

## 4.0 State Plan of Flood Control Lands

In most cases, federal project authorizations require the nonfederal sponsor to provide all lands, easements, and rights-of-way for project construction, maintenance, and operation. Property rights for SPFC lands are held by the SSJDD, which is under the jurisdiction of the Board. The SSJDD was created by State legislation in 1913 and has associated property rights going back to 1900. Boundaries of the SSJDD are shown in Figure 4-1.

SPFC property rights extend to about 18,000 parcels of land. All comprehensive property records, indexes, and mapping associated with SPFC lands are maintained by DWR's Division of Engineering,

Geodetic Branch, Cadastral Survey Section. Each parcel of land has a file folder containing hard copies of the parcel description and other pertinent information. About 400 plat maps show the locations of the land parcels. Since the recording system has been in place for more than 100 years, it is set up to identify rights on individual properties at specific locations and is not readily suitable to general queries or other summaries.

This section presents information about SSJDD land holdings, types of property rights, agreements for use of easements and properties, lands of designated floodways, and ongoing evaluations.



Figure 4-1. Boundaries of the Sacramento-San Joaquin Drainage District

## 4.1 Summary

In general, SSJDD or LMAs acquired and hold property rights necessary for the construction of facilities and ongoing O&M. Property rights are held for approximately 210,500 acres of land throughout 19 Central Valley counties. Table 4-1 summarizes, by county, the approximate acreage of land for which SSJDD holds property rights.

**Table 4-1. Acres of Land for Which Sacramento-San Joaquin Drainage District Holds Property Rights, by County**

County	Acres
Butte	26,510
Colusa	5,272
Fresno	5,018
Glenn	38,000
Lake	174
Madera	5,460
Mariposa	3,246
Merced	10,900
Modoc	2
Placer	95
Plumas	177
Sacramento	8,650
San Joaquin	4,350
Solano	16,100
Stanislaus	500
Sutter	29,200
Tehama	580
Yolo	74,800
Yuba	950

Note:  
This table represents approximate acres of land in each county. For more information on property rights, contact DWR Division of Engineering-Geodetic Branch, Cadastral Survey Section.

## 4.2 Data Gaps

The record of SPFC property right holdings is not clear in all areas. Because of the incremental construction of SPFC facilities over almost a century, records are not of uniform quality and records for rights in some areas are missing.

SPFC property rights have been acquired and disposed of for various reasons throughout the history of the SPFC in the Sacramento and San Joaquin river basins. For example, property rights may have been acquired for spoiling or borrowing soil material necessary for construction and, in some cases, these rights were disposed of through sale or transfer after construction.

Standards for easements beyond the land-side toe of levees for O&M have varied with time. Since the 1980s, a 10-foot-wide easement has been standard. However, a majority of SPFC levee easements were acquired before the 1980s according to standards existing at the time of acquisition. Therefore, 10-foot-wide easements do not exist throughout the system. Similarly, easements to gain access to and from various points along the levee system are not consistent. In some areas, the inventory of unauthorized encroachments on these easements is incomplete.

In some cases, levee were set back by USACE, and the new levee toe infringed on preexisting structures and features. Also in some cases, these features were not previously encroachments, but became encroachments when levees were moved. Many of these features were not removed or relocated as part of a project, and were accepted at the time.

## 4.3 Fee Title Lands

Fee title lands, or fee simple lands, are those with full ownership. Some of the property rights for the SPFC are held in fee title, but the current method of record-keeping does not allow easy summarization of these holdings. Some levees are on lands owned by the State. Also, the State owns the land within the Chowchilla Bypass, and the Eastside Bypass upstream from Sand Slough.

In some areas, land was purchased by the State in fee and then disposed of while the State retained some easement rights.

## 4.4 Easements

Easements are limited-use rights to property owned by others. SSJDD often acquired property rights in areas where it was determined that purchasing easements was more appropriate than purchasing the land in fee title. The majority of SSJDD's property rights are easements. In these locations, most

notably the Butte Basin (Colusa and Glenn counties only), the Sutter, Sacramento, Yolo, Butte, Tisdale, and Mariposa bypasses, and the Eastside Bypass downstream from Sand Slough, flowage easements were acquired that compensate landowners for giving SSJDD the right to flow or flood water over land.

Common easement types used by SSJDD are listed below:

- **Levee** – Standard levee easement language has been revised numerous times in the past 100 years. With each revision, the standard version has become more specific and defined. Also, standard language has been modified or sections deleted in some easement deeds, as requested by the grantor. Because of the revisions and customization, language in each deed must be evaluated to determine SSJDD's exact rights for the parcel. For example, two levee easements (acquired at different times, one 60 years ago to build the levee, the other 5 years ago to enlarge and improve the levee) could be adjacent but have different levee rights. The latter would have the right to preserve and retain all vegetative growth desirable for project purposes; the older document would only state that SSJDD had the right to build, construct, reconstruct, repair, and maintain, with no mention of replanting or preserving vegetation. Current levee language, Rights 1 through 8 (revised in 1994) are as follows:
  1. *Construct, reconstruct, enlarge, fence, plant with trees, shrubs and other vegetation, preserve and retain all vegetative growth desirable for project purposes, repair and use flood control works, which shall include, but not be limited to, access, haul and patrol roads, levees, ditches, embankments, channels, berms, fences and appurtenant structures, and operate and maintain said flood control works in conformity with the Code of Federal Regulations, Corps of Engineers' Standard O&M Manual, and State of California Standards.*
  2. *Clear and remove from said flood control works any or all natural or artificial obstructions, improvements, trees and vegetation necessary for construction, operation, maintenance, repair, reconstruction and emergence flood fight.*
  3. *Flow waters and materials and by said flow erode.*
  4. *Place or deposit earth, debris, sediment or other material.*
  5. *Excavate and remove earth, debris, sediment, or other material, including that placed or deposited as above.*
  6. *Locate or relocate roads and public utility facilities by grantee or others.*
  7. *Restrict the rights of the grantor, his successors and assigns, without limitations, to explore, extract, remove, drill, mine or operate through the surface or upper 100 feet of the subsurface in exercise of the grantor's interest in any minerals, including oil and gas.*
  8. *Restrict any use by others which may interfere with any of the uses listed herein or any use necessary or incidental thereto.*
- **Access** – A perpetual easement and right-of-way to construct, reconstruct, operate, maintain, and use an access and service road over a property.
- **Canal/Channel** – A perpetual easement and right-of-way to construct, reconstruct, enlarge, operate, and maintain, a canal or ditch, and all works necessary and appurtenant to a flood control facility.
- **Drainage and Flowage** – A perpetual easement and right-of-way to construct, reconstruct, enlarge, operate, and maintain drainage facilities, and to flood, seep, pond, and overflow water over a property.
- **Flowage** – A perpetual easement and right-of-way to flood, seep, pond, and overflow water over, through, and across a property.
- **Slope** – A perpetual easement, with the right to construct, reconstruct, extend, and maintain cut and fill slopes and drainage facilities over a property.
- **Temporary** – Other temporary easements and rights-of-way for access, borrow, spoil, and construction may have been acquired. Since these rights terminated after construction, they are no longer part of the SPFC property rights.

## 4.5 Implied Dedication

In cases where the State or LMA lack recorded real property rights, the State has relied on the doctrine of implied dedication codified in the California Civil Code (CCC) Section 1009(d) for access to SPFC features for inspections, O&M, floodfighting or other activities critical to the function of the system. This code creates, as defined, a vested right for a governmental entity to continue the use of lands where public funds have been used to make improvements on private property.

## 4.6 Agreements

SSJDD has agreements with public entities (cities, counties, utilities, other State departments, and federal entities) and individual landowners for specified use of easements and properties. Each agreement is unique and allows specific uses and restrictions.

## 4.7 Designated Floodways

See Sections 2.5.3 and 6.8 for descriptions of designated floodways. Designated floodways are not considered lands of the SPFC, but they are a condition for successful operation of the SPFC. They do not carry specific property rights, but are a regulatory designation.

## 4.8 Encroachment Permits

The Board issues permits for encroachments that are compatible with the flood system and do not weaken its facilities and hamper its O&M. The permits are not SPFC property rights, but are permissions by the Board to enter and use features of the SPFC under specific conditions. Encroachment permit applications must also be approved by USACE before the Board's issuance of permits.

There are many unpermitted encroachments on SPFC facilities. Some of these encroachments are clearly incompatible with O&M of SPFC facilities and should be removed. Others may be compatible and need permitting. Limiting and controlling encroachments are important to public safety. Unpermitted encroachments can limit visibility for inspections, can impede access necessary for floodfights and O&M, and can weaken the structural integrity of the facilities. Also, unpermitted encroachments could delay planned construction activities.

## 4.9 Ongoing Evaluation

Each individual property for which the SSJDD holds property rights represents an agreement between the previous owner of the rights and SSJDD or a Final Order of Condemnation forcibly transferring property rights to the government. While standard ownership and easement right agreements have been used by SSJDD, these agreements have changed throughout the years. In addition, individual property owners may have negotiated modified agreement terms. While the types of property rights may be aggregated into groups of similar rights, each individual deed must be reviewed to understand the specific rights held for the parcel.

Documentation and analysis of SPFC lands is extremely complex. More than 100 years of records exist that document thousands of land acquisitions and disposal actions. Over this period, record-keeping protocols, technology, surveying accuracy and methods, and legal language have all changed and developed significantly. Many early records use descriptive language that leaves significant interpretation to the boundary delineation of a parcel or the rights conferred by the deed. Compiling, rectifying, and standardizing these records into a state-of-the-art electronic database is an ongoing activity underway by DWR. This effort has been initiated, but substantial work remains to be completed so that records can be analyzed in detail. In the absence of this completed geographic information system (GIS) database, only approximate conclusions can be drawn from the existing data. Specific inquiries into the rights of individual parcels or groups of parcels are handled by DWR's Division of Engineering, Geodetic Branch, Cadastral Survey Section.

Based on rights that can be quantified, additional property rights may need to be obtained, especially for gaining access to SPFC facilities and for adequate easements along the landside toes of levees. Therefore, the State and LMAs may not have the land rights necessary for SPFC facility O&M as intended.

# 5.0 State Plan of Flood Control Operations and Maintenance

The modes of O&M are part of the SPFC. Modes of O&M for the completed facilities of the SPFC that USACE has turned over to the Board include O&M manuals, inspections and maintenance of SPFC facilities by DWR and LMAs, and flood operations.

This section presents information about O&M manuals, inspections, maintenance, and operations for the SPFC.

## 5.1 Summary

DWR depends on 81 LMAs to keep the SPFC levees in good condition. In addition, DWR maintains structures, channels, and levees in specific sections of the SRFCP. USACE does not perform O&M on SPFC facilities.

O&M manuals specify needed inspections and O&M for each unit of the SPFC. A unit may be a reach of levee along a waterway, a pumping plant, a weir, a control structure, a dam and reservoir, or another facility.

## 5.2 Operation and Maintenance Manuals

The O&M manuals contained on the reference DVD included with this report are part of the SPFC. O&M manuals describe actions that maintaining agencies are to follow during high-water events and for

keeping project facilities in good working condition. USACE has prepared two standard O&M manuals for Sacramento and San Joaquin river facilities, respectively. These standard O&M manuals are supported by more detailed O&M manuals for each unit of the State-federal flood management system in the Sacramento and San Joaquin river basins.

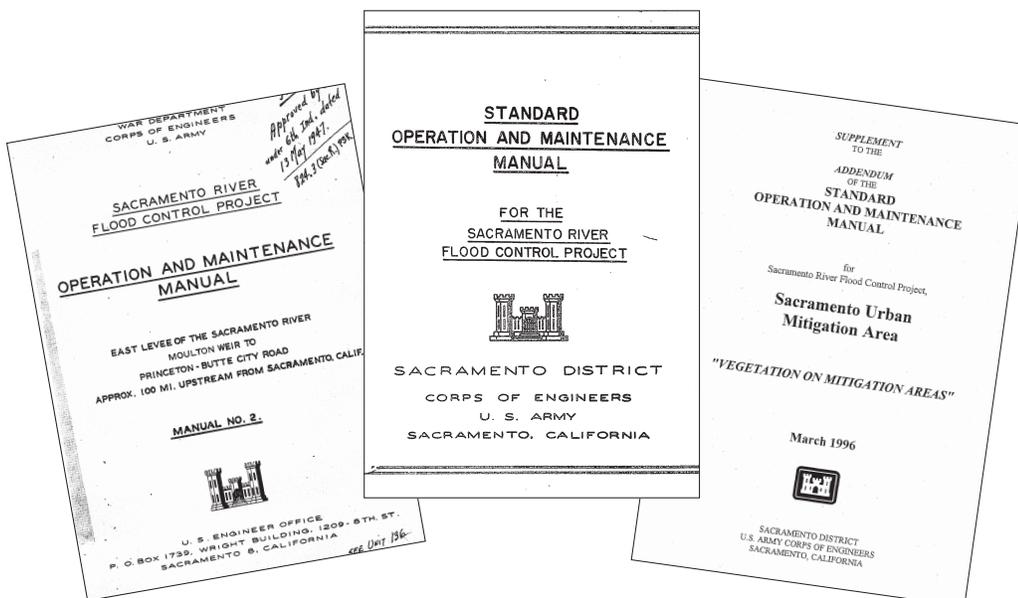
### 5.2.1 Standard Operations and Maintenance Manuals

The two standard USACE O&M manuals present requirements that apply to all maintaining agencies that operate and maintain the various geographical SPFC units. The two standard USACE O&M manuals are listed below:

- *Standard Operation and Maintenance Manual for the Sacramento River Flood Control Project (USACE, revised May 1955)*
- *Standard Operation and Maintenance Manual for the Lower San Joaquin River Levees, Lower San Joaquin River and Tributaries Project, California (USACE, April 1959)*

The standard O&M manual for the Sacramento River portion of the system (see O&M Manual SAC000) and the standard O&M manual for the San Joaquin River portion of the system (see O&M Manual

SJR000) can be found on the reference DVD in the back pocket of this report. The standard O&M manuals apply to all units of each project and conform to Section 208.10, Title 33 of the Code of Federal Regulations (CFR), as approved by the Acting Secretary of the Army on August 9, 1944, and published in the Federal Register on August 17, 1944. Each of the two manuals includes a copy of the regulation.



Examples of general rules for O&M of local flood control works (facilities) specified in the two standard manuals are as follows:

- O&M for maximum benefits
- O&M in accordance with USACE-prescribed regulations
- Reserve supply of materials for flood emergencies
- No encroachments that adversely affect O&M
- No improvements without USACE approval
- Semiannual report
- USACE access at all times
- Maintenance and repairs performed by maintaining agencies, as deemed necessary by USACE
- Coordination during flood periods

Examples of more detailed O&M information contained in the two USACE standard manuals include the following:

- Conditions requiring facility maintenance such as erosion, vegetation, burrowing animals, degradation of levee crown
- Need for patrols during floods
- Need for inspections
- Procedures to combat flood conditions

### 5.2.2 Unit-Specific Operation and Maintenance Manuals

USACE prepared detailed O&M manuals for each separate unit of the State-federal flood management system when the unit was completed. Unit-specific O&M manuals (see reference DVD) were incrementally prepared for specific O&M requirements that apply to the unit. These O&M manuals supplement information included in the two USACE standard O&M manuals. Each unit-specific manual includes information on authorization, location, project description, protection provided, assurances of cooperation provided by the nonfederal sponsor (usually the Board), maintenance methods, operation methods, and inspection and reporting.

The O&M manuals generally include the as-constructed drawings as an appendix, but the drawings are filed separately because of their large size. Some manuals include information on reconstruction or improvements completed following construction of the

original facilities, but it is apparent that not all O&M manuals are up to date. Levee repairs such as construction of seepage berms and relief wells in 1997 and 1998, many repairs under Public Law 84-99, and other levee modifications are yet to be included in the unit-specific O&M manuals. Considering the age of the levees, it is likely that there are other levee modifications that have not been documented in the manuals or records may no longer exist.

Most of the unit-specific O&M manuals were prepared for individual segments of levees, often aligned to the LMA responsible for their maintenance. Other unit-specific O&M manuals were prepared for pumping plants along a given reach of stream channel, weirs, diversions, storage reservoirs, or other features of the SPFC.

Each unit-specific O&M manual also includes information on ancillary features that are part of each unit such as bridges, culverts, and other minor drainage facilities, and hydrographic features such as gages necessary for operation. The O&M manuals and the reference DVD contained at the end of this report contain specific information on these features. This information should be viewed as a general inventory of these facilities, not a definitive list of existing features.

O&M Manuals SAC1 through SAC17 are early manuals that have been superseded by more recent information in O&M manuals numbered SAC100 and higher. SAC1 through SAC17 are included on the reference DVD for historical completeness, but do not reflect current information.

As mentioned, many levees have been modified subsequent to original construction throughout the system. The common practice is for USACE to prepare a supplemental O&M manual to cover work by USACE under a separate project at the same location. DWR and USACE are currently assembling a set of these supplemental O&M manuals.

### 5.3 Inspections

Each individual unit-specific O&M manual includes requirements for inspection of SPFC facilities. DWR is responsible for inspections of all SPFC facilities. DWR inspects levees that are maintained by DWR and LMAs, and then reports the findings to USACE and the Board. DWR has implemented a self-inspection program that requires LMAs to inspect

their levees in the summer and winter, while DWR conducts inspections in the spring and fall. From the inspection information submitted, USACE may choose to conduct follow-up inspections in certain areas. USACE uses the State's inspection findings and its own follow-up inspections to make Public Law 84-99<sup>1</sup> eligibility determinations.

While each O&M manual contains specific inspection criteria, the following are examples of items included in inspections:

- Debris
- Channel vegetation
- Levee vegetation
- Encroachments
- Sedimentation
- Settlement
- Erosion
- Rodent damage
- Condition of structures
- Other conditions specified in each O&M manual

Annual inspection reports and a variety of other inspection reports prepared by DWR's Flood Project Integrity and Inspection Branch can be found on the California Data Exchange Center (CDEC) Web site: <http://cdec.water.ca.gov/fsir.html>

The maintenance status of project channels and structures is reported in an annual Inspection Report. Each annual report includes criteria for inspections of levee maintenance, channels, and structures.

### 5.3.1 Interim Vegetation Inspection Criteria

In April 2007, USACE released a draft white paper, *Treatment of Vegetation Within Local Flood Damage Reduction Systems* (USACE, 2007), which called for the removal of wild growth, trees, and other encroachments that might impair levee integrity or floodfighting access to reduce the risk of flood damage. Guidance on vegetation standards for flood control structures can be found in USACE *Engineering Technical Letter (ETL) 1110-2-571* (USACE, 2009) and *Engineering Manual (EM) 1110-2-301* (USACE, 2000). These standards limit uncontrolled vegetation growth (brush, weeds, or trees) to smaller than

2 inches in diameter. USACE notified sponsors that levees that fail to meet these existing standards be rated as unacceptable, with the consequence that the sponsors could lose eligibility for federal assistance (Public Law 84-99) in post-flood levee rehabilitation.

In response to USACE vegetation criteria, DWR revised its levee inspection criteria for vegetation in fall 2007. The interim vegetation inspection criteria will be considered in the short term until they can be revised using best available science, and USACE completes its review and revision of its levee vegetation standards. The inspection criteria are aimed at improving public safety by providing visibility for inspections, eliminating vegetation conflicts and encroachments that could hamper floodfight activities, and improving access for overall maintenance.

DWR's Interim Vegetation Inspection Criteria apply on the entire land-side slope plus a 10-foot-wide easement beyond the land-side toe. On the water-side, these criteria apply to vegetation on only the top 20 feet (slope length) of the levee slope. Trees within these areas must be trimmed up to 5 feet above the ground (12 feet above the crown road) and thinned enough for visibility and access. Brush, weeds, or other vegetation more than 12 inches high blocking visibility and access within these levee areas should be trimmed, thinned, mowed, burned, dragged, or otherwise removed in an allowed manner.

### 5.3.2 Enforcement

During the spring and fall inspection cycles, DWR identifies and documents inspection items as acceptable (A), minimally acceptable (M), or unacceptable (U) considering USACE inspection rating criteria.

The Board, in conjunction with DWR and LMAs, addresses deficient items, including the following:

- Critical items impacting the structural integrity of a levee
- Vegetation not in compliance with interim vegetation inspection criteria, or determined to critically weaken a levee and lower public safety
- Critical erosion issues
- Aggressive rodent control and repair of levee damage by rodents

<sup>1</sup>Public Law 84-99 defines federal rehabilitation assistance for flood control works.

- Encroachments affecting floodfighting activities or levee integrity

To address deficiencies identified in inspections, the Board, in conjunction with DWR, does the following:

- Notifies USACE of inspection findings
- Requires submittal of an LMA Corrective Action Plan consistent with the agency's O&M responsibility
- Identifies a time period required to correct deficiencies
- Sends notification letters to appropriate LMAs indicating inspection status, maintenance history, and impacts on Public Law 84-99 eligibility through DWR's Flood Risk Notification Program

To enforce compliance regarding deficiencies, DWR will rate items that are minimally acceptable as unacceptable (U) if they are not corrected within the time period in the notification, unless work is scheduled or in progress. This may lead to an overall rating of unacceptable (U), resulting in loss of Public Law 84-99 eligibility.

Levees in maintenance areas (MA) (see Section 5.4.1) and LMAs and channels ranked unacceptable (U) because of vegetation will be expected to remedy deficiencies. To remain eligible for the Public Law 84-99 program, the Board expects these issues to be addressed expeditiously, and in compliance with all appropriate environmental laws.

## 5.4 Maintenance

As mentioned, maintenance of SPFC facilities is performed by DWR and 81 different LMAs. USACE Regulation 33, CFR 208.10, separates responsibilities into two categories – levees and channels. In addition, DWR and LMAs are responsible for satisfying all environmental and resource agency requirements or laws that apply during performance of maintenance activities.

### 5.4.1 Maintenance by DWR

In the Sacramento River Basin, DWR maintains levees and roads in accordance with USACE O&M manuals for about 293 miles of levees under DWR jurisdiction. DWR also maintains 14 SPFC structures and all SPFC channels for compliance with the O&M manuals. Channel maintenance can include vegeta-

tion, debris, and sediment removal for maintaining flood-carrying capacity, and erosion repairs. DWR performs maintenance through its Sacramento and Sutter maintenance yards on a continuing basis.

In the San Joaquin River Basin, the Board generally has passed all maintenance responsibility to the LMAs. However, DWR has performed some critical erosion repairs identified under the Governor's Executive Order S-01-06; these repairs were funded through a legislative appropriation by Assembly Bill (AB) 142.

### *State Responsibility in California Water Code 8361*

CWC Section 8361 specifies the portions of the SRFCP for which DWR has O&M responsibility:

*8361. The department shall maintain and operate on behalf of the state the following units or portions of the works of the Sacramento River Flood Control Project, and the cost of maintenance and operation shall be defrayed by the state:*

- (a) The east levee of the Sutter Bypass north of Nelson Slough.*
- (b) The levees and channels of the Wadsworth Canal, Willow Slough Channel downstream from the Southern Pacific Railroad from Davis to Woodland except that portion of the north levee thereof lying within Reclamation District No. 2035, Putah Creek downstream from Winters, the intercepting canals draining into them, and all structures incidental thereto.*
- (c) The collecting canals, sumps, pumps, and structures of the drainage system of Project No. 6 east of the Sutter Bypass.*
- (d) The bypass channels of the Butte Slough Bypass, the Sutter Bypass, the Tisdale Bypass, the Yolo Bypass, and the Sacramento Bypass with all cuts, canals, bridges, dams, and other structures and improvements contained therein and in the borrow pits thereof.*
- (e) The levees of the Sacramento Bypass.*
- (f) The channels and overflow channels of the Sacramento River and its tributaries and the major and minor tributaries' flood control*

projects as authorized and defined in Sections 12648, 12648.1, and 12656.5.

- (g) *The Knights Landing ridge cut flowage area.*
- (h) *The flood relief channels controlled by the Moulton and Colusa Weirs and the training levees thereof.*
- (i) *The levee on the left bank of the Sacramento River adjoining Butte Basin, from the Butte Slough outfall gates upstream to a point four miles northerly from the Moulton Weir, after completion.*
- (j) *All weirs and flood relief structures.*
- (k) *The west levee of the Yolo Bypass, extending from the west end of the Fremont Weir southerly to the Cache Creek Settling Basin and from Willow Slough Channel to Putah Creek and the east levee of the Yolo Bypass from Fremont Weir southerly two miles.*
- (l) *The levee on the west bank of Feather River extending a distance of about two miles southerly from the Sutter-Butte Canal head-gate.*
- (m) *The levees of Cache Creek and the easterly and westerly levees of Cache Creek Settling Basin; excepting the portion of the southerly levee of Cache Creek lying upstream from State Highway Route 7 (U.S. 99W).*
- (n) *The flowage area of Western Pacific Intercepting Canal extending northerly for a distance of five miles from Bear River.*
- (o) *The levees of Tisdale Bypass from Tisdale Weir 4.5 miles easterly to Sutter Bypass.*
- (p) *The flood relief structures or weirs and other structures or facilities essential for their proper functioning in the vicinity of the Sacramento River between Big Chico Creek and the north boundary of Glenn County Levee District No. 3.*

### Channel Maintenance

DWR is responsible for maintaining all SPFC channels to control vegetation, sedimentation, fallen trees, and other debris affecting channel capacity. CWC Sections 8361 (b), (d) and (f) and (h) require DWR to carry out those functions that are necessary

to maintain carrying capacity of the channels and overflow channels. Channels maintained by DWR are listed in Table 5-1.

### Maintenance Areas

When an LMA is not able to operate or maintain project facilities to acceptable standards, DWR or the Board is authorized to form a maintenance area and take responsibility for those facilities in the best interest of the State. CWC Section 12878 defines a maintenance area as follows:

*“Maintenance area” means described or delineated lands that are found by the board or department to be benefited by the maintenance and operation of a particular unit of a project.*

The procedure for forming a maintenance area is covered in CWC Sections 12878 through 12878.21. The flood management benefit of this program is that it addresses sections of levee that are not being maintained through either (1) identifying another maintaining agency willing to accept the maintenance responsibility, or (2) turning over maintenance responsibilities to the State to be paid for by local beneficiaries. Ten maintenance areas (1, 3, 4, 5, 7, 9, 12, 13, 16, and 17) are currently active within the jurisdictional boundaries of the Board (see Figures 5-1 and 5-2). Based on their location, levees within these maintenance areas are maintained by either the DWR Sacramento or Sutter maintenance yards.

### 5.4.2 Maintenance by Local Maintaining Agencies

Most levees in the SPFC are maintained by LMAs that fund maintenance activities through assessing landowners within their boundaries. These LMAs primarily comprise levee districts and RDs. A variety of cities, counties, and other public agencies and municipalities also maintain SPFC levees and other facilities. In addition, DWR maintains specific facilities defined in CWC Section 8361 and for specific maintenance areas (see Section 5.4.1). LMAs and DWR maintenance areas are shown in Figures 5-1 and 5-2, and listed in Table 5-1 along with the SPFC facilities they maintain.

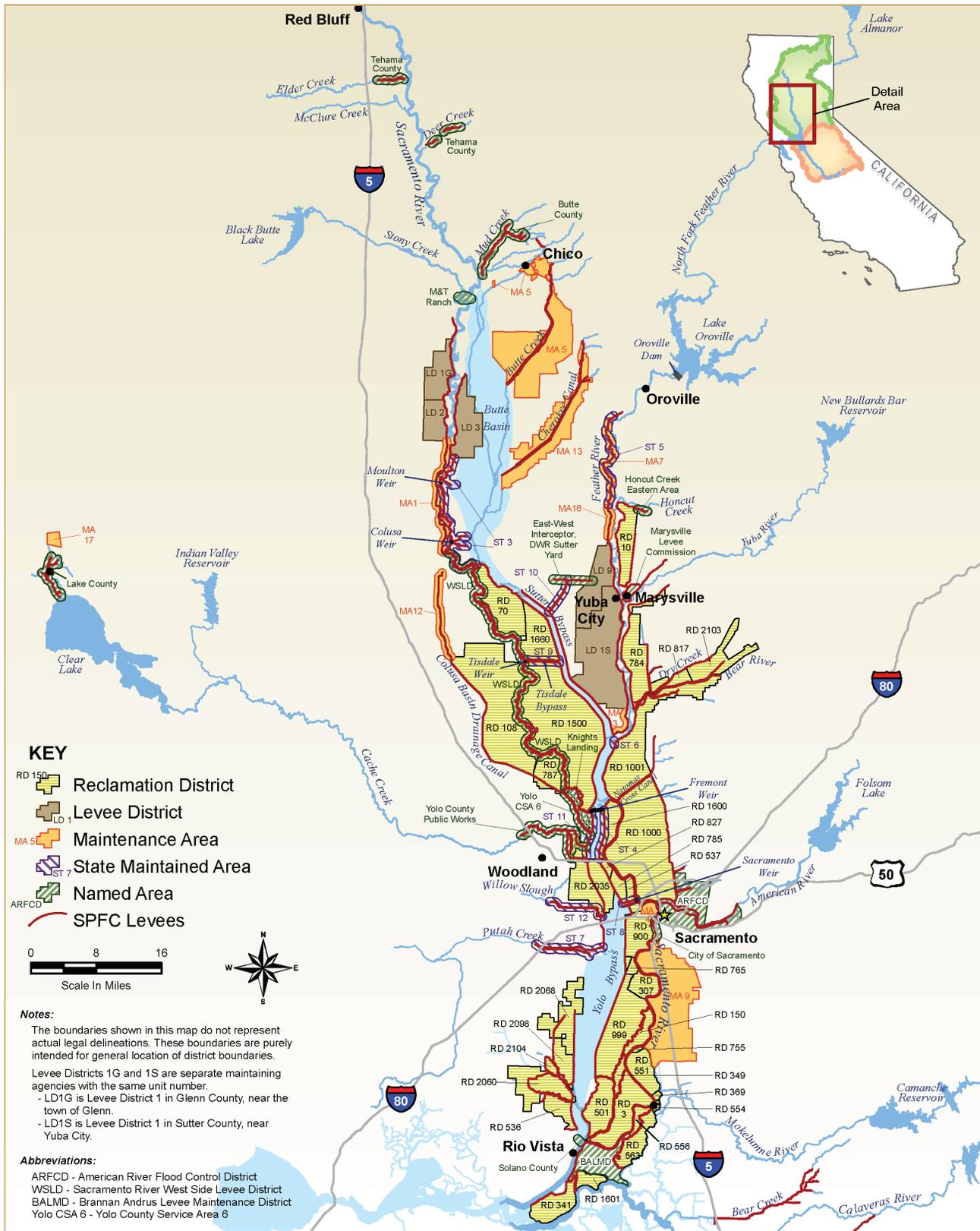


Figure 5-1. Locations of Maintaining Agencies Within the Sacramento River Basin

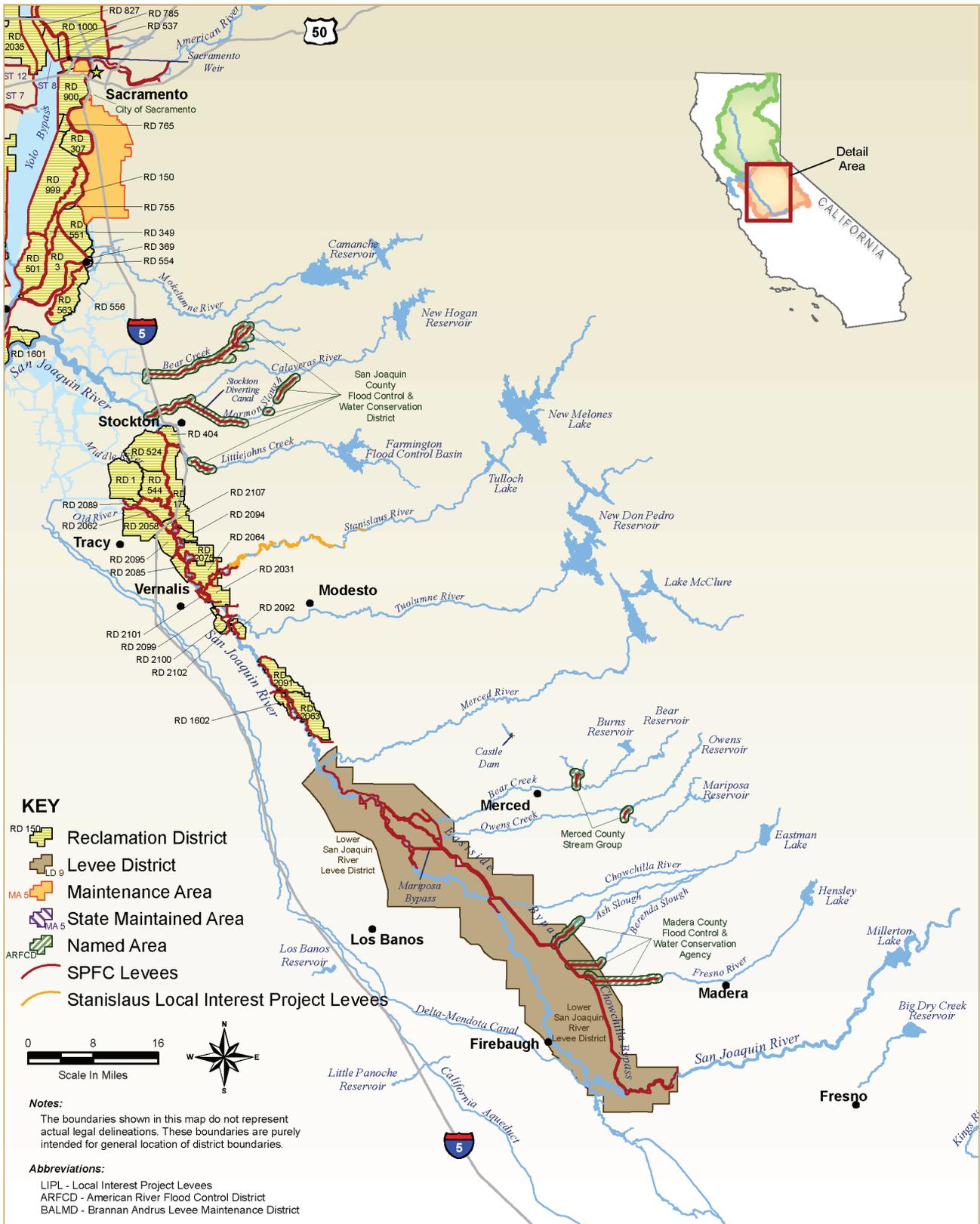


Figure 5-2. Locations of Maintaining Agencies Within the San Joaquin River Basin

**Table 5-1. Maintaining Agencies for State Plan of Flood Control Facilities**

<b>State Plan of Flood Control Facility</b>	<b>Maintaining Agency</b>
Sacramento River bank protection, Red Bluff to Chico Landing	DWR – Sutter Maintenance Yard
North Fork Feather River channel improvements, including a diversion structure, an excavated rock-lined diversion channel, seven drop structures, and levees	Plumas County Department of Public Works
Feather River right-bank levee, high ground to Yuba City	DWR – Sutter Maintenance Yard, LD 9
Feather River right-bank levee, Yuba City to Sutter Bypass	LD 1 (Sutter County)
Feather River left-bank levee, Honcut Creek to Jack Slough	RD 10
Feather River left-bank levee, Yuba River to Bear River	RD 784
Sutter-Butte Canal Headgate	DWR – Sutter Maintenance Yard
Honcut Creek left bank levee, upstream from Feather River confluence	RD 10
Back levee for RD 10, along Jack and Simmerly sloughs	RD 10
Ring levee around City of Marysville	Marysville Levee Commission
Yuba River right-bank levee, upstream from Marysville ring levee	Marysville Levee Commission
Yuba River left-bank levee, upstream from Feather River confluence	RD 784
Feather River left-bank levee	RD 784
Feather River right-bank levee	LD 1 (Sutter County)
Dry Creek left-bank levee, upstream from Bear River confluence	RD 817, RD 2103
Dry Creek right-bank levee, upstream from Bear River confluence	RD 784, RD 817
Bear River right- and left-bank levees, upstream from Dry Creek confluence	RD 784, RD 817, RD 1001
Yankee Slough right- and left-bank levee, upstream from Bear River confluence	RD 1001
WPRR Intercepting Channel right-bank levee	RD 784
WPRR Intercepting Canal Bridge (WI-1)	DWR – Sutter Maintenance Yard
WPRR Intercepting Canal Bridge (WI-2)	DWR – Sutter Maintenance Yard
WPRR Intercepting Canal Bridge (WL-1)	DWR – Sutter Maintenance Yard
Bear River right-bank levee, downstream from Dry Creek confluence	RD 784
Bear River left-bank levee, downstream from Dry Creek confluence	RD 1001
Feather River right-bank levee from Bear River to Sutter Bypass	LD 1 (Sutter County), DWR – Sutter Maintenance Yard
Feather River left-bank levee from Bear River to Sutter Bypass	RD 1001
Nelson Bend Rock weir on Feather River at Sutter Bypass	DWR – Sutter Maintenance Yard
Sutter Bypass channel	DWR – Sutter Maintenance Yard
Sutter Bypass Toe Drain Bridge (EL-1A)	DWR – Sutter Maintenance Yard
Sutter Bypass East Borrow Canal Bridge (EL-2)	DWR – Sutter Maintenance Yard
Sutter Bypass East Borrow Canal Bridge (EL-3)	DWR – Sutter Maintenance Yard
Sutter Bypass East Borrow Canal Bridge (EL-6)	DWR – Sutter Maintenance Yard
East Interceptor Canal/Sand Creek Bridge (EI-2)	DWR – Sutter Maintenance Yard
East Interceptor Canal Bridge (EI-5)	DWR – Sutter Maintenance Yard
State Drain Bridge (CC-4)	DWR – Sutter Maintenance Yard

Table 5-1. Maintaining Agencies for State Plan of Flood Control Facilities (contd.)

State Plan of Flood Control Facility	Maintaining Agency
Feather River/Sutter Bypass right-bank levee, upstream from Sacramento River confluence	RD 1500
Feather River/Sutter Bypass left-bank levee, upstream from Sacramento River confluence	RD 1001
American River right-bank levee, upstream from Natomas East Main Drainage Canal	American River Flood Control District
Vegetation mitigation, five sites between H Street and Watt Avenue	American River Flood Control District
Pumps along American River at H Street and Watt Avenue	Sacramento County
American River left-bank levee, upstream from Natomas East Main Drainage Canal	American River Flood Control District
American River channel	DWR – Sacramento Maintenance Yard
Natomas East Main Drainage Canal right-bank levee at Sankey Road	RD 1000
Dry (Linda) Creek left-bank levee, upstream from Natomas East Main Drainage Canal	American River Flood Control District
Maggie Creek diversion channel	American River Flood Control District
Natomas East Main Drainage Canal right- and left-bank levees, from Arcade Creek to American River	RD 1000
Arcade Creek right- and left-bank levees, upstream from Natomas East Main Drainage Canal	American River Flood Control District
American River right-bank levee, from Natomas East Drainage Canal to Sacramento River	RD 1000
Lower Butte Creek channel improvements and Howard Slough diversion structure	DWR – Sutter Maintenance Yard
Butte Slough Outfall Gates	DWR – Sutter Maintenance Yard
Butte Slough Bypass channel	DWR – Sutter Maintenance Yard
Right-bank levee from Butte Slough Outfall Gates to Sutter Bypass	RD 70
Sutter Bypass channel	DWR – Sutter Maintenance Yard
Sutter Bypass pumps and right- and left-bank levees from State Route 20 to Wadsworth Canal	DWR – Sutter Maintenance Yard, RD 70, RD 1660
Wadsworth Canal right- and left-bank levees and channel, West Intercepting Canal, and East Intercepting Canal right- and left-bank levees	DWR – Sutter Maintenance Yard
Sutter Bypass right-bank levee from Wadsworth Canal to Tisdale Bypass	RD 1660
Sutter Bypass left-bank levee from Wadsworth Canal to Tisdale Bypass and Pumping Plant No. 2	DWR – Sutter Maintenance Yard
Sutter Bypass right-bank levee downstream from Tisdale Bypass to Feather River confluence	RD 1500
Sutter Bypass left-bank levee downstream from Tisdale Bypass to Feather River confluence and Pumping Plant No. 1	DWR – Sutter Maintenance Yard
Feather River/Sutter Bypass right-bank levee, upstream from Sacramento River confluence	RD 1500
Feather River/Sutter Bypass left-bank levee, upstream from Sacramento River confluence	RD 1001
Colusa Basin Drain left-bank levee	RD 108 and DWR - Sutter Maintenance Yard
Knights Landing Outfall Gates	DWR – Sacramento Maintenance Yard

**Table 5-1. Maintaining Agencies for State Plan of Flood Control Facilities (contd.)**

<b>State Plan of Flood Control Facility</b>	<b>Maintaining Agency</b>
Knights Landing Ridge Cut channel and right- and left-bank levees	Knights Landing Ridge Drainage District
Knights Landing Ridge Cut channel	DWR – Sacramento Maintenance Yard
Middle Creek and Tributaries Project (levees, channels, diversion structures, and pumping plant)	Lake County Watershed Protection District and DWR – Sutter Maintenance Yard
Willow Slough Diversion Weir, right- and left-bank levees to confluence with Yolo Bypass, and channel downstream from Southern Pacific Railroad from Davis to Woodland	DWR – Sacramento Maintenance Yard
Putah Creek channel and levees from Interstate 505 highway bridge in Winters to Yolo Bypass	DWR – Sacramento Maintenance Yard
Cache Slough and Lindsey Slough levees	RD 2068, RD 2098, RD 2093, RD 536
Yolo Bypass right-bank levee from Fremont Weir to Cache Creek Settling Basin	DWR – Sacramento Maintenance Yard
Yolo Bypass left-bank levee from Knights Landing Ridge Cut to Cache Creek Settling Basin	RD 1600
Cache Creek Settling Basin, east and west training levees	DWR – Sacramento Maintenance Yard
Yolo Bypass right-bank levee from Cache Creek to Sacramento Bypass	RD 2035
Yolo Bypass left-bank levee from Cache Creek to Sacramento Bypass	RD 785, RD 827, RD 2035
Yolo Bypass right-bank levee from Sacramento Bypass to Putah Creek	RD 900 and DWR - Sacramento Maintenance Yard
Yolo Bypass left-bank levee from Sacramento Bypass to Putah Creek	RD 900
Yolo Bypass right-bank levee from Putah Creek to Sacramento River	RD 536, RD 2060, RD 2068, RD 2098
Yolo Bypass left-bank levee from Putah Creek to Sacramento River	RD 501, RD 999
Yolo Bypass channel	DWR – Sacramento Maintenance Yard
Ash Creek and Dry Creek channel clearing	Adin Community Services District
Salt Creek channel clearing, upstream from Sacramento River confluence	Tehama County Flood Control and Water Conservation District
Elder Creek channel clearing and left-bank levee upstream from Sacramento River confluence	Tehama County Flood Control and Water Conservation District
Elder Creek channel	DWR – Sutter Maintenance Yard
McClure Creek channel clearing near U.S. Highway 99	Tehama County Flood Control and Water Conservation District
Deer Creek channel clearing and right and left-bank levees upstream from Delany Slough to Sacramento River	Tehama County Flood Control and Water Conservation District
Deer Creek channel	DWR – Sutter Maintenance Yard
Cherokee Canal channel	DWR – Sutter Maintenance Yard
Big Chico/Sandy Gulch (Lindo Channel) left-bank levee and Big Chico Creek Gates, Lindo Channel Gates, and Sycamore Weir diversion structures	Butte County Public Works
Big Chico Creek, Sandy Gulch (Lindo Channel), Little Chico Creek channels	DWR – Sutter Maintenance Yard
Sycamore, Sheep Hollow and Mud creeks right- and left-bank levees	Butte County Public Works
Sacramento River channel, as included in the Sacramento River Flood Control Project	DWR – Sutter and Sacramento Maintenance Yards
Sacramento River bank protection, Chico Landing to Goose Lake Flood Relief Structure	DWR – Sutter Maintenance Yard

Table 5-1. Maintaining Agencies for State Plan of Flood Control Facilities (contd.)

State Plan of Flood Control Facility	Maintaining Agency
M&T and Goose Lake Flood Relief Structures	DWR – Sutter Maintenance Yard
Sacramento River right-bank levee from Ord Ferry to Moulton Weir	LD 1 (Glenn County), LD 2
Sacramento River left-bank levee from Ord Ferry to Moulton Weir	LD 3
Moulton Weir	DWR – Sutter Maintenance Yard
Sacramento River right-bank levee from Moulton Weir to Colusa Weir	DWR – Sutter Maintenance Yard
Sacramento River left-bank levee from Moulton Weir to Colusa Weir	LD 3, DWR – Sutter Maintenance Yard
Colusa Weir, sediment basin, and training levees	DWR – Sutter Maintenance Yard
Sacramento River left-bank levee from Colusa Weir to Tisdale Weir	RD 70, RD 1660
Sacramento River right-bank levee from Colusa Weir to Tisdale Weir	Sacramento River West Side LD
Tisdale Weir and Tisdale Bypass, including right-bank, and left-bank levees	DWR – Sutter Maintenance Yard
Sacramento River right-bank levee from Fremont Weir to Sacramento Weir	RD 1600, RD 827
Sacramento River left-bank levee from Fremont Weir to Sacramento Weir	RD 1000
Sacramento Weir and Sacramento Bypass channel	DWR – Sacramento Maintenance Yard
East Side Canal and Natomas Cross Canal right-bank levee	RD 1001
Pleasant Grove Canal and Natomas Cross Canal left-bank levee	RD 1000
Sacramento River left-bank levee from Sacramento Weir to American River confluence	RD 1000
Sacramento River right-bank levee from Sacramento Weir to American River confluence	RD 537, DWR – Sacramento Maintenance Yard
Sacramento River right-bank levee from American River to Elk Slough	DWR – Sacramento Maintenance Yard, RD 307, RD 537, RD 900, RD 765, RD 999
Sacramento River left-bank levee from American River to Elk Slough	City of Sacramento, American River Flood Control District, DWR – Sacramento Maintenance Yard
Sacramento River right-bank levee from Elk Slough to Collinsville	RD 3, RD 150, RD 349
Sacramento River left-bank levee from Elk Slough to Collinsville	RD 369, RD 407, RD 551, RD 554, RD 556, RD 755, Brannan-Andrus Levee Maintenance District
Elk Slough right- and left-bank levees	RD 150, RD 999
Sutter Slough right- and left-bank levees	RD 349, RD 999, RD 150, RD 501
Miner Slough right- and left-bank levees	RD 501, RD 999
Steamboat Slough right- and left-bank levees	RD 3, RD 349, RD 501
Georgiana Slough right- and left-bank levees	RD 556, RD 563, Brannan-Andrus Levee Maintenance District
Three Mile Slough right- and left-bank levees	RD 341, RD 1601
Chowchilla Bypass right- and left-bank levees, Chowchilla Canal Bypass Control Structure and Debris Settling Basin, San Joaquin River Control Structure	Lower San Joaquin LD
Fresno River right- and left-bank levees	Madera County Flood Control and Water Conservation Agency
Berenda Slough right- and left-bank levees from levee mile 0 to levee mile 2.03	Lower San Joaquin LD

**Table 5-1. Maintaining Agencies for State Plan of Flood Control Facilities (contd.)**

State Plan of Flood Control Facility	Maintaining Agency
Berenda Slough right- and left-bank levees in Madera County Flood Control and Water Conservation Agency	Madera County Flood Control and Water Conservation Agency
Ash Slough right- and left-bank levees from levee mile 0 to levee mile 1.28, Ash Slough Drop Structures No. 1 through 4	Lower San Joaquin LD
Ash Slough right- and left-bank levees in Madera County Flood Control and Water Conservation Agency	Madera County Flood Control and Water Conservation Agency
Eastside Bypass right- and left-bank levees, Eastside Bypass Control Structure, Eastside Bypass Drop Structures No. 1 and 2	Lower San Joaquin LD
Mariposa Bypass right- and left-bank levees, Mariposa Bypass Control Structure	Lower San Joaquin LD
San Joaquin River right- and left-bank levees in Lower San Joaquin LD, Sand Slough Control Structure, San Joaquin River Structure	Lower San Joaquin LD
Owens Creek Diversion Channel right- and left-bank levees	Merced Irrigation District
Merced County Stream Group Project (Black Rascal Creek, Bear Creek Burns Creek, Mariposa Creek and Duck Slough, Miles Creek, Owens Creek) channels	Merced County
Black Rascal Diversion Channel	Merced Irrigation District
Castle Dam	Merced Irrigation District
San Joaquin River left-bank levee in RD 1602	RD 1602
San Joaquin River right-bank levee in RD 2063 and Lower San Joaquin River (RD 2063) pumping plant	RD 2063
Mormon Slough Project (diversion, Pumping Plants No. 1, 2, and 3, right and left-bank levees, and channels)	San Joaquin County Flood Control and Water Conservation District
San Joaquin River right-bank levee in RD 2091	RD 2091
San Joaquin River right-bank levee in RD 2092	RD 2092
San Joaquin River left-bank levee in RD 2102	RD 2102
San Joaquin River left-bank levee in RD 2100	RD 2100
San Joaquin River left-bank levee in RD 2099	RD 2099
San Joaquin River left-bank levee in RD 2101	RD 2101
San Joaquin River right-bank levee in RD 2031	RD 2031
Stanislaus River left-bank levee from levee mile 0 to levee mile 7.15	RD 2031
Stanislaus River right-bank levee from levee mile 6.06 to San Joaquin River	RD 2064
San Joaquin River right-bank levee in RD 2064	RD 2064
San Joaquin River right-bank levee in RD 2075	RD 2075
San Joaquin River left-bank levee in RD 2085	RD 2085
San Joaquin River right-bank levee in RD 2094	RD 2094
Weatherbee Lake Pumping Plant and Navigation Gate and San Joaquin River right-bank levee in RD 2096	RD 2096
San Joaquin River left-bank levee in RD 2095	RD 2095
Paradise Cut left-bank levee in RD 2095	RD 2095
Paradise Cut left-bank levee in RD 2058	RD 2058

Table 5-1. Maintaining Agencies for State Plan of Flood Control Facilities (contd.)

State Plan of Flood Control Facility	Maintaining Agency
Paradise Cut right-bank levee in RD 2107	RD 2107
Paradise Cut right-bank levee in RD 2062	RD 2062
San Joaquin River left-bank levee in RD 2107	RD 2107
San Joaquin River left-bank levee in RD 2062	RD 2062
Old River left-bank levee from San Joaquin River to Paradise Cut	RD 2062
Old River right-bank levee from San Joaquin River to Middle River	RD 544
Old River right-bank levee in RD 1	RD 1
Old River and Salmon Slough right-bank levees in RD 2089	RD 2089
San Joaquin River left-bank levee from Old River to Howard Road	RD 544
San Joaquin River right-bank levee from Walthall Slough to French Camp Slough	RD 17
San Joaquin River left-bank levee from Howard Road to Burns Cutoff	RD 524
French Camp Slough right-bank levee	RD 404
French Camp Slough left-bank levee	RD 17
San Joaquin River right-bank levee from French Camp Slough to Burns Cutoff	RD 404
South Littlejohns Creek right- and left-bank levees	San Joaquin County Flood Control and Water Conservation District
Duck Creek Diversion Channel	San Joaquin County Flood Control and Water Conservation District
Potter Creek right- and left-bank levees	San Joaquin County Flood Control and Water Conservation District
North Paddy Creek right- and left-bank levees	San Joaquin County Flood Control and Water Conservation District
Middle Paddy Creek right- and left-bank levees	San Joaquin County Flood Control and Water Conservation District
Paddy Creek right- and left-bank levees	San Joaquin County Flood Control and Water Conservation District
Bear Creek right- and left-bank levees	San Joaquin County Flood Control and Water Conservation District

## Key:

DWR = California Department of Water Resources

LD = levee district

RD = reclamation district

WPRR = Western Pacific Railroad

Sixty LMAs perform maintenance for the SRFCP. Twenty-nine LMAs perform maintenance for the SPFC in the San Joaquin River Basin. AB 156, Local Agency Annual Report 2009 (DWR, 2009), provides maps and available reports for each entity (see reference DVD).

### **Local Maintaining Agency Responsibility in California Water Code Section 8370**

The LMAs are responsible for maintaining SRFCP facilities not included in the section on DWR responsibility in CWC Section 8361. CWC Section 8370 specifies responsibilities of the LMAs:

*8370. It is the responsibility, liability and duty of the reclamation districts, levee districts, protection districts, drainage districts, municipalities, and other public agencies within the Sacramento River Flood Control Project limits, to maintain and operate the works of the project within the boundaries or jurisdiction of such agencies, excepting only those works enumerated in Section 8361 and those for which provision for maintenance and operation is made by Federal law.*

### **Local Reporting Requirements**

An example of the evolving nature of the SPFC is the additions to the CWC resulting from the adoption of AB 156 in the 2007 – 2008 legislative session. Additions to the CWC include requirements for LMAs to submit to DWR, by September 30 of each year, specific information relative to the SPFC levees they operate and maintain. In turn, DWR is required to summarize this information in an annual report to the Board by December 30 of each year.

Required information includes the following:

- Information known to the LMA that is relevant to the condition or performance of an SPFC levee.
- Information identifying known conditions that might impair or compromise the level of flood protection provided by an SPFC levee.

- Summary of maintenance performed by the LMA during the previous fiscal year.
- Statement of work and estimated cost for O&M of an SPFC levee for the current fiscal year.
- Any other readily available information contained in records of the LMA relevant to the condition or performance of an SPFC levee.

## **5.5 Operations**

The standard O&M manuals and unit-specific O&M manuals specify necessary operations during high water. In most cases for levees, the operation is limited to patrolling at specified river stages and floodfighting, as necessary. Other facilities, such as pumping plants, control structures, and the Sacramento Weir, require additional facility-specific operations.

### **5.5.1 Real-Time Gages**

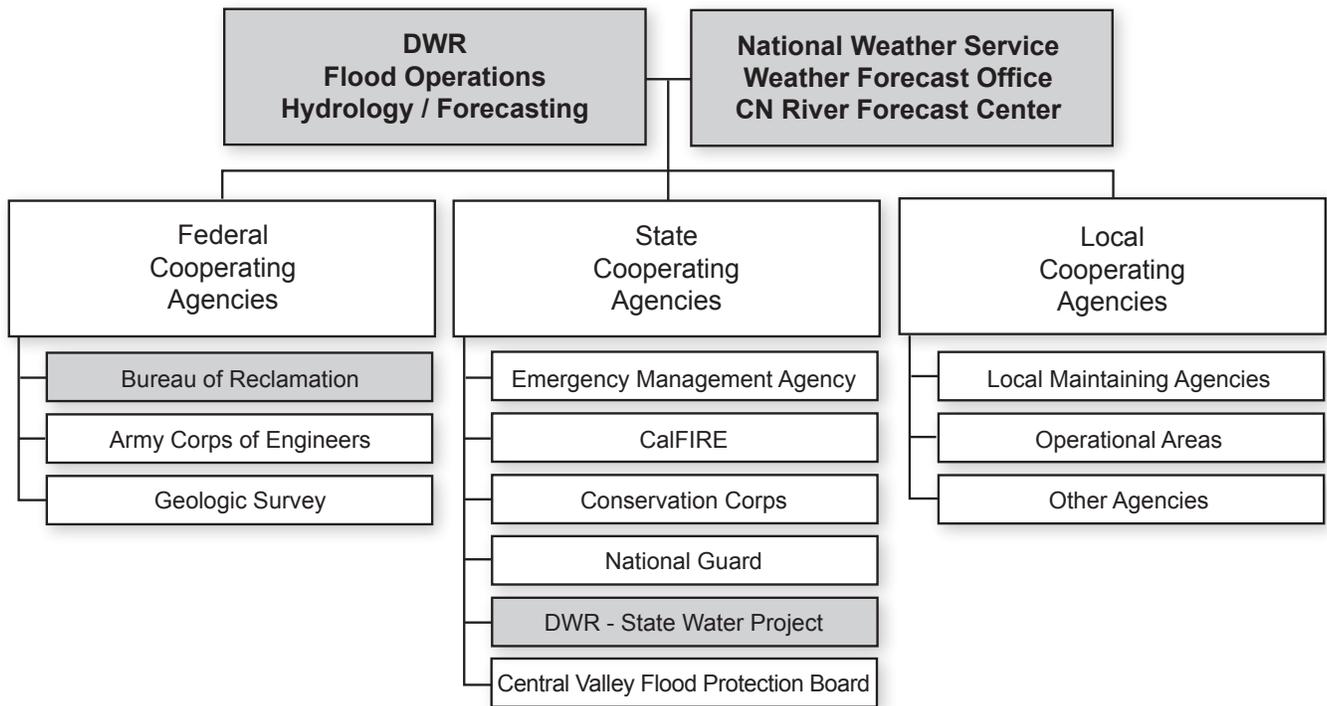
Real-time gages for stream stage and flow are essential to successful operation of SPFC facilities. Most unit-specific O&M manuals include specific stream gages (called hydrographic facilities in most manuals). The condition or existence of these gages may have changed over time, evolving to the set of stream gages, precipitation stations, snow accumulation stations, and other tools used by the State-federal Flood Operations Center (FOC) (see Section 5.5.2) during flood operations. These tools and historical records can be found on the CDEC Web site (<http://cdec.water.ca.gov/>). These represent base data that may be revised after analysis. Data for DWR-maintained gages can be found on DWR's Water Data Library Web site (<http://www.water.ca.gov/waterdatalibrary/>) and data for U.S. Geological Survey (USGS)-maintained gages can be found on the USGS Web site (<http://waterdata.usgs.gov/ca/nwis/rt>).

**5.5.2 State-Federal Flood Operations Center**

The FOC, located in Sacramento, California, is a component of DWR’s Division of Flood Management. While actions of the FOC are not specifically performed for the SPFC, these actions are essential for SPFC operations.

As major storms approach California, forecasters from the National Weather Service (NWS) and DWR forecast the location, amount, and timing of expect-

ed precipitation, river flows, and stages and, when needed, prepare emergency notifications to local agencies so they can respond and inform the public. In addition to the NWS, many agencies cooperate with DWR during flood emergencies and some send representatives to work at the FOC. Figure 5-3 provides an overview of local, State, and federal cooperating agencies with colocated agencies depicted by shaded boxes.



Note: Agencies in shaded boxes are colocated at the State-federal Flood Operations Center.

Key:

CN = California-Nevada

DWR = California Department of Water Resources

Figure 5-3. Cooperating Agencies in State-Federal Flood Operations Center

### 5.5.3 High-Water Levee Patrols

Each unit-specific O&M manual provides information on required high-water patrols, generally keyed to water stages at stream gages. These patrols are performed by LMAs beginning at river stages specified in the unit-specific O&M manuals.

### 5.5.4 Floodfights

DWR is the lead State agency for flood emergency response, including floodfight assistance in California. The FOC serves as DWR's Emergency Operations Center and leads the statewide flood emergency operations responsibility. Each of the two USACE standard O&M manuals contains methods for combating floods.



DWR is the lead State agency for floodfight assistance in California

### 5.5.5 Facilities Requiring Active Operations

The following SPFC facilities require active operation by DWR or local agencies. The procedures for operation are included in the unit-specific O&M manuals. Maps showing more detailed locations of the facilities below are included in Section 3, and in Attachment A.

#### *Pumping Plants*

The following SPFC pumping plants require active operation:

- Two pumping plants along the American River (see O&M Manual SAC518)
- Three pumping plants along the Sutter Bypass (see O&M Manual SAC159)
- Pumping plant along the lower San Joaquin River between the Merced and Tuolumne rivers (see O&M Manual SJR6A)
- Pumping plant along the lower San Joaquin River between Paradise Cut and Old River (see O&M Manual SJR3A)
- Three pumping plants along the Mormon Slough Diversion Channel (see O&M Manual SJR611.2)

#### *Weirs*

Two SPFC weirs require operation to release flow:

- Howard Slough Diversion Structure (see O&M Manual SAC153)
- Sacramento Weir (see O&M Manual SAC158)
- Willow Slough Weir (see O&M Manual SAC120)

#### *Dams*

There are four SPFC dams in the system:

- Oroville Dam
- North Fork Feather River Diversion (see O&M Manual SAC508)
- Cache Creek Settling Basin (see O&M Manual SAC120)
- Castle Creek Dam (see O&M Manual SJR607A)

#### *Control Structures*

Several SPFC water control structures require active manual operation:

- Sutter-Butte Canal Headgate (see O&M Manual SAC160)
- Butte Slough Outfall Gates (see O&M Manual SAC161)
- Knights Landing Outfall Gates (see O&M Manual SAC162)
- Lindo Channel and Big Chico Creek diversion gates (see O&M Manual SAC504)
- Chowchilla Canal Bypass Control Structure (see O&M Manual SJR601B)
- San Joaquin River Control Structure (see O&M Manual SJR601B)
- Mariposa Bypass Control Structure (see O&M Manual SJR601A)
- Eastside Bypass Control Structure (see O&M Manual SJR601A)
- Sand Slough Control Structure (see O&M Manual SJR601)
- San Joaquin River Structure (see O&M Manual SJR601)

## 6.0 State Plan of Flood Control Conditions

This section presents the conditions, or terms, of the SPFC set forth by the federal government and the State.

### 6.1 Summary

Federal requirements for construction of federal flood damage reduction projects are set by USACE in accordance with federal laws, regulations, and policies. Federal projects are constructed by USACE in partnership with nonfederal sponsors. The nonfederal partners are required to enter into agreements with USACE and agree to adhere to the federal requirements. Federal requirements have evolved over the years, as reflected in the form and contents of the agreements. Among these requirements are the acceptance of the completed works and their O&M throughout the life of the projects. For the State, the Board has given assurances of cooperation to USACE in the form of signed MOUs and agreements.

### 6.2 Assurances of Cooperation

State assurances of cooperation to the federal government are described in Section 1.4.

### 6.3 Federal Flood Control Regulations

Nonfederal sponsors abiding by the federal flood control regulations are a condition for federal participation in the development of flood damage reduction, formerly flood control, projects. Federal flood control regulations are contained in 33 CFR Section 208. Federal requirements for O&M are contained in 33 CFR Section 208.10. The regulations apply to all entities responsible for maintaining the completed and "turned-over" federal facilities.

### 6.4 Standard O&M Manuals

As mentioned in Section 5.2.1, the two USACE standard O&M manuals present requirements that apply to all maintaining agencies that operate and maintain the various geographical SPFC units. Fulfilling the requirements outlined in the two USACE standard O&M manuals is a condition for federal projects.

### 6.5 Unit-Specific O&M Manuals

As mentioned in Section 5.2.2, unit-specific O&M manuals supplement information included in the two USACE standard O&M manuals with O&M requirements applicable to each unit. Fulfilling the requirements outlined in the unit-specific O&M manuals is a condition for federal projects.

### 6.6 Design Profiles

USACE has prepared design water surface elevation profiles for much of the Sacramento River, San Joaquin River, and major tributaries of the flood management system. The primary published profiles are the 1957 Revised Profile Drawings (described in Section 6.6.1), the 1955 Profile (described in Section 6.6.2), Cache Creek Basin, Middle Creek Project profiles (described in Section 6.6.3), and Mormon Slough Project profiles (described in Section 6.6.4). Flood system improvements that have occurred after the 1950s are not reflected in the design profiles discussed below. For channels not delineated in the profiles listed above, the as-constructed plans are assumed to take precedence.

DWR operates SPFC facilities based on the design profiles rather than on design flows from the O&M manuals (USACE, 1969). The profiles are on the reference DVD included in this document or can be viewed on the Board Web site at <http://recbd.ca.gov/profiles/index.cfm>.

The Board uses designated floodways (see Section 2.5.3) as a management tool for passage of design flood flows shown by the design profiles described below.

It should be noted that USACE now employs uncertainty analyses that no longer use a single flow value for a river reach. This may require revisions to how the following flow profiles are used in the future.

### 6.6.1 1957 Revised Profile Drawings

For the SRFCP, USACE requires that channels pass design flood flows for stages at or below the 1957 Revised Profile Drawings. The reference DVD contains 1969 and 2006 letters from USACE to the Board with this directive (USACE, 1969 and 2006). The 1957 profile is shown in the *Sacramento River Flood Control Project, California, Levee and Channel Profiles* (USACE, 1957a) (re-created in 2006). The profiles are contained on four sheets identified as File No. 50-10-3334. The profiles include the design flows at various locations throughout the system, and are listed in Table 3-1.

### 6.6.2 1955 Profile

For the San Joaquin River and tributaries, USACE requires that channels pass design flood flows for stages at or below the 1955 Profile. The 1955 Profile for the Merced River and downstream is shown in the *San Joaquin River and Tributaries Project, California, Levee Profiles* (USACE, 1955). The profiles are contained on one sheet identified as Sheet SJ-20-60. The profiles do not include the design flood flows.

### 6.6.3 Profiles for Middle Creek Project

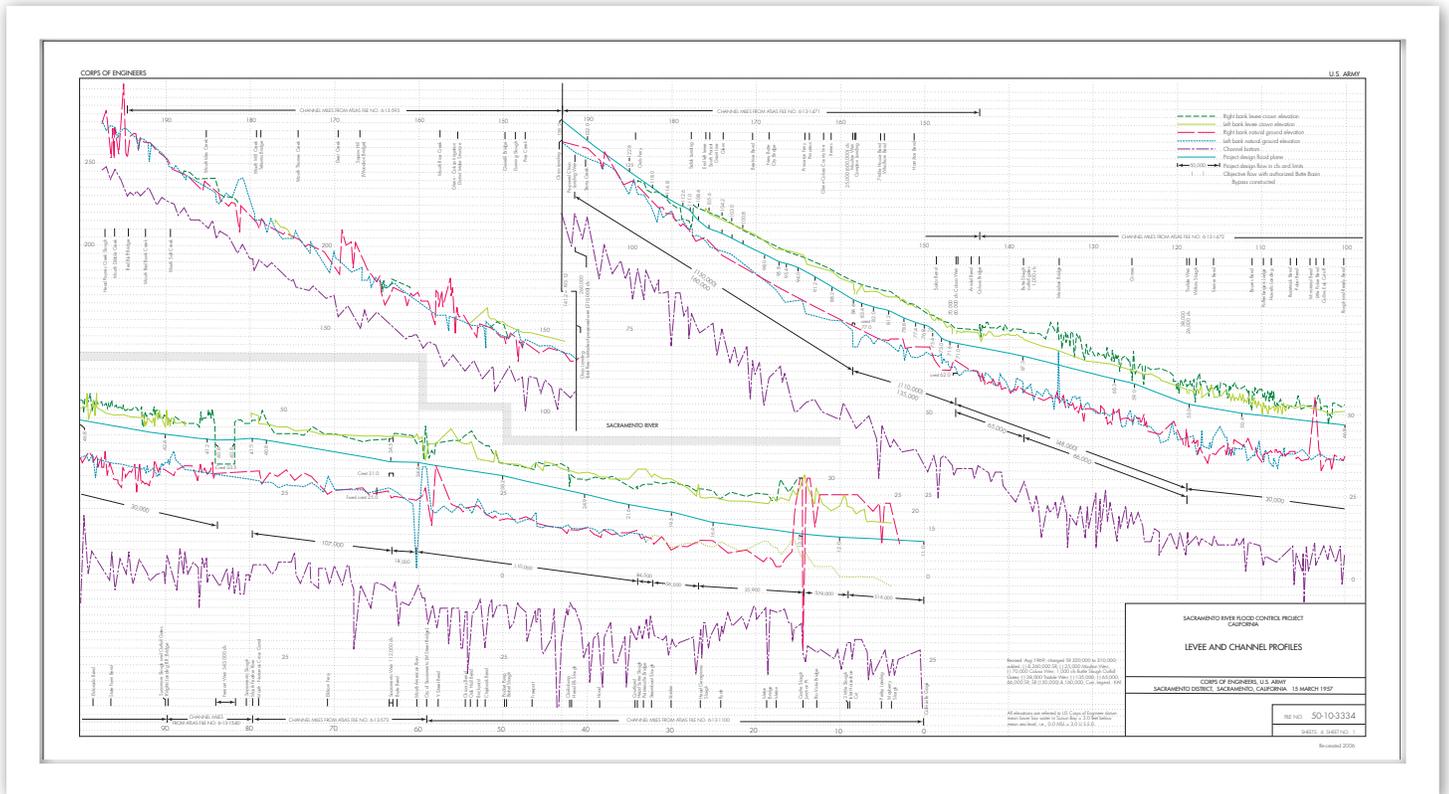
Profiles for the Middle Creek Project are shown in *Cache Creek Basin California, Middle Creek Project, Stream Profiles* (USACE, 1957b) on one sheet, File No. CC-4-20-16 (re-created in 2006).

### 6.6.4 Profiles for Mormon Slough Project

Profiles for the Mormon Slough Project are shown on *Mormon Slough Project, San Joaquin County, Plan of Improvement, Profile and Flood Plane* on six sheets (USACE, 1965), File No. 3-20-142 (re-created in 2006).

## 6.7 Project Cooperation Agreements

Project cooperation agreements (PCA) specify other conditions that must be met by parties to the agreements. These PCAs have evolved over time, and are especially important before new project construction is started.



USACE has prepared design profiles for much of the SPFC Planning Area

### 6.7.1 Federal/State Project Cooperation Agreement

The Project Partnership Agreement (PPA), formerly Local Cooperation Agreement (LCA) and PCA, between the Department of the Army and the State of California (The Reclamation Board or Central Valley Flood Protection Board, depending on the date of the agreement), is a contract for project construction. While the agreements vary by time and project, they contain specific provisions. Examples include the following:

- Obligations of both parties, including cost-sharing of project cost
- Compliance requirements for land right acquisition and relocation
- Compliance requirements with federal flood insurance programs and floodplain management
- Project coordination
- Method of payment
- Dispute resolution
- Requirement for nonfederal operation, maintenance, repair, replacement, and rehabilitation (OMRR&R)
- Indemnification of the federal government
- Other contract terms

Upon completion of a functional portion of projects, USACE turns over that portion of the project by a letter to the Board for OMRR&R. The Board in turn sends USACE a letter saying that the Board may accept the project as constructed or accept the completed portion of the project while other portions are completed. Concurrent with the Board's acceptance of a completed portion of a project, the Board transfers that portion to the LMA for OMRR&R.

### 6.7.2 Local Project Cooperation Agreement

The Local Project Partnership Agreement (LPPA), formerly Agreement and Local Project Cooperation Agreement (LPCA), between the Board and an LMA is a legally binding document for federal project sponsorship. Among many provisions, the agreement outlines specific conditions for the local sponsor to fulfill, such as cost-share, OMRR&R, holding the State harmless and other conditions. Recent agreements have included requirements to participate in federal floodplain management and flood

insurance programs, to publicize floodplain information, and for the local sponsor to pay the total cost of betterments requested by the local sponsor.

Concurrent with the Board's acceptance of a completed portion of a project, the Board transfers that portion to the LMA for OMRR&R.

### 6.8 State-Adopted Conditions

Successful operation of the SPFC requires many other conditions that do not meet the strict definition of the SPFC provided by the Legislature (see Section 1.1). One of the most important conditions for operation of the SPFC is that the upstream reservoirs operate in compliance with the flood storage rules established by USACE. Except for Oroville Dam (see Section 3.2.1) and Castle Dam (see Section 3.3.1), the State has no direct responsibility for O&M of flood control reservoirs that regulate flow to the SPFC – federal agencies and local agencies are responsible for their operation. Similarly, the State has no direct operational responsibility for many other non-SPFC facilities.

The Board considers its Designated Floodway Program (see Section 2.5.3) as a condition for successful operation of the SPFC. Where implemented, the program is important and necessary in helping to limit further development into active floodways. The program is also considered necessary to help provide for the passage of project design flood flows (see Section 6.6) along many reaches of the SPFC system. As mentioned, Figure 2-3 shows the location of designated floodways within the Sacramento and San Joaquin river basins. Maps of designated floodways by county can also be found at the Board's Web site: <http://recbd.ca.gov/maps/index.cfm>.

*This page left blank intentionally.*