:

- Provide additional; opportunity for stakeholders to learn about each other’s projects and work together on envisioning how projects may be refined and best positioned for future funding;.
- Begin to develop a framework for “packaging” priority projects;
- Begin a dialog on prioritizing projects to seek future funding; and
- Begin a dialogue on next steps on advancing collaboration on, and implementation of actions and projects within the Regions.

The workshops generated valuable additional ideas, dialogue and debate on how best to pursue implementation of projects within the Regions. Given the geographic scope of the Regions, the workshops focused on sub-regional areas, to allow for more detailed discussions. These sub-regional area discussions are summarized in the following sections.

### 11.3.1. *The City of Colusa Complex*

The City of Colusa and adjoining unincorporated areas (Colusa Complex) is the largest ‘small community’ within the Regions. The area is subject to flooding from the Sacramento River and the Colusa Drain. Preliminary assessments indicate that the most practicable approach to providing improved flood protection for the area would be to develop a ‘horseshoe’ levee system. The horseshoe would incorporate and extend the existing Powell Slough levee located west of the City of Colusa, which would connect to a new east-west levee north of the City. The east-west levee would potentially connect to the Sacramento River levee. The Sacramento River levee would be improved through the City of Colusa to near Moon Bend (See Chapter 7 for additional discussion). Additional components suggested for incorporation into the horseshoe levee concept included:

- Incorporate the City’s proposed boat launch facility into the project to create a recreational component and to ensure that the boat launch project and required levee improvements are properly integrated;
- Develop a ‘wildlife corridor’ north of the proposed east-west levee to connect the Colusa Basin Drain with the Sacramento River;
- Evaluate levee realignments in the Moon Bend area to reduce levee improvement costs and create additional floodplain areas;
- Evaluate floodplain lowering along the Sacramento River near the ‘top’ of the horseshoe; and
- Coordinate the Powell Slough levee extension crossing of Highway 20 with work proposed to improve access to the Colusa National Wildlife Refuge near O’Hair Road.

#### 11.3.1.1. *Implementation Strategies for the Colusa Complex*

**Governance:** There are a number of local entities with responsibilities for flood management and land use planning within and near the Colusa Complex area. These agencies include the City of Colusa, the County of Colusa, Sacramento River West Side Levee District, DWR Maintenance Areas 1 and 12, and the Colusa Basin Drainage District. Developing a unified strategy and approach amongst these agencies will be key to addressing the flood management issues facing the Colusa Complex. This could be accomplished by establishing an ‘umbrella’ agency/organization to take the lead in coordinating the activities of these agencies. This umbrella agency could be a new agency such as a Joint Powers Authority (JPA) made up of member agencies within the area with roles and responsibilities for flood management, or it could be an existing agency such as the Colusa County Flood Control and Water Conservation District. The JPA approach has been very successful in other parts of the Central Valley (Sacramento, San Joaquin, Butte and Sutter, Yuba, and Yolo counties) in bringing together area agencies to work together to spearhead flood management efforts. JPAs have been successful because they typically have a single focus, and provide member agencies with a ‘seat at the table’, thereby vesting them in the agency and its goals and objectives. DWR have indicated

that the next phase of the RFMP process will include funding for regions to establish governance frameworks. This should be a priority for the Colusa Complex area.

**Corridor Management Plan (CMP):** As discussed above CMPs are a vehicle which provide the opportunity to build upon the vision and strategies developed during the RFMP process; the applicability of CMPs to the MUSR Regions is discussed in detail in Chapter 6. The Sacramento River Conservation Area Forum is working with DWR to investigate local interest in developing a CMP along a reach of the Sacramento River. The Sacramento River through the Colusa Complex would be an excellent candidate for a CMP, which could be used to leverage additional State funding investments within the area.

**Funding:** DWR is preparing to issue guidelines for a new grant program to assist small communities plan and implement projects with the goal to achieve a 100-Year level of flood protection. The Colusa Complex would be an ideal candidate for this ‘small communities’ funding program.

### **11.3.2. *South of Tisdale Weir***

This area south of Tisdale Weir contains one small community, Robbins. The majority of projects recommended for inclusion in the RFMP for this area are O&M type projects. However, the workshops did identify other potential projects that could be packaged with O&M projects. These included:

- Canal 14A Habitat Corridor: Canal 14A is an irrigation canal oversized for its current function. The canal could be used to recreate a terrestrial corridor linking the Sacramento River to the Colusa Basin Drain, while creating a “cross-levee to protect RD 787 should an upstream levee(s) breach.
- Bullock Bend – The project proposes to convert agricultural property to riparian habitat through the establishment of a habitat mitigation bank.
- Levee realignment – Some property owners are potentially interested in levee realignments along the Sacramento River which would cure chronic levee deficiencies, and potentially create new areas for floodplain habitat.
- Colusa Basin Drain – Potential opportunities for habitat improvement along the Colusa Basin Drain west of the RD 108 ‘Back’ levee.
- Knights Landing Gates Fish Passage Improvements – Improvements are needed to stop salmonids straying away from the Sacramento River to the Colusa Basin Drain

#### **11.3.2.1. *Implementation Strategies for South of Tisdale Weir***

**Governance:** Again there are a number of local entities with responsibilities for flood management and land use planning in this area. There are three counties, Yolo, Sutter and Colusa, and a number of LMAs including RD 108, RD 1500, RD 787, and Sacramento West Side Levee District. These agencies should use the next phase of RFMP to create a governance

framework that would identify and support a lead agency to take the lead in pursuing these potential projects.

**Corridor Management Plan:** A Corridor Management Plan (for both the Sacramento River and Colusa Basin Drain) would provide the opportunity to further develop these potential projects.

**System Wide Improvement Framework (SWIF):** As mentioned earlier, the majority of projects in South of Tisdale Weir area are O&M related. The SWIF process provides the opportunity for LMAs to engage at the federal, and state levels to address complex system issues in a more long-term, comprehensive approach. It provides a process to identify solutions that optimize resources by prioritizing improvements and corrective actions based on risk; and to coordinate overlapping or competing programs and requirements. SWIFs provide more opportunities to package flood system repairs with habitat enhancement projects.

**Funding:** The Flood System Repair Program (FSRP) does provide an opportunity to fund flood repair projects. However due to the lack of populated areas in this area, it will be a challenge to leverage state and or federal funding to undertake all of the proposed flood repair projects. This increases the importance of finding multi-benefit components which can paired with flood repair projects. DWR may use a round of grant funding for its “Rivers Corridor” program which may be applicable for property owners interested in pursuing levee realignments.

### **11.3.3. *North of Tisdale & Sutter Bypass***

This area includes the towns of Grimes and Meridian and the Sutter Bypass. Again the majority of projects recommended for inclusion in the RFMP for this area are O&M type projects. Within the Sutter Bypass itself, a project was proposed to remove sediment which impacts flood conveyance while also impacting fish passage and the USFWS ability to convey water within the Sutter National Wildlife Refuge (SNWR). The project would reduce impediments to the movement of salmon smolts from wetland impoundments in the SNWR by removing water control structures that impede movement of fish. Pond bottoms would be re-contoured to maintain water depths within the ponds that are desirable for use by migratory waterfowl. Pipes between redesigned ponds would be replaced with larger diameter pipes to facilitate adequate water conveyance between the larger ponds and to improve fish passage. These modifications would also reduce O&M costs for the SNWR and increase water/wetland management capabilities on the Refuge. The removed material could be made available to LMAs for use in levee repair and maintenance.

#### **11.3.3.1. *Implementation Strategies for North of Tisdale & Sutter Bypass***

**System Wide Improvement Framework (SWIF):** As discussed earlier, the SWIF process provides more opportunities to package flood system repairs with habitat enhancement projects.

**Sutter Bypass Comprehensive Management Plan:** In Chapter 10 (Section 10.4) there is a detailed discussion on the need for a Comprehensive Management Plan for the Sutter Bypass. This is the recommended process for implementing improvements in management and function of the Bypass system.

**Funding:** The Flood System Repair Program (FSRP) does provide an opportunity to fund flood repair projects, but again the lack of large populated areas will make it a challenge to leverage state and or federal funding to undertake all of the proposed flood repair projects. Developing a Management Plan for the Sutter Bypass could allow the area to tap into state funding for ‘systemwide’ improvements within the Bypass.

#### **11.3.4. Princeton/Sanctuary Area**

The area along the Sacramento River north of Princeton has some opportunities to pair flood repair projects with ongoing and proposed habitat enhancement projects.

- A 400-acre portion of the Riparian Sanctuary Unit, which is part of the Sacramento River National Wildlife Refuge (SRNWR) Llano Seco Unit, will be restored under the Riparian Sanctuary Project. The project is currently in the permitting and implementation phase, where project partners need to submit permit applications, secure permits, and obtain funding. In addition to providing riparian habitat, the project will minimize ecosystem impacts from a pumping plant, include anadromous fish screen protection measures, and provide data to aid in making sound floodplain management decisions on future sites (River Partners, 2014). Levee District 1 has levee erosion projects in the vicinity which could be added to the implementation phase of the Riparian Sanctuary Project. LD 1 would need to undertake its own permitting as the Riparian Sanctuary Project is already in progress with its permitting applications.
- The Nature Conservancy (TNC) is embarking on a planning process for habitat restoration on the Llano Seco property and is open to working with LMAs and other stakeholders interested in incorporating multi-beneficial components into their proposed habitat restoration work.

##### **11.3.4.1. Implementation Strategies for Princeton/Sanctuary Area**

**System Wide Improvement Framework (SWIF):** As discussed earlier, the SWIF process provides more opportunities to package flood system repairs with habitat enhancement projects.

**Funding:** The Riparian Sanctuary Project proponents continue to seek funding to implement its project and may be able to assist LD 1 find funds for its erosion repair project.

**TNC:** TNC’s planning process for Llano Seco may provide an opportunity for local LMAs to pair projects with the proposed Llano Seco restoration effort.

### 11.3.5. *Tehama & Glenn Multi-Benefit Projects*

Areas within Tehama and Glenn Counties have a number of multi-benefit project currently underway including:

The Kopta Slough Project: This project is located in Tehama County between the City of Corning and the Town of Vina. Five project goals have been established, including:

1. Provide flood damage reduction benefits through reduced bank erosion to protect public resources;
2. Provide advance mitigation credits for projects on State-maintained Central Valley Flood Control facilities for riparian habitat, including habitat for valley elderberry long horn beetle;
3. Provide ecosystem benefits through the restoration of natural fluvial and floodplain processes and mitigate for the loss of shaded riverine aquatic (SRA) habitat from DWR Flood Control Projects;
4. Establish long term public ownership of the 708-acre Kopta Slough property to protect public trust resources; and
5. Expand recreational opportunities for the people of the State of California on a portion of the project area, including camping, hiking, picnicking, and equestrian use.

Project partners and stakeholders include Tehama County, California State Parks, The Nature Conservancy, the Sacramento River Conservation Area Forum, and the USACE.

Hamilton City Flood Damage Reduction and Ecosystem Restoration Project: In the late 1990s, the Hamilton City Project was developed to address the flood risk in Hamilton City and improve aquatic and riparian habitat. The objectives of the project include flood risk reduction, the reduction of flood damages, the improvement of the quality and quantity of habitat within the project area, the restoration of river function, and the formation of a successful partnership between the community of Hamilton City, agriculture, and the environment. The recommended plan includes levee improvements that would result in up to a 90% chance of passing a 75-year flood event and restoration of 1,361 acres of native habitat and reestablishment of river/floodplain connectivity. The project recently received federal funding which will allow Phase 1 to commence.

Lower Deer Creek Restoration and Flood Management Project: This project site is located in Tehama County, near the Town of Vina. The goal of the project is to improve habitat while developing feasible solutions to flood hazards on lower Deer Creek. These solutions will have a particular emphasis on improving conditions for passage, spawning and/or rearing of Chinook salmon and steelhead. The project has been in the planning stage for several years but implementation has stalled due to lack of funding.

### **11.3.5.1. *Implementation Strategies for Tehama & Glenn Multi-Benefit Projects***

**Funding:** TNC and the local reclamation district have made significant progress in acquiring federal funds for the implementation of the first phase of the Hamilton City J-Levee project, and are working to leverage additional federal funding for future phases. For Kopta Slough and Lower Deer Creek there may be funding potential through the RAMP, and possibly the River Corridors program. For levee repair projects, DWR's FSRP program provides an opportunity to capture funding for some sites.

**System Wide Improvement Framework (SWIF):** Tehama and Glenn counties levee systems have significant needs for projects to correct levee deficiencies. Again, the SWIF process would provide LMAs in the area with a process in which they could develop a comprehensive program of levee deficiency corrections and provide more opportunities to package flood system repairs with habitat enhancement projects.

### **11.3.6. *City of Chico Area***

The City of Chico flood management system is discussed in detail in Chapter 8. DWR recently made available draft technical analyses of the Chico levee system. Preliminary results indicate that the levees that have been evaluated are meeting 200-year criteria for seepage (through-seepage and under-seepage), slope stability, and erosion. In addition, there are only two reaches that are not meeting criteria for freeboard.

#### **11.3.6.1. *Implementation Strategies for City of Chico Area***

**Funding:** While it appears levees in the Chico area may not need significant improvements to provide the urban area with a 200-Year level of flood protection, some work will be needed. In addition to physical work, the City of Chico will have to go through a General Plan amendment process and will have to make findings regarding its current Urban Level of Flood Protection (ULOP) in order to comply with SB 5. DWR is currently finalizing guidelines for its Urban Flood Risk Reduction (UFRR) grant program which will make available to urban areas, funds to achieve 200-Year level of flood protection. The City of Chico should explore how the UFRR program might be able to help the City of Chico comply with SB 5.

**Governance:** Levees in the Chico area are maintained by Butte County and DWR, while the City of Chico is the largest land-use agency in the area. Other urban areas with split land-use and flood management responsibilities have had success in forming JPAs to improve interagency coordination and pursue flood management system improvements to use flood risk for urban areas. DWR has indicated that the next phase of the RFMP process will include funding for regions to establish more integrated governance frameworks. The City of Chico and Butte County should explore this option during the next phase of RFMP.

**System Wide Improvement Framework (SWIF):** The Chico area levees do have existing deficiencies. Again, the SWIF process would provide LMAs in the area with a process in which

they could develop a comprehensive program of levee deficiency corrections and provide more opportunities to package flood system repairs with habitat enhancement projects.

### **11.3.7. Lake County Multi-Benefit Projects**

In Lake County there are two multi-benefit projects which present excellent opportunities to reduce flood risk while improving habitat.

Middle Creek Flood Damage Reduction and Ecosystem Restoration Project: This project would restore the Middle Creek floodplain to a natural wetland ecosystem and provide flood damage reduction within the study area. USACE and Lake County are the project sponsors. The project is located between Highway 20 and Middle Creek immediately northwest of Clear Lake. The project involves the de-authorization and breaching of federal levees in order to restore approximately 1,650 acres into natural floodplain. A final FR/EIS/EIR has been developed that describes the environmental resources in the Clear Lake area; evaluates the direct, indirect, and cumulative environmental effects of the recommended plan and three alternative plans; and recommends avoidance, minimization, and mitigation measures. Most potential adverse effects would either be short term and insignificant, or would be avoided or reduced to less-than significance using best management practices.

Upper Lake/Clover Creek Diversion Project: This project would address a design deficiency by removing a diversion structure which no longer operates as designed. The project would also improve spawning habitat for the Clear Lake Hitch, a special status fish species.

#### **11.3.7.1. Implementation Strategies for Lake County Multi-Benefit Projects**

**Funding:** DWR's River Corridors program may be able to provide additional funding for the Middle Creek project.

## **11.4. Project Prioritization**

Projects were evaluated for prioritization by determining how they aligned with the objectives of the 2012 CVFPP. Projects were considered to meet the objectives based on the following criteria.

**Improve Flood Risk Management** – Includes projects that: reduce the chance of flooding; reduces damages when flooding does occur; and improves public safety, preparedness, and emergency response. These typically include flood control structural and/or non-structural projects.

**Improve Operations and Maintenance** – Includes projects that: reduce maintenance and repair costs and requirements; adjust, coordinate, and streamline regulatory and institutional standards,

funding, and practices for operations and maintenance; involve actual repair actions; correct right of way deficiencies and/or encroachment issues; and restore PL 84-99 eligibility.

**Promote Ecosystem Functions** – Includes projects that integrate the recovery and restoration of key physical processes, self-sustaining ecological functions, native habitats, and species into flood management system improvements. Includes revetment removal, invasive plant management, and increasing floodplain inundation.

**Promote Multi-Benefit Projects** – Includes projects that have recreation, water supply, or ground water recharge components. Also includes projects that protect farmlands of statewide significance.

**Improve Institutional Support** – Includes projects and actions that develop stable institutional structures, coordination protocols, and financial frameworks that enable effective and adaptive integrated flood management (designs, operations and maintenance, permitting, preparedness, response, recovery, and land use and development planning). Projects include those that directly provide for evaluation or implementation of changes to standards, and those that correct legacy right of way issues, legacy encroachment issues, correct remnant levee issues, or solve other legacy issues in the system.

A matrix of the project list indicating how each project met the objectives is included in Appendix F.

The projects which have been identified as priorities for the Regions include:

- **100-Year Level of Protection for Small Communities:** The Regions have a number of small communities which currently do not have 100-year levels of flood protection. Providing 100-year levels of flood protection for these communities will take significant effort, time and resources. Therefore priority should be placed on projects and actions identified within the MUSR RFMP which advance the goal of providing 100-year levels of flood protection for small communities.
- **System-Wide Improvement Frameworks (SWIFs):** SWIFs provide the opportunity for LMAs to engage at the federal, and state levels to address complex system issues in a more long-term, comprehensive approach. This comprehensive assessment approach would also provide more opportunities to package flood system repairs with habitat enhancement projects. Therefore developing SWIFs should be a priority during the next phase of RFMP.
- **Complete Implementation of Habitat Enhancement Projects:** Within the MUSR Regions there are a number of habitat enhancement/multi-benefit projects underway which are in various stages of completion (Hamilton City, Kopta Slough, Riparian Sanctuary, Middle Creek, etc.). Priority should be placed on completing these projects and showing ‘success’ which could provide impetus for other habitat enhancement/multi-benefit projects.
- **Urban Level of Protection (200-Year):** Chico is the only urban area with the Regions. Achieving an urban level of flood protection should be priority so planned growth and develop can continue in manner which minimizes risk and complies with SB5.

- **Improving Regional Flood Emergency Preparedness:** Creating a sustainable, regional, and integrated emergency response structure and partnership is critically important for the MUSR Regions.
- **Comprehensive Bypass Management Plan(s):** System bypasses play a vital role within the Regions for both flood management and ecosystem function. Development of long-term Comprehensive Bypass Management Plans is critical to ensure that the bypasses are being managed to optimize their use and function.