

CALIFORNIA DEPARTMENT OF WATER RESOURCES

REPORT OF ACTIVITIES

JANUARY 2019

THE PURPOSE OF THIS REPORT...

is to provide a brief update to Central Valley Flood Protection Board (CVFPB) members on California Department of Water Resources (DWR) activities that occurred in the previous month. This report is organized by the five DWR mega-programs:

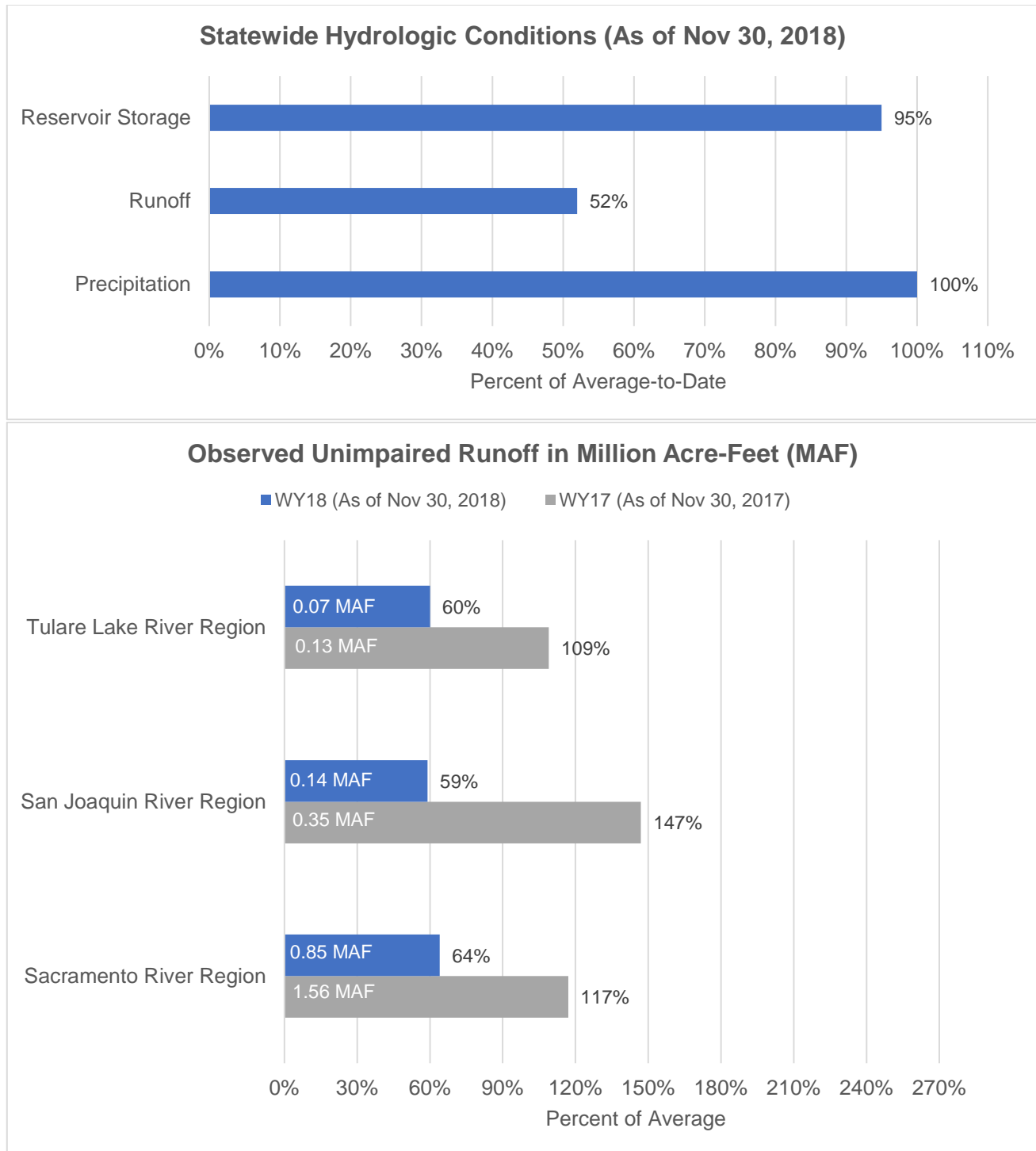
- Flood Emergency Response
- Flood Management Planning
- Floodplain Risk Management
- Flood Risk Reduction Projects
- Flood System Operations and Maintenance

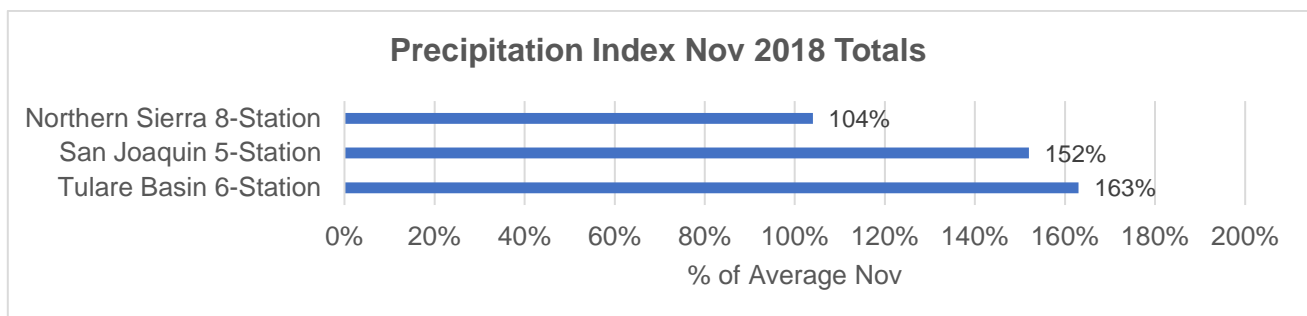
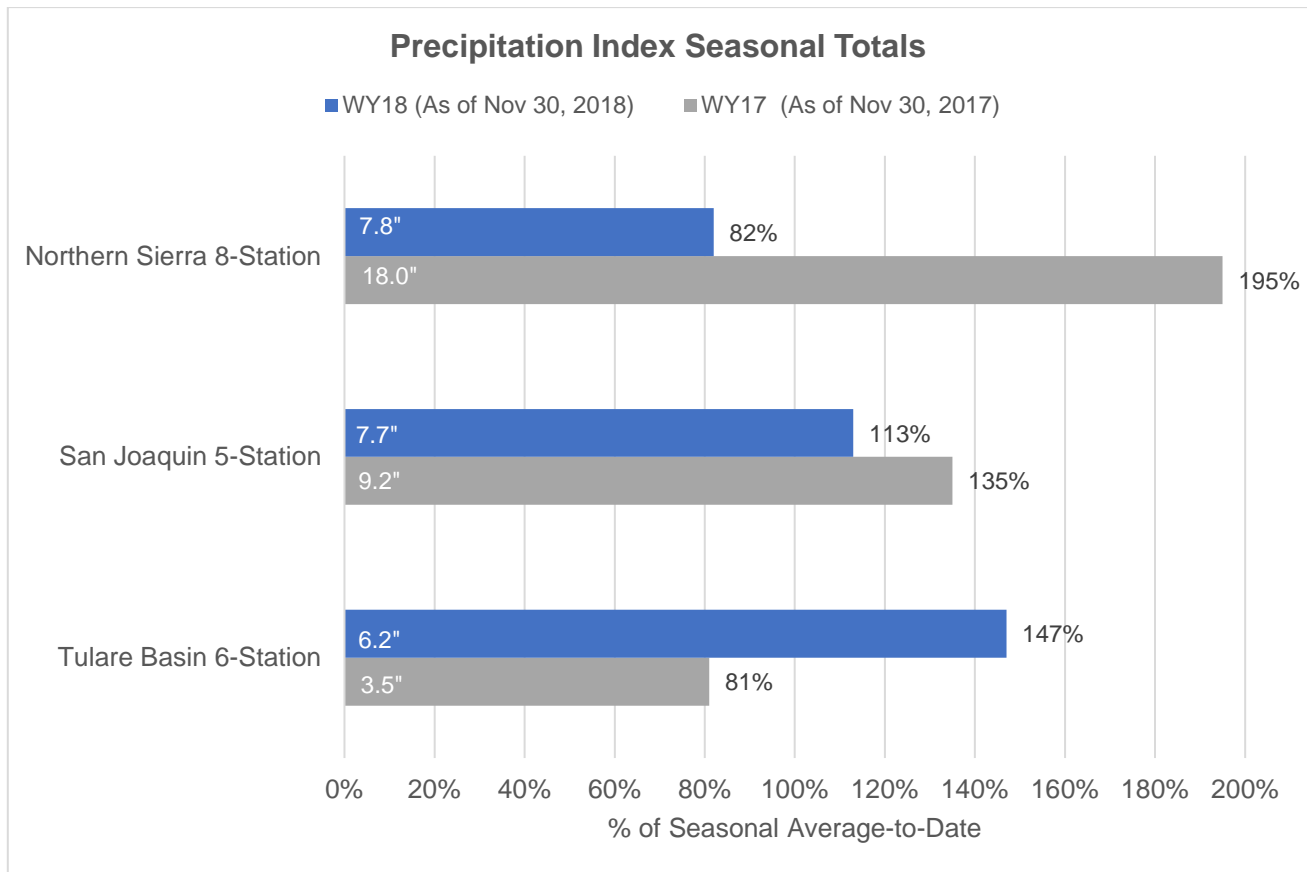
Only programs with updates for this month have been included in this report. Programs not listed in this month's report may be included in future reports if updates are provided.

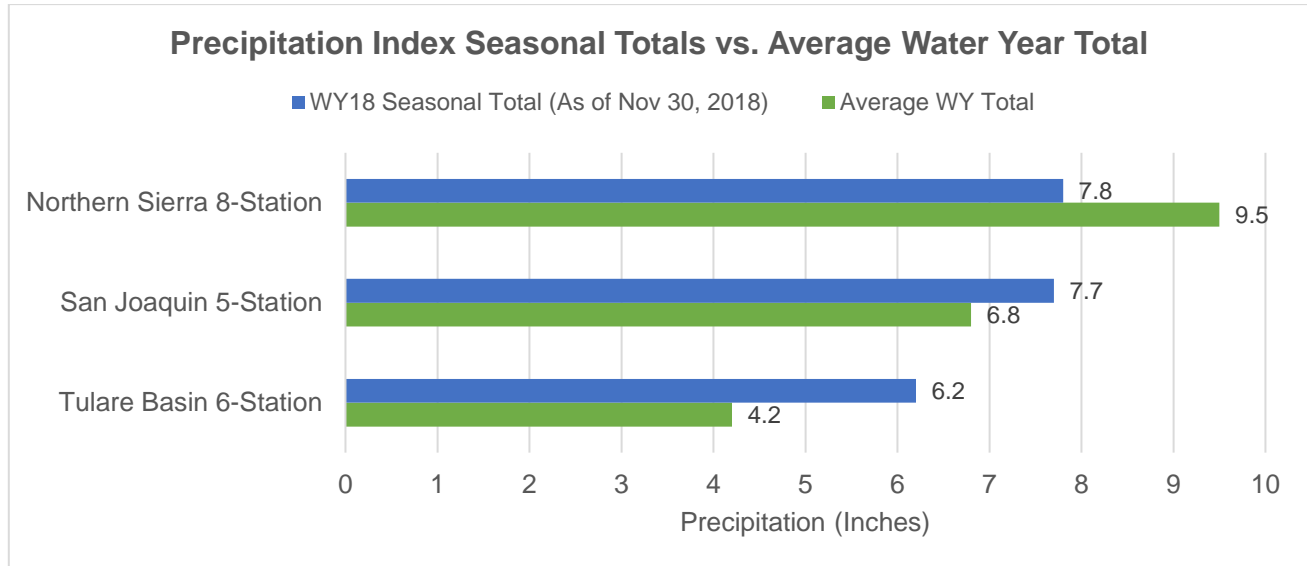
A full list of programs and program descriptions are available upon request. If you have any questions or concerns regarding this report, please call Ricardo Pineda at (916) 574-0632 or email Ricardo.Pineda@water.ca.gov.

FLOOD EMERGENCY RESPONSE (FER)

FER // HYDRO-CLIMATE DATA COLLECTION & PRECIPITATION / RUNOFF FORECASTING







Daily Precipitation (Inches) for Selected Stations as of Nov 30, 2018

Daily Precipitation (in inches) for Selected Stations as of 11/30/2018					
Station	Oct 1 to Date 2018 - 2018	% Average	Season to Date 2017 - 2018	% Average	% Average Oct 1 - Sep 30
Mount Shasta	4.70	61	5.31	69	11
Eureka	5.49	70	9.27	118	14
Redding	6.88	105	5.55	84	20
South Lake Tahoe	3.66	73	6.29	125	18
Sacramento Executive Airport	2.43	80	2.28	75	13
Santa Rosa (Sonoma Co AP)	6.06	90	5.74	85	17
San Francisco	3.77	88	3.14	73	16
Stockton	3.50	139	0.91	36	25
Yosemite	7.23	109	4.80	73	19
Monterey	3.01	107	1.57	56	19
Paso Robles	2.35	142	0.26	16	18
Fresno	1.77	104	0.37	22	15
Bakersfield	0.68	72	0.03	3	11
Death Valley	0.07	28	0.00	0	3
Los Angeles	2.14	126	0.11	6	14
Riverside	1.88	147	0.03	2	15
Palm Springs	0.98	101	0.00	0	17
San Diego	1.38	87	0.02	1	13

National Weather Service Climate Prediction Center (CPC) long-range, 1-month precipitation outlook for January 2019 (issued December 31, 2018), suggests:

- Average precipitation for far northern half of California.
- Above-average precipitation for the southern half of the State.
- Staff issued the first Water Supply Index forecasts of the 2019 Water Year for conditions as of December 1, 2018. The Sacramento Valley Index (SVI) was forecast at 7.0 based on the 50 percent exceedance and is classified as Below Normal. The San Joaquin Valley Index (SJI) was forecast at 2.4 based on the 75 percent exceedance level and is classified as Dry. These forecasts, while low, are a very early look at the water year with much of the winter left to come.
- Staff serviced three United States Bureau of Reclamation hydro-meteorological stations: New Melones (NMS) and Telegraph (TLH) in the Stanislaus River Basin, and Friant (FRT) in the San Joaquin River Basin. Staff also serviced four DWR-owned stations: Mineral (MIN), Shingletown (SHI), Gibson (GIB), and Mount Shasta City (MTS) in the Sacramento River Basin.

FER // RESERVOIR OPERATIONS & RIVER FORECASTING

Major Reservoirs in the Central Valley Storage as of 12 a.m. on Nov 30, 2018

Major Reservoirs in the Central Valley Storage as of 11/30/2018 midnight						
RESERVOIR	RIVER	Storage (in Acre Feet)	% of Capacity	% Average	Storage Year Ago This Date	% Average
Trinity Lake	Trinity	1,558,930	64	98	72	111
Shasta Lake	Sacramento	2,171,938	48	80	71	119
Lake Oroville	Feather	1,029,538	29	48	36	59
New Bullards Bar Res	Yuba	551,567	57	104	74	135
Folsom Lake	American	329,078	34	70	63	131
New Melones Res	Stanislaus	1,763,080	73	130	83	148
Don Pedro Res	Tuolumne	1,397,722	69	106	80	123
Lake McClure	Merced	561,889	55	125	65	148
Millerton Lake	San Joaquin	292,332	56	134	65	154
Pine Flat Res	Kings	267,434	27	72	47	128
San Luis Res	(Offstream)	1,165,295	57	96	74	124
Terminus	Kaweah	12,384	7	95	12	169
Success	Tule	6,891	8	73	11	93
Isabella	Kern	66,261	12	42	29	107

- On December 19, 2018, the North American Vertical Datum (NAVD88) Conversion Team had its monthly meeting. During the winter and spring, the team will focus on public outreach on the proposal to update datums for 20 surface water gages along the Sacramento and Feather Rivers.

- In mid-December 2018, the Forecast-Coordinated Operations Program released the final web version of the Release Change application to its partners. This application was requested by the US Army Corps of Engineers and provides reservoir operators with an alternative way to enter future reservoir releases that are needed for river forecasting.
- Since early December 2018, forecasting staff, in coordination with the California-Nevada River Forecasting Center (CNRFC), continue to conduct weekly weather and hydrology briefings on Thursdays.
- In late-December 2018, staff conducted manual surveys of the Lyons Creek and Alpha snow courses and provided data to support the January 3 media survey held at Phillips Station.
- As of January 7, 2019, most flood control reservoirs are below the top of conservation or flood pool elevation, with an exception of a few smaller reservoirs like Camanche, New Hogan, Coyote, Terminus, and Success. Most of these reservoirs will be able to absorb the runoff from the early-January storm events without making flood control releases.

FER // FLOOD EMERGENCY PREPAREDNESS & OPERATIONS

- In December 2018, three Flood Operations Center staff worked three day shifts at the State Operations Center as Department representatives to assist Cal OES with its response to the Camp Fire in Butte County.
- On December 4, the Regional Flood Preparedness Section hosted the 4th quarter Delta Working Group meeting at Solano County Office of Emergency Services' Emergency Operations Center. The purpose was to provide flood emergency preparedness and response activity updates for the Delta region. The meeting included discussions on the Division of Flood Management's Flood Threat Mitigation Process, reevaluating Rio Vista high water notifications, and information on CAL FIRE flood fight response capabilities.
- In December 2018, DWR staff finalized the Water Project Export Disruptions for Multiple-Island Breach Scenarios Report. The Report summarizes the results and findings of 760 model simulations that were carried out using the Delta Emergency Response Tool (Delta ERT). The findings highlight how hydrologic conditions, levee damage, and response strategies affect water exports in the Delta. The Report will be included as a supplement to DWR's Delta Flood Emergency Management Plan (DFEMP), which is anticipated to be released early this year.
- On November 30, 2018, DWR staff submitted the Emergency Action Plan (EAP) for the CVFPB-owned Chester Diversion Dam to Cal OES. The dam is classified as a high-hazard dam, and therefore is required to have an EAP and Inundation Map. Staff is in the process of modifying the Inundation Map based on comments received from the Division of Safety of Dams (DSOD). Once modifications are completed and approved by DSOD, the final Inundation Map will be provided to Cal OES.
- On December 12, 2018, Flood Operations Branch staff presented at the Merced County Winter Preparedness Meeting in Merced, where they shared information on the role and responsibilities of the Flood Operations Center, the process for

requesting technical and direct assistance, flood fight methods training, and flood fight materials.

FER // REAL-TIME FLOOD CONDITIONS, STATUS, & WARNING

- The Flood Project Integrity and Inspection Branch has completed the 2018 Inspection and Local Maintaining Agency Report of the Central Valley State-Federal Flood Protection System. Three copies of the report were submitted to the Central Valley Flood Protection Board (CVFPB) on December 28, 2018.
- Inspection Section staff were deployed to Paradise to assist with recovery efforts for the Camp Fire from November 19, 2018 to December 13, 2018.
- Inspection Section staff closed 105 permits in the month of December, closing a grand total of 526 CVFPB permits in 2018.

FLOODPLAIN RISK MANAGEMENT (FRM)

FRM // FLOODPLAIN MANAGEMENT ASSISTANCE

- December 4, 2018, Floodplain Management Assistance Section (FPMAS) staff conducted a FEMA National Flood Insurance Program (NFIP) workshop entitled “Floodplain Management Review Course” in Riverside, CA.
- December 5, 2018, FPMAS staff proctored a “Certified Floodplain Managers” exam in Riverside, CA.

FLOOD RISK REDUCTION PROJECTS (FRRP)

FRRP // DELTA LEVEE SYSTEM INTEGRITY (DLSI)

Delta Levees Maintenance Subventions Program

The Delta Levees Maintenance Subventions Program is authorized by CA Water Code § 12980-12995. Recent changes to § 12986 of the CA Water Code affected the Subventions Program. These changes became effective July 1, 2018 and include definitions, application reporting requirements and a change to the per levee mile deductible.

The Delta Levees Subventions Maintenance Program 2016 Guidelines, Addendum #1 was prepared to reflect the recent changes to the CA Water Code § 12986 and was adopted by the Board at the November 2018 meeting.

- **Subventions Program FY 2016-17**
 - 67 final claims received.

- 56 final claims for \$6.1 million are being processed for reimbursement.
- **Subventions Program FY 2017-18**
 - 72 applications were received and reviewed.
 - CVFPB approved \$12 million for the FY 2017-18 Funding Plan on June 23, 2017.
 - 72 work agreements have been executed.
- **Subventions Program FY 2018-19**
 - 72 applications for \$54 million were received and reviewed.
 - The CVFPB approved \$12 million for the FY 2018-19 Funding Plan on May 18, 2018.
 - Urban Levees (10% or more of the land area considered residential land use)
Bethel Island MID, Bishop Tract, Boggs Tract, Byron Tract, Lincoln Village West, Sargent-Barnhart Tract, Smith Tract, Weber Tract.

FRRP // USACE/CVFPB PROJECTS

American River Watershed Project – American River Common Features ARCF/WRDA 2016

- The three-party Project Partnership Agreement (PPA) between USACE, CVFPB, SAFCA and the Local Project Partnership Agreement (LPPA) with SAFCA are being brought to the January CVFPB meeting for consideration of approval.
- Design Charrette for the Sacramento Weir expansion was conducted on December 12 and 13, 2018.
- USACE Engineering Design (PED) for the erosion work on the American River is underway.
- USACE Engineering Design (PED) for the seepage and stability work on the Sacramento River is underway.
- The Levee Seepage Wall effort in the North Area Streams area has been completed by SAFCA.

Folsom Dam Modifications Joint Federal Project (JFP)

- USACE has completed all commissioning testing of the JFP facility.
- USACE has awarded a contract to complete many of the project punch-list items.

Folsom Dam Raise Project

- USACE Engineering Design (PED) of dikes #1-6 is underway.
- USACE Engineering Design (PED) of dikes #7 & 8, Left Wing Dam and Right Wing Dam is underway.

- The Project Partnership Agreement (PPA) with USACE, CVFPB, and local sponsor (SAFCA) is being revised by USACE HQ to include language incorporating the supplemental funding.

Marysville Ring Levee Improvement Project

- At the December 14, 2018 CVFPB meeting, an informational briefing on Amendment No. 2 of the Project Partnership Agreement was presented to the Board.

Sutter Basin Preconstruction Engineering and Design (PED)

- The project was advertised for construction bids on December 10, 2018 by USACE. USACE is looking to award a contract in the middle of February.

FLOOD SYSTEM OPERATIONS & MAINTENANCE **(FSO&M)**

Flood Maintenance Office (FMO) is responsible for two areas of SPFC facilities, State Maintained Areas (SMAs), which are authorized by CWC Section 8361, and ten Maintenance Areas (MAs), which are described in CWC Section 12878. SMAs are funded by State general fund, while MAs are on reimbursable accounts funded by property owners protected by the MA levees and facilities.

State Maintained Areas (SMAs)

- *Levees: ~145 miles*
- *Channels: ~1,200 miles*
- *Flood Structures: ~30 (11 weirs, 5 gate structures, 4 pumping plants, crossing bridges, etc.)*
- *Collecting Canals: ~60 miles*

Maintenance Areas (MAs)

Currently, FMO maintains ten MAs: MA01, 02, 04, 05, 07, 09, 12, 13, 16, & 17.

- *Levees: ~150 miles*
- *Structures: 1 pumping plant and 1 diversion weir*

OPERATIONS & MAINTENANCE (O&M)

Listed activities are mandated by O&M manuals for facilities in SMAs or MAs. This work is performed by two maintenance yards in Sacramento and Sutter with technical and environmental support from JOC.

- *Levee and channel vegetation management*
- *Access road and levee crown maintenance*
- *Debris and obstruction removal*
- *Rodent abatement*

- *Rodent Damage Repair*
- *Levee erosion repair*
- *Channel scour repair*
- *Small sediment removal*
- *Pumping plant, weir, outfall gates, and bridge operation, maintenance, and repair*
- *Pipe/Culvert repair*

FMO is in the process of developing a new program, Flood Maintenance Assistance Program (FMAP), with annual funding to increase the level of maintenance in SMAs and support Local Maintaining Agencies (LMAs), including MAs, to do the same.

SMA Activities

Sacramento Yard

- Cache Creek Levees: 21 miles of vegetation broadcast spraying (in progress).
- Cache Creek Levees: 10 acres of vegetation spot spraying (in progress).
- Cache Creek Levees: 21 miles of rodent hole grouting (completed).
- Cache Creek Levees: 23 miles of vegetation burning (completed).
- Cache Creek Settling Basin Levees: 21 miles of rodent hole grouting (completed).
- Knights Landing Outfall Gates: Structure maintenance (completed).
- Putah Creek: Vegetation broadcast spraying (in progress).
- Putah Creek: Rodent baiting (in progress).
- Sacramento Bypass Levees: levee gate repair/replace (in progress).
- Sacramento Bypass Levees: Vegetation dragging (in progress).
- Sacramento Bypass Levees: 3.5 miles road grading (in progress).
- Sacramento Bypass Levees: Vegetation broadcast spraying (in progress).
- Sacramento Bypass Levees: Rodent baiting (in progress).
- Sacramento Weir: Structure maintenance (completed).
- Willow Slough Bypass Channel: Toe road grading (in progress).
- Willow Slough Bypass levee: Rodent baiting (in progress).

Sutter Yard

- Big Chico Creek Channel: 60 cubic yards debris removal (completed).
- Cherokee Canal Channel: 260 acres of vegetation mowing (in progress).
- East Levee Sutter Bypass: Repair/replace 30 signs (in progress).
- East Levee Sutter Bypass: Rodent depredating (in progress).
- Elder Creek Channel: Scour repair (completed).
- Lake of the Woods: 300 acres vegetation mowing (in progress).
- Lindo Creek: 2 acres vegetation cutting/limbing (completed).
- Little Chico and Butte Creek Diversion Weirs: 60 cubic yards of debris removal (completed).
- Little Chico Creek: 20 cubic yards of debris removal (completed).
- Little Chico Creek: 30 cubic yards of debris removal (in progress).
- M&T Ranch Flood Relief Structure: Vegetation spot spraying (completed).
- Murphy Slough: Vegetation broadcast spray (completed).

- Sutter Collecting Canals: Wet sediment removal (in progress).
- Tisdale Bypass Channel: 10 acres vegetation masticating (in progress).
- Tisdale Bypass Levees: Repair/replace 10 signs (in progress).
- Tisdale Bypass Levees: Rodent depredating (in progress).
- Tisdale Bypass Levees: 4.5 miles vegetation mowing (in progress).
- Wadsworth Canal: Rodent depredating (in progress).

MA Activities

MA01

- 17.12 miles vegetation broadcast spraying (completed).

MA03

- Rodent depredating (in progress).

MA05

- 33.42 miles vegetation broadcast spraying (completed).

MA07

- 12.07 miles vegetation broadcast spraying (completed).
- 1 gate repair/replace (complete).

MA13

- 41.97 miles vegetation mowing (complete).
- 0.66 miles road gravel (in progress).
- 30 cubic yards debris removal (completed).

MA16

- 4.09 miles vegetation broadcast spraying (complete).
- 4.09 miles vegetation broadcast spraying (in progress).

Flood Maintenance Assistance Program (FMAP)

- On December 17, 2018, DWR Director Karla Nemeth approved the FMAP guidelines and solicitation package which were distributed to LMAs on December 19, 2018. The first due date for program solicitation applications is January 25, 2019.

STUDIES & EVALUATIONS

Activities related to evaluating all SPFC facilities to identify any deficiencies, and prioritizing (emergency, critical, serious, monitor) them for repair, rehabilitation, or replacement. These evaluations include:

- *Levee stability*
- *Levee penetrations, such as pipes and culverts*

- *Channel capacity*
- *Structure functionality*
- *Levee Tree Assessment*
- *Encroachments*
- *O&M right-of-way (ROW)*

Channel Evaluation

Cherokee Canal Evaluation

- Staff provided an estimate of around 1.5 million cubic yards of sediment in the canal between Afton Road and Cottonwood Creek when comparing 2008 LiDAR data to as-built condition. Staff is simulating different scenarios (as-built roughness, complete veg removal, without Richvale Irrigation District canal crossing) using HEC-RAS model.

Sacramento Area Streams Survey

- Staff is requesting DOE's Geodetic Branch to add Chico Streams and Butte Creek to the original list of the channels for LiDAR survey. The original list includes Cherokee Canal, Willow Slough Bypass, Cache Creek, Knights Landing Ridge Cut, Natomas Cross Canal, East Side Canal, Linda Creek, Arcade Creek, and NEMDC.

Levee Evaluation

Pipe/Culvert Evaluation

- Phase 1 video inspections:
 - 154 of 258 pipes passing through State Maintenance Area (SMA) levees have been video inspected by FMO.
 - 32 DWR directed funding agreements have been executed. The LMAs are in the process of inspection and evaluation of their pipes.
- Hydro vacuum/flushing followed by video inspection in MA01, MA12, MA13, ST03, ST10, and ST20 has been postponed due to the recent rains. This work is scheduled to resume after the flood season.
- AECOM has completed the electro-magnetic studies for missing pipes including all MAs and SMAs, and each participating and subsequently added non-participating LMAs, with two exceptions: RD 2095 who denied access, and ARFCD who is providing additional information on the number of pipes requiring assessment.

Levee Tree Assessment (LTA)

- Training of staff in the North Region Office, Sutter Yard Maintenance Areas, and Sacramento Yard Maintenance Areas occurred in November 2018.

Encroachments

- FMO continues to coordinate with HAFOO, CDEC, FPO, and CVFPB to prepare a comprehensive list of encroachments in SMAs and MAs. Information and data from cooperating partners listed above are used and compared to the most recent USACE

Periodic Inspection report for accuracy, completeness, and redundancy.

- The third and fourth draft list(s) for MA05 and MA12 have been completed and are under review and field confirmation.

DEFERRED MAINTENANCE

Maintenance that has not been completed to keep the facilities in an acceptable and operable condition will result in deferred maintenance. If the work is not completed as part of O&M activities, it will lead to a larger maintenance issue and cost significantly more.

2017 Emergency Rehab

- Construction began on August 1, 2018 on the final nine critical repair sites identified for state rehabilitation, which were completed in December 2018. All site construction work has been completed, with plant maintenance activities planned for 2019.
- Construction is planned for Fall 2019 on previously identified serious sites, up to 28 of which are in design and permitting stages.

Levee Rehab

Flood System Repair Program (FSRP)

- DWR is completing LMA outreach and field reconnaissance to prioritize eligible repairs and continue to enter into project agreements with the remaining program funding. Reclamation Districts are reporting their high priority sites as part of this reconnaissance.

Pipe Rehab

- FMO is currently working on the logistics to schedule the Cured In-Place Pipe (CIPP) rehabilitation work in Putah Creek and Willow Slough in the Davis area. These are system pipes that have Automatic Board Orders (ABOs). ABOs were “permits” issued by the Central Valley Flood Protection Board, where the Board assigned “responsibility” for features to the adjacent land owner, without the landowner taking any action. FMO believes these pipes/culverts are SPFC facilities, owned by the State, not encroachments.
- All the preliminary cleaning and video inspections have been completed by the contractor.

The following table provides an overall status update of the pipe inspection/rehabilitation work:

DMP-Pipes Program		Status Update: 1/3/2019	
	MAs/SMAs	Non-Participating LMAs	Participating LMAs¹
Phase 1			
Total pipes for C&I (Cleaning & Inspection):	258	161	995
Total pipes completed:	154	134	TBD
Irrigation Impacted Pipes:	50	7	TBD
Continuous water Pipes:	28	10	TBD
Vault access required:	23	--	TBD
Geophysical Evaluation*			
"Not-Found" Pipe Location:			
Total Pipes for Geophysics (GP)	137	174	221
Total Pipes GP Complete	137	172	221
Phase 2 - R/R/R			
CIPP Slip-Lining Rehabilitation**	40	TBD	TBD
Removal and Replacement***	TBD	TBD	1
Removal	TBD	TBD	TBD
Abandonment in Place	TBD	TBD	TBD

* DWR Contractor completing geophysical evaluation in MAs/STs, Non-Participating LMAs, and where requested by participating LMAs

** DWR has a contract for CIPP Slip-Lining Rehabilitation; 40 pipes are ready for rehab, pending scheduling and logistics

*** RD784 has 1 pipe in Phase 2 agreement with DWR for removal/replacement; Design/permitting work in progress

1 - Many Participating LMAs are reporting difficulty in contracting geophysics, pipe cleaning, and video inspection work.

Channel Rehab

Elder Creek Channel Rehab

- Year 2 of sediment removal has been completed.

Structural Rehab

Butte Slough Outfall Gate (BSOG) Rehabilitation

- DWR is formulating a proposal based on input from natural resource agencies.

Tisdale Weir Rehabilitation and Fish Passage Project

- Multi-agency meetings continue monthly. Agencies include Central Valley Flood Protection Board, California Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. The conceptual design is being developed by this group led by FMO.

Knights Landing Outfall Gates (KLOG) Fish Barrier

- Previous fish exclusion barrier became inoperable and was removed in Fall 2016.
- FMO is moving forward to identify the appropriate design and operational needs for replacing the fish exclusion barrier.

Yard Rehab*Sacramento Yard Improvements*

- Paving of the Phase 1 work is complete.
- Phase 2 work will be put on hold for the winter and will start back up in the spring. Work that may occur during the winter includes extra work to extend the sewer line to the City of West Sacramento service in the street, remove and reinstall domestic and fire water backflow preventers, and connect to city water.

ENVIRONMENTAL INITIATIVES

Environment coordination, advance mitigation, and other holistic measures to expedite our project delivery. FMO is looking to find long-term solutions that will allow more effective and efficient O&M by identifying and implementing environmental measures as part of the system.

Environmental Permitting for Operations and Maintenance Project (EPOM)

FMO is hiring more environmental staff to assist with the permitting requirements and for mitigation planning and agency collaboration.

Routine Maintenance Agreement (RMA) under FCG 1600

On January 2, 2019, FMO received an executed RMA from California Department of Fish and Wildlife Region 3 (Delta). Like the Region 2 RMA, this agreement is for 12 years and broadens the ability of DWR's maintenance yards' ability to impact sensitive environmental resources while performing maintenance activities on the Sacramento River Flood Control Project.

O&M Habitat Conservation Plan (HCP)

This effort is on hold due to how the Systemwide Improvement Framework Endangered Species Act nexus process works out.

Systemwide Improvement Framework (SWIF) - Endangered Species Act,**Section 7 Nexus**

The USACE has agreed to provide a nexus for the Endangered Species Act for SWIF through a workplan review and approval process. FMO will be proposing rodent damage abatement and repair activities along MA05 to the USACE under the SWIF. FMO will be

meeting with the USACE to discuss how environmental consultation and review will proceed.

FEDERAL PROGRAM

FMO's interaction with federal agencies, mainly USACE, in rehabilitation of deferred maintenance projects.

Federal Public Law 84-99 Emergency Repair Project (PL 84-99)

- USACE has completed construction on seven PL 84-99 Emergency Rehabilitation sites (scheduled for 2018) identified from the 2017 high water events. Up to 22 additional sites are targeted for repair in 2019. USACE completed repairs to 15 damaged sites in 2017. DWR and CVFPB are working closely with USACE to manage the state's interest in these projects.

Sacramento River Bank Protection (Sac Bank)

- FMO followed up with USACE on the submittal for \$200 million federal credit request for work performed under the 2006 emergency critical repair program performed under the Sacramento River Bank Protection Authority.