Revised 29 Dec 2016

Volume C

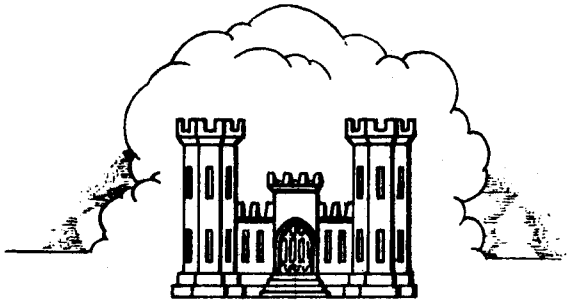
SUPPLEMENT TO STANDARD OPERATION AND MAINTENANCE MANUAL

LOWER SAN JOAQUIN RIVER AND TRIBUTARIES PROJECT, CALIFORNIA

UNIT NO. 4

EAST LEVEE OF SAN JOAQUIN RIVER WITHIN RECLAMATION DISTRICT NO. 2031

Including S. Levee of Stanislaus River



U. S. ARMY ENGINEER DISTRICT

CORPS OF ENGINEERS

SACRAMENTO, CALIFORNIA

Book 1

Corps of Engineers
U.S. Army

SUPPLEMENT TO STANDARD OPERATION AND MAINTENANCE MANUAL SAN JOAQUIN RIVER AND TRIBUTARIES PROJECT

UNIT NO. 4
EAST LEVEE OF SAN JOAQUIN RIVER
WITHIN R.D. 2031
and S. Levee of Stanislaus R.

Sacramento District
Corps of Engineers
U.S. Army
June 1968

SUPPLEMENT TO STANDARD
OPERATION AND MAINTENANCE MANUAL
LOWER SAN JOAQUIN RIVER AND TRIBUTARIES PROJECT, CALIFORNIA

UNIT NO. 4

EAST LEVEE OF SAN JOAQUIN RIVER
WITHIN RECLAMATION DSITRICT NO. 2031
INCLUDING S. LEVEE OF STANISLAUS RIVER

LOCATION	ADDITION OR REVISION	DATE
1-04 c.	Add contract no. DACW05-68-C-0086	Jan 1970
Exhibit B	Add drawing no. 7-4-1710	Jan 1970
Exhibit F	Add copy of letter of acceptance dated 20 Jan 1970	Jan 1970
1-04 d.	Add contract no. DACW05-70-C-0020	Mar 1970
Exhibit B	Add drawing no. 7-4-1745	Mar 1970
Exhibit F	Add copy of letter of acceptance dated 15 Jan 1970	Mar 1970
Exhibit F	Add copy of letter of transfer dated 4 Jan 1966	25 May 2011
Exhibit F	Add copy of letter of transfer dated 30 Nov 1966	25 May 2011
Exhibit F	Add copy of letter of transfer dated 19 Nov 1969	25 May 2011
Exhibit F	Add copy of letter of transfer dated 29 Nov 2016	29 Dec 2016

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A	Flood Control Regulations - - - - - - - - - - - - - - (Contained in Standard Manual)	Unattached
A-1	Location Map -	1 Sheet
B	"As Constructed" Drawings - - - - - - - - - - - - - -	Unattached
C	Plates of Suggested Flood Fighting Methods - - - - (Contained in Standard Manual)	Unattached
D	Suggested Check List No. 1 - Levee Inspection Report - (Contained in Standard Manual)	Unattached
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SUPPLEMENT TO STANDARD
OPERATION AND MAINTENANCE MANUAL
SAN JOAQUIN RIVER AND TRIBUTARIES PROJECT

UNIT NO. 4

EAST LEVEE OF SAN JOAQUIN RIVER
WITHIN R.D. 2031

SECTION I

INTRODUCTION

1-01. Location. The improvement covered by this manual is that part of the San Joaquin River and Tributaries Project levee and channel that is located on the right bank of the San Joaquin River between the mouths of the Tuolumne and Stanislaus Rivers and along the left bank of the Stanislaus River from high ground at Kiernan Avenue to the junction of the Stanislaus and San Joaquin Rivers. The area lies about 7 miles west of the town of Ripon and 4 miles east from the town of Vernalis. Location by levee mileage along the left bank of the Stanislaus River is from mile 0.00 (Unit No. 1) at Kiernan Avenue to mile 7.15 at the mouth of the Stanislaus River and for the right bank of the San Joaquin River (Unit No. 2) mile 0.00 at the junction of the left bank levee of the Stanislaus River and the right bank levee of the San Joaquin River to mile 6.04 at high ground along the right bank of the Tuolumne River. The area lies within Reclamation District No. 2031 in the county of Stanislaus, California and in the general vicinity as shown on the Location Map, EXHIBIT A-1.

1-02. Project Works. The project works covered by this manual is a part of the Lower San Joaquin River and Tributaries Project as authorized by the Flood Control Act of 22 December 1944, Public Law 534, Seventy-Eighth Congress, Second Session, Section 10, and consists of the right bank levee and channel of the Tuolumne River from high ground to the San Joaquin River; the right bank and channel of the San Joaquin River between the Tuolumne and Stanislaus Rivers; and the left bank and channel of the Stanislaus River from the San Joaquin River to high ground at Kiernan Avenue; a distance of about 13.19 miles.

1-03. Protection Provided. Levees along the Tuolumne, San Joaquin and Stanislaus River, as described in this unit, provide direct protection to adjacent agricultural land within Reclamation District No. 2031. Along the upper end of the Tuolumne River right bank levee the grade of the adopted flood plane varies from elevation 49.2 at the upper end to elevation 40.0 to elevation 36.0. Along the Stanislaus River the grade of the adopted flood plane varies from elevation 49.4 at the upper end

to elevation 36.0 at the San Joaquin River. All elevations are referred to mean sea level datum (1929 adjustment). Levee grad within this unit provides for a freeboard of at least 3 feet above the adopted flood plane profile. Within this unit the project design flood for the Tuolumne River is 15,000 cubic feet per second, for the San Joaquin River 46,000 cubic feet per second, and for the Stanislaus River 12,000 cubic feet per second.

1-04. Construction Data and Contractor. Work required by the Corps of Engineers to bring levees of this unit to project standards was accomplished under the following contracts:

a. Emergency repairs on the right bank of the Tuolumne River was accomplished under Contract No. DA-04-167-CIVENG-59-64 by Lee Stephens, during the period from 21 October 1958 to 4 December 1958. Specification No. 2507 and Drawing No. 7-4-1570.

b. Levee construction, right and left banks San Joaquin River between Tuolumne River and Stanislaus River was accomplished under Contract No. DA-04-167-CIVENG-65-21 by M. Malfitano & Son, Inc. during the period from 28 August 1964 to 20 January 1967. Specification No. 2894 and Drawing No. 7-4-1666.

c. Completion phase work on the right and left banks of the San Joaquin and Stanislaus River was accomplished under Contract No. DACW05-68-C-0086 by Elmer G. Wendt, Inc., and completed on 14 November 1968. Specification No. 3455, Drawing No. 7-4-1710.

d. Emergency levee repairs on the left bank of the Stanislaus River were accomplished under Contract No. DACW05-70-C-0020 by James L. Ferry & Son during the period from 16 September 1969 to 12 January 1970. Specification No. 3660, Drawing No. 7-4-1745.

1-05. Flood Flows. For purposes of this manual, the term “flood” or “high water period” shall refer to flows when the water surface in the San Joaquin River reaches or exceeds the reading of 28.0 on the U. S. Geological Survey Vernalis gage located on the left bank of San Joaquin River 11 feet downstream from the Durham Ferry Highway Bridge, 3.4 miles northeast of Vernalis. This gage is set at 0.00 feet mean sea level (1929 adjustment). Until the New Melones Project is completed and placed into operation, “flood” or “high water” condition may also exist when the Stanislaus River flows at Ripon, California, exceed 8,000 cubic feet per second. This condition may occur when the Vernalis gage reading is less than 28.0.

1-06. Assurances Provided by Local Interest. Assurance of cooperation by local interests is provided by State Legislation as contained in Chapters 1 and 2, Part 4, Division 5 of the State Water Code (See paragraph 2-02a of the Standard Manual).

1-07. Acceptance by the State Reclamation Board. Responsibility for operating and maintaining this unit was officially accepted by the State Reclamation Board by letters dated 28 December 1966 and 21 November 1966, as shown on the attached letters, EXHIBIT F.

1-08. Inspection Procedure. Since the enactment by State Legislation of Chapter 1528, Statutes of 1947, the Department of Water Resources, State of California, has made semi-annual inspections of all levees of authorized flood control projects in the Sacramento-San Joaquin Drainage basin pursuant to the Federal Regulations of 16 August 1944 (Title 33), and reports its findings to the local agency, the State Reclamation Board and the Sacramento District, Corps of Engineers, U.S. Army. This activity, initiated pursuant to section 208.10(a) of the Federal Regulations, has in effect provided for transfer from the local agencies to the State Department of Water Resources the obligation of compliance with Sections 8371, 8372, and 8373 of the Water Code of the State California. These sections of the Code require the local responsible agencies to submit a report to the State Department of Water Resources on or before 1 June of each year on the condition of the levees within their jurisdiction. Supervisory powers and duties of the Department are applicable to all works of the Lower San Joaquin River and Tributaries Flood Control Project maintained and operated by the local agencies without regard to status of completion, or expenditure of Federal funds on the construction of such works.

The following procedure is used in inspecting the levees of the responsible maintaining agency:

The personnel of the State Department of Water Resources make a detailed inspection in the spring and fall of each year and make a report on any required maintenance. The inspection objectives are to determine if the following items, which are a condensation of Federal Regulations, are being adhered to:

a. That all brush, trees and wild growth other than sod are removed from the levee crown and slopes.

b. That all weeds, grass and debris on the levee have been burned during the appropriate season, where not dangerous or impractical.

c. That all grass and weeds on the levee have been mowed where removal by burning is dangerous or impracticable. This applies only on peat levees or where burning would constitute a hazard to improvements.

d. That all burrowing animals have been exterminated.

e. That all caves, sloughs, burrows, holes, slips or other damaged portions of the levee have been repaired.

f. That all irrigation and drainage structures through the levee are in good working condition.

g. That no revetment work or riprap have been displaced, washed out or removed.

h. That the crown of the levee is well shaped and maintained and that unauthorized vehicular travel is restricted.

i. That stock grazing on the levee is restricted to conditions and seasons when the levee would not be seriously scarred or the otherwise damaged thereby.

j. That encroachments are not being erected on the levee which would hinder travel by authorized patrol vehicles.

k. Prevent the erection of structures on, additions to, or alterations of, the levee unless authorized by permit from the State Reclamation Board.

Following this detailed inspection a joint field inspection is made with representatives of the responsible maintaining agency and the State Department of Water Resources to review and discuss the inspection report.

Upon completion of the fall inspection, the State Department of Water Resources publishes an annual report entitled, “Status of Project Levee Maintenance” which indicates the degree of proficiency attained by each obligated local agency in providing required maintenance.

SECTION II
FEATURES OF THE PROJECT SUBJECT TO FLOOD CONTROL REGULATIONS

2-01. Levees

a. The levees described in this manual lie along the right bank of the Tuolumne River from high ground to the San Joaquin River; along the right bank of the San Joaquin River; and along the left bank of the Stanislaus River from the San Joaquin River to high ground at Kiernan Avenue, a total distance of about 13.19 miles. The levee has been reconstructed to project standards with a minimum crown width of 12 feet. The necessary drainage structures, road approaches, bank protection, and appurtenances were also included in the work. For more complete detail in construction of the above-mentioned levees, refer to the "As Constructed" drawings of EXHIBIT B.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements, see the following:

(1) Maintenance - paragraph 4-02 of the Standard Manual.
(2) Suggested Check Lists - EXHIBIT E of this Supplement Manual.
(3) Operation - paragraph 4-04 of the Standard Manual.
(4) Special Instructions - paragraph 4-05 of the Standard Manual.

2-02. Drainage and Irrigation Structures. Drainage and irrigation structures which extend through the levees are listed as follows:

Levee Mile	Size of Pipe	Other Description	Feet Below Crown
		Unit No. 1 - Stanislaus River, Left Bank	
0.13	8"	Concrete pipe	7.7
0.36	24"	Cut-off wall at centerline	5.3
0.45	48" x 54"	Concrete box culvert	12.7
0.57	15"	Riser W.S.	9.0
0.75	15"	Flashboard slots L.S.	4.0
0.81	24"	Pumphouse W.S.	4.0
1.28	12"	Pumps on pile structure W.S.	3.3
1.56	24"	Flapgate W.S.	6.0
1.80	2-24"	Flapgate W.S.	9.5
2.41	24"	Flapgate W.S.	8.0
2.47	16"	Pumphouse on piles on berm	8.0
3.11	24"	Riser W.S.	14.0
3.30	16"	Pumphouse on piles on berm	5.4
3.55	24"	Slidegate W.S.	17.5
3.63	16"	Pumphouse on piles	4.9

Levee Mile	Size of Pipe	Other Description	Feet Below Crown
3.70	20"	Pumphouse on piles	3.9
4.46	2-14"	Pumphouse W.S.	7.5
4.73	36"	Slidegate W.S.	11.0
5.02	36"	Riser W.S.	12.7
5.93	48"	Flapgate W.S.	17.5
5.93	48"	Flapgate W.S.	22.0
		Unit No. 2 - San Joaquin River, Right Bank	
0.24	2-24"	Flapgates W.S.	2.5
0.24	30"	Pump on pile structure L.S.	25.0
0.26	48"	Flapgate W.S.	22.0
1.38	12"	Sewer pipe	5.0
1.41	12"	Flapgate W.S.	5.0
2.13	8"	Highway drain	3.0
2.28	8"	Highway drain	3.0
2.75	24"	Valve W.S.	17.0
3.24	24"	Pump on pile structure W.S.	8.0
3.24	16"	Pump on pile structure W.S.	7.5
3.80	5' x 5'	Concrete box culvert	
3.80	30"	Flapgate W.S.	11.0
3.82	24"	Flapgate W.S.	9.0
3.88	24"	Flapgate W.S.	11.0
4.20	24"	Flapgate W.S.	9.6'
4.92	36"	Concrete pipe - slidegate W.S.	8.4
5.35	36"	Slidegate W.S.	11.0
5.35	36"	Slidegate W.S.	8.5
5.99	8"	Gasline	2.0
5.99	36"	Concrete pipe - slidegate W.S.	7.5
6.02	36"		10.5
6.03	4.5' x 9'	Concrete box culvert	8.0

Note on abbreviations:

L.S. = Landside
W.S. = Waterside

b. For pertinent Requirements of the Code of Federal Regulations and other requirements, see the following:

(1) Maintenance - paragraph 5-02 of the Standard Manual.
(2) Suggested Check Lists - EXHIBIT E of this Supplement Manual.
(3) Operation - paragraph 5-04 of the Standard Manual.

(4) Additional Requirements - paragraph 5-05 of the Standard Manual.

(5) Safety Requirements - paragraph 5-06 of the Standard Manual.

2-03. Channels

a. Description. The main channels and floodways of the Tuolumne, San Joaquin and Stanislaus Rivers for this unit lie adjacent to the levees as described in paragraph 1-02. The project design capacities of said channels are listed in paragraph 1-03 of this manual.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements, see the following:

(1) Maintenance - paragraph 6-02 of the Standard Manual
(2) Suggested Check Lists - EXHIBIT E of this Supplement Manual.
(3) Operation - paragraph 6-04 of the Standard Manual.
(4) Safety Requirements - paragraph 6-05 of the Standard Manual.

It shall be the duty of the local agency responsible for maintenance to keep in contact with the State Department of Water Resources' Flood Operation Center during all periods of flood danger, and maintain a patrol of the project works in their area during periods of flood in excess of a reading of 28.0 on the Vernalis gage or when the Stanislaus River flows at Ripon, California exceed 8,000 cubic feet per second.

The Flood Operation Center is responsible for Data Collection and issuance of a joint river forecast with the U. S. Weather Bureau and coordinates with the Sacramento District Engineer and other agencies to keep appraised of the current situation in accordance with terms of the Memorandum of Understanding dated 1 November 1956, between the Division Engineer, U. S. Army Engineer Division, South Pacific and the Director, Department of Water Resources, State of California for cooperative action during flood emergencies.

2-04. Miscellaneous Facilities

a. Description. - Miscellaneous structures or facilities which were constructed as a part of, or in conjunction with, the protective works, and which might affect their functioning, include the following:

(1) Utility Relocation. Because of the nature of the construction of structures by local interests, records of utility relocations are not available.

(2) Hydrologic Facilities.

(a) Hydrologic facilities provided in the vicinity of this unit consist of the State Department of Water Resources and U.S.G.S. radio reporting continuous water stage recorder and staff gage located on the left bank of the San Joaquin River 11 feet downstream from the Durham Ferry Highway Bridge, 3.4 miles northeast of Vernalis.

(b) The State Department of Water Resources continuous water stage recorder and staff gage located on the right bank of the San Joaquin River immediately downstream from the Mossdale Bridge on U. S. Highway No. 50. This gage is set at -0.30 mean sea level datum (1929 adjustment). A stage of about 14.5 feet on this gage usually corresponds to the specified alert stage of 28.0 feet at the Vernalis gage.

(3) Bridges

Highway No. 132 bridge crossing at levee mile 2.05.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements see the following:

(1) Maintenance - paragraph 7-02 of the Standard Manual.
(2) Suggested Check Lists - paragraph 7-03 of the Standard Manual.
(3) Operation - paragraph 7-04 of the Standard Manual.

SECTION III

REPAIR OF DAMAGE TO PROJECT WORKS AND METHODS OF COMBATING FLOOD CONDITIONS

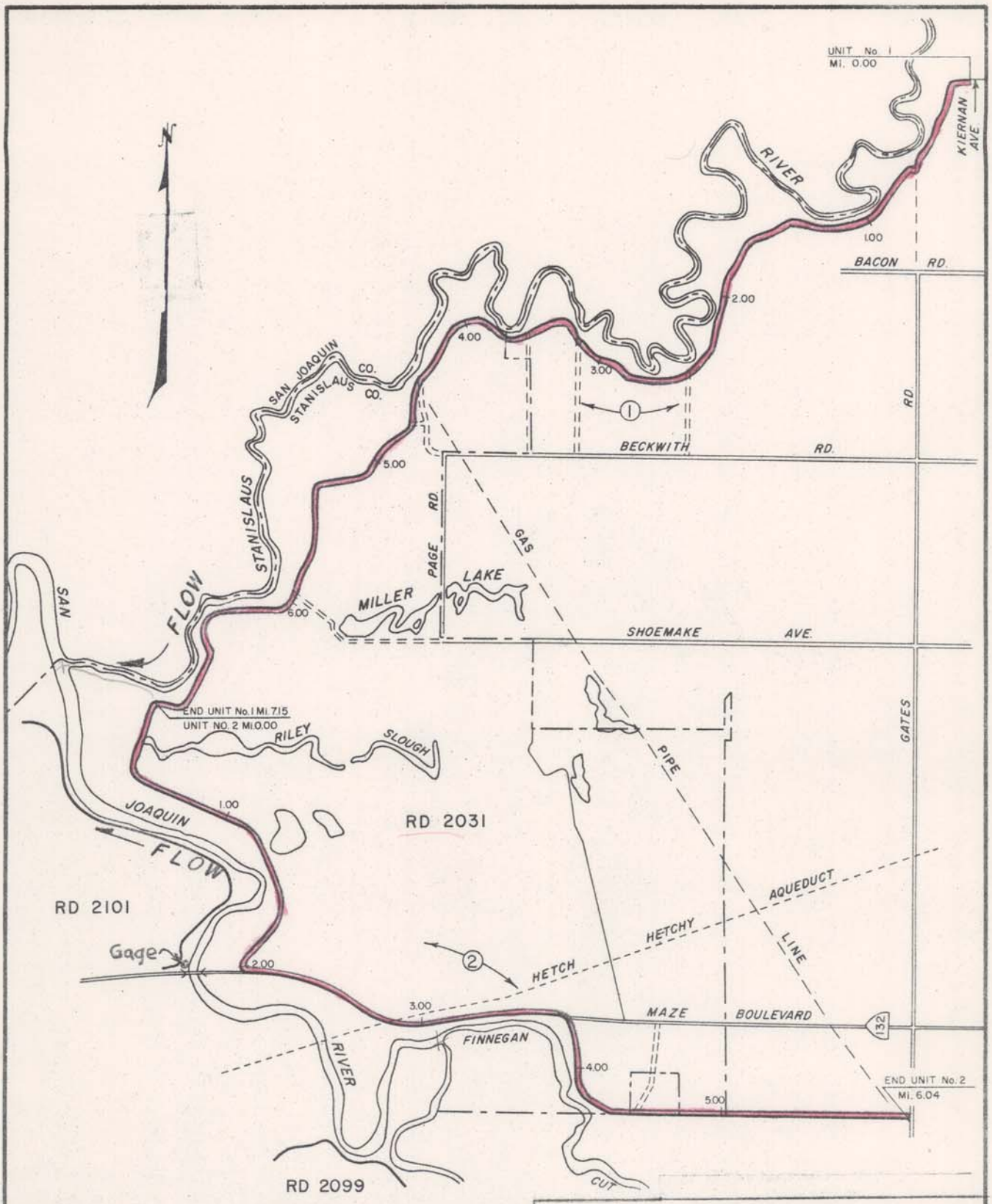
3-01. Repair of Damage. In the event of serious damage to the project works, whether due to flood conditions or other causes, and which may be beyond the capability of local interests to repair, the local agency responsible for maintenance will contact a representative of the Department of Water Resources, State of California, who co-ordinates maintenance of project works of the Lower San Joaquin River and Tributaries Flood Control Project. The State representative will give assistance or advise, or will determine appropriate action to be taken.

30-2. Applicable methods of combating floods. For applicable methods of combating flood conditions, reference is made to Section VIII of the Standard Manual and Maintenance Manual where the subject is fully covered.

EXHIBIT A

FEDERAL FLOOD CONTROL REGULATIONS

(SEE STANDARD MANUAL)



LEGEND

EXTENT OF LEVEE IN THIS UNIT

LOCATION MAP

UNIT NO. 4

EAST LEVEE OF SAN JOAQUIN RIVER WITHIN R.D. 2031

EXHIBIT A-1

EXHIBIT B

"AS CONSTRUCTED"
DRAWINGS

File No.	Title
7-4-1570	Emergency Repairs, Right Bank Tuolumne River, in 2 sheets.
7-4-1666	Levee Construction, Right and Left Banks San Joaquin River Between Tuolumne River and Stanislaus River, in 66 sheets.
7-4-1710	Completion Phase, Right and Left Banks San Joaquin River and Stanislaus River.
7-4-1745	Levee Repair, Right Bank San Joaquin River and Left Bank Stanislaus River, RD 2031.

EXHIBIT B
Unattached

EXHIBIT C

PLATES OF SUGGESTED FLOOD FIGHTING METHODS

(SEE STANDARD MANUAL)

EXHIBIT C
Unattached

EXHIBIT D

SUGGESTED CHECK LIST NO. 1

LEVEE INSPECTION REPORT

(SEE STANDARD MANUAL)

EXHIBIT E

SUGGESTED CHECK LISTS OF LEVEES

CHANNEL AND STRUCTURES

For definition of "flood" or "high water period", see paragraph 1-05 this manual.

SUGGESTED CHECK LIST NO. 2
UNIT NO. 4
SAN JOAQUIN RIVER

Inspector's Report Sheet No. _____ Inspector _____

Date _____ Superintendent _____

Item	Remarks
(a) Location by Station	
(b) Settlement, sloughing, or loss of grade	
(c) Erosion of both levee slopes	
(d) Condition of roadways, including ramps	
(e) Evidence of seepage	
(f) Condition of farm gates and fencing	
(g) Maintenance measures taken since last inspection	
(h) Comments	

Instruction for Completing Sheet 2, Exhibit E
(To be printed on back of Sheet 2)

Item (a) Indicate levee station of observation, obtained by pacing from nearest reference point; indicate right or left bank.

Item (b) If sufficient settlement of earthwork has taken place to be noticeable by visual observation, indicate amount of settlement in tenths of a foot. If sloughing has caused a change in slope of the embankment sections, determine the new slope. Note areas where erosion or gullying of the section has occurred.

Item (c) If sufficient erosion or gullying of back face of back toe of levee has taken place to be noticeable by visual inspection, indicate area affected and depth.

Item (d) Note any natural change in any section of roadway or ramps. Indicate any inadequacy in surface drainage system.

Item (e) Indicate any evidence of seepage through the embankment section.

Item (f) Indicate the serviceability of all farm gates across the embankments and roadway, and indicate if repainting is required.

Item (g) Indicate maintenance measures that have been performed since last inspection and their condition at the time of this inspection.

Item (h) Record opinion, if any, of contributory causes for conditions observed and also any observations not covered under other columns.

NOTE: One copy of the Inspector's Report is to be mailed to the District Engineer immediately on completion, and one copy is to be attached to and submitted with the Superintendent's semi-annual report.

SUGGESTED CHECK LIST NO. 3
CHANNEL AND RIGHT-OF-WAY
UNIT NO. 4
SAN JOAQUIN RIVER

Inspector's Report Sheet No. _____ Inspector _____

Date _____ Superintendent _____

Item	Remarks
(a) Name of Channel and location by Stations	
(b) Vegetal growth in channel	
(c) Debris and refuse in channel	
(d) New construction within right-of-way	
(e) Extent of aggradation or degradation	
(f) Condition or riprapped section	
(g) Condition of bridges	
(h) Measures taken since last inspection	
(i) Comments	

Instructions for Completing Sheet 4, Exhibit E
(To be printed on back of Sheet 4)

Item (a) Indicate station of observation obtained by pacing from nearest reference point.

Item (b) Note nature, extent, and size of vegetal growth within the limits of flood flow channel.

Item (c) Note nature and extent of debris and refuse that might cause clogging of the conduits of the irrigation intake works, souling of the tainter gates, or the bridges over the channel.

Item (d) Report any construction along the diversion channel or above the diversion channel or above the diversion works that has come to the attention of the inspector and that might affect the functioning of the project.

Item (e) Indicate any change in grade or alignment of the channels, either by deposition or sediment or scour, that is noticeable by visual inspection. Estimate amount and extent.

Item (f) Indicate any change that has taken place in the riprap such as disintegration of the rock, erosion, or movement of the rock. Note the presence of vegetal growth through the riprap.

Item (g) Note any damage or settlement of the footings of the bridges. Indicate condition of wooden structures and if repainting is required. Indicate condition of bridge approaches, headwalls, and other appurtenances.

Item (h) Indicate maintenance measures that have been performed since the last inspection and their condition at time of this inspection.

Item (i) Record opinion, if any, of contributory causes for conditions observed, also any observations not covered under other columns.

NOTE: One copy of the Inspector's Report is to be mailed to the District Engineer immediately on completion and one copy is to be attached to and submitted with the superintendent's semi-annual report.

SUGGESTED CHECK LIST NO. 4
DRAINAGE AND IRRIGATION STRUCTURES
UNIT NO. 4
SAN JOAQUIN RIVER

Inspector's Report Sheet No. _____ Inspector _____

Date _____ Superintendent _____

(a) Location by Levee Mileage	(b) Bank	(c) Debris or other obstruction to flow	(d) Damage or Settlement of Pipe or conduit	(e) Condition of concrete head-wall or invert paving	(f) Condition of right-of-way adjacent to structure	(g) Repair Measures taken since last inspection	(h) Comments
			Unit No. 1 - Stanislaus River - Left Bank (As listed in Paragraph 2-02)				
			Unit No. 2 - San Joaquin River - Right Bank (As listed in Paragraph 2-02)				

Instruction for Completing Sheet 6, Exhibit E
(To be printed on back of Sheet 6)

(1) Enter station of all structures under Column (a) for check list.

(2) Inspect inlet, barrel, and outlet for accumulation of sediment, rubbish, and vegetal matter. Note condition under Column (c).

(3) If any settlement or damage to the pipe, barrel, or invert of the drain has occurred, estimate the location and amount. Note particularly if any backfill has come into the pipe or been disturbed. Record observations under Column (d).

(4) Inspect the concrete portions of the structures for evidence of settlement, cracks, "pop-outs", spaces, abrasive wear, or other deterioration. Record conditions under Column (e).

(5) Inspect backfill area adjacent to structure for evidence of erosion caused by overflow of the drainage structure and note conditions in Column (f).

(6) Under Column (g) indicate physical measures that have been taken to correct conditions reported in last inspection, and their condition at time of this inspection.

(7) Under Column (h) record opinion, if any, of contributory causes for conditions observed, also any observations not covered under other columns.

(8) A copy of the inspector's report is to be mailed to the District Engineer immediately on completion, and a record copy shall be attached to the Superintendent's semi-annual report.

EXHIBIT F

LETTERS OF ACCEPTANCE BY

THE STATE RECLAMATION BOARD

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

NOV 29 2016

Ms. Leslie M. Gallagher
Executive Officer
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

Dear Ms. Gallagher:

The purpose of this letter is to notify the Central Valley Flood Protection Board of the completion of an effort to update the Operation and Maintenance Manual Supplements for the Sacramento River Flood Control Project and the Lower San Joaquin River Levees and Lower San Joaquin River and Tributaries Project. These updates are a compilation of revisions made to the project over time and where we had record of a transfer letter to the Board. These updated supplements are the most current version and should be utilized as the baseline version for any future project modifications.

This process and the compiled updates have been coordinated with the Central Valley Flood Protection Board and Department of Water Resources staffs for review and comment. All comments have been addressed or incorporated into the manuals.

The Board staff has been provided a copy of the manuals in electronic format. Future updates will include entire unit supplements so updates can be seen in context with the entire unit supplement. The list of completed supplements, by the unit number and title, are attached. If you have any questions regarding this transmittal, please contact Gary Kamei at 916-557-6845.

Sincerely,

David G. Ray, P.E.
Colonel, U.S. Army
District Commander

Enclosures

Standard O&M Manual Sacramento River Flood Control Project	
Unit No.	**Project Name**
101	RD 341 Sherman Island
102	E. Levee of Sac River, Isleton to Threemile Slough & N. Levee of Threemile Slough from Sac River to SJ River
103	Both Levees of Georgiana Slough & E. Levee of Sac River from Walnut Grove to Isleton
104	Levees around Grand Island
105	Levees Around Reyer Island
106	S. Levee Lindsey Slough & W. Levee of Yolo BP from Lindsey Slough to Watson Hollow and N. Levee of Watson Hollow Drain
107	Levees Around Hastings Tract
108	Levees Around Peters Tract
109	West Levee of Yolo Bypass & E. Levee of Cache Slough
110	Levees Around Sutter Island
111	E. Levee of Sac River from Freeport to Walnut Grove
112	Levees Around Merritt Island
113	E. Levee Yolo Bypass, N. Levee Miner Slough, W. Levees Sutter Slough, Elkhorn Slough & Sac River, All Bordering RD 999
114	W. Levee of Sac River from Northern Boundary of RD 765 to Southern Boundary of RD 307
115	E. Levee of Sac River from Sutterville Rd to Northern Boundary of RD 744
116	W. Levee of Sac River from Sac Weir to Mi 51.2 & S. Levee of Sac Bypass & E. Levee of Yolo Bypass from Sac Bypass to Southern Boundary of RD 900
117	E. Levee Sac River through City of Sac from Tower Bridge to Sutterville Rd
118.1	E. Levee of Sac River from American River to Tower Bridge & S. Levee of American River from Mayhews Downstream to Sac River
118.2	N. Levee American River, E. Levee Natomas Canal, Both Levees Arcade Creek, S. Levee Linda Creek, & Magpie Creek Diversion Channel
118.2 Sup	Vegetation on Mitigation Sites E. Levee of Sac River from American River to Tower Bridge & S. Levee of American River from Mayhews Downstream to Sac River
119	Putah Creek Channel & Levees & W. Levee of Yolo Bypass from Yolo Causeway Downstream 3 mi. Includes O&M manual for the Yolo Basin wetlands, and South Fork Putah Creek Preserve Restoration Section 1135 Authorization.
120	Relocated Willow Slough Channel & Levees & W. Levee Yolo Bypass from mouth of Relocated Willow Slough to Yolo Causeway
121	R. Levee of Yolo Bypass from Willow Slough Bypass to Woodland Rd RD2035
122.1	W. Levee of Sac River from Mi 70.8 to Sac Weir & N. Levee of Sac Bypass & E. Levee of Yolo Bypass from Woodland Hwy to Sac Bypass
123	W. Levee of Sac River from East End of Fremont Weir to Mi 70.8 & E. Levee of Yolo Bypass from East End Fremont Weir to Woodland Hwy RD 1600

124	N. Levee of American River from Natomas E. Canal to Sac River & E. Levee of Sac River from Natomas Cross Canal to American River. Includes supplement, Vegetation on Mitigation Sites.
125	Back Levee of RD 1000
126	Cache Creek Levees & Settling Basin Yolo Bypass to High Ground
127	Knights Landing Ridge Cut & Sac River & Yolo BP Levees of RD's 730 and 819 & S. Levee of Sycamore Slough
128	E. Levee of Sac River from Sutter Bypass to Tisdale Weir all within RD 1500
129	S. Levee of Tisdale By-Pass from E. Levee Sac River to W. Levee Sutter BP & W. Levee of Sutter BP Downstream to E. Levee of Sac River
130	W. Levee Sac River from Sycamore Slough to Wilkins Slough (Mi. 89.9 to Mi. 117.8)
131	W. Levee Sac River from Wilkins Slough to Colusa (Mi. 117.8 to Mi. 143.5)
132	Back Levees of RD 108
133	E. Levee of Sac River from Winship School to Tisdale BP & N. Levee of Tisdale BP & W. Levee of Sutter BP from Long Bridge to Tisdale BP
134	Levees of RD 70, E. Levee of Sac River from Butte Slough Outfall Gates to Winship School & W. Levee of Sutter BP from Butte Slough Outfall Gates to Long Bridge
135	E. Levee of Sutter BP from Sutter Buttes Southerly to Junction with Feather River & E. & W. Levees of Wadsworth Canal & Levee of Intercepting Canals
136	E. Levee of Sac River from Butte Slough Outfall Gates to the Princeton-Afton Rd (Mi. 138.3 to Mi. 164.4)
137	W. Levee of Sac River from North End of Princeton Warehouse to Colusa Bridge
138	E. Levee of Sac River from Parrott-Grant Line to Princeton-Afton Rd
139	W. Levee of Sac River from N. Boundary of LD 2 to North End of Princeton Warehouse
140	W. Levee of Sac River in LD 1 (Mi. 170.5 to Mi. 184.7). Includes mitigation site O&M manual, Yuba County
141.1	E. Levee of Feather River from Bear River to Natomas CC & S. Levee of Bear River & Both Levees of Yankee Slough. Parts 1 and 2
141.2	E. Levee of Feather River from Bear River to Natomas CC & S. Levee of Bear River & Both Levees of Yankee Slough. Parts 1 and 2
142	Back Levee of RD 1001
143	W. Levee of Feather River from North Boundary of RD 823 to E. Levee of Sutter Bypass
144	W. Levee of Feather River from North Boundary of LD 1 to North Boundary of RD 823
145	E. Levee of Feather River, S. Levee of Yuba River, Both Levees of WPRR Intercepting Channel, W. Levee of South Dry Creek & N. Levee of Bear River
146	N. Levee of Bear River & S. Levee of South Dry Creek RD 817 & Vicinity of Wheatland
147	Levee Around the City of Marysville & N. Levee of Yuba River to a Point 1.8 Mi. Upstream from Marysville

148	W. Levee of Feather River from North Boundary of RD 777 to North Boundary of LD 1
149	S. Levee of Yuba River Maintenance Area No. 8
151	E. Levee Feather River from Honcut Creek to Marysville & S. Levee of Honcut Creek & E. Levee of RD 10
152	W. Levee of Feather River from N. Boundary of RD 777 to Western Canal Intake (Levee of Drainage District No. 1)
153	Lower Butte Creek Channel Improvement, Colusa, Glenn & Butte Counties
154	Moulton Weir & Training Levee Sacramento River
155	Colusa Weir & Training Levee Sacramento River
156	Tisdale Weir & Bypass
157	Fremont Weir, Sacramento River
158	Sacramento Weir, Sacramento River
159	Pumping Plants No. 1, 2 & 3, Sutter Bypass
160	Sutter Butte Canal Headgate
161	Butte Slough Outfall Gates
162	Knights Landing Outfall Gates, Sacramento River

Standard O&M Manual San Joaquin River	
Unit No.	**Project Name**
1	Right Bank Levee of the San Joaquin River & French Camp Slough within RD 404
2	Right Bank Levee of the San Joaquin River & French Camp Slough within RD 17
3	North Levee of Stanislaus River & East Levee of the San Joaquin River within RD 2064, 2075, 2094 and 2096
4	East Levee of San Joaquin River within RD 2031
5	East Levee of the San Joaquin River Within RD No. 2092
6	East Levee of the San Joaquin River in RD Nos. 2063 & 2091
7	West Levee of San Joaquin River & North Levee of Old River RD Nos. 524 & 544
8	Right Banks of Old River & Salmon Slough Within RD No. 1 & RD No. 2089
9	Levees Around RD No. 2062 & San Joaquin County Flood Control District Area No.2
10	West Levee of Paradise Cut RD No. 2058 & SJ County Flood Control District, Area No.2
11	West Levee of San Joaquin River from Durham Bridge to Paradise Dam Within RD No. 2085 & 2095
12	West Levee of San Joaquin River From Opposite Mouth of Tuolumne River Downstream to Stanislaus County Line Within RD Nos. 2099, 2100, 2101, & 2102
13	West Levee of the San Joaquin River in RD No. 1602

THE RECLAMATION BOARD
STATE OF CALIFORNIA

COPY

20 January 1970

COPY

District Engineer
Corps of Engineers
U. S. Army
650 Capitol Mall
Sacramento, California 95814

Attention: Construction-Operations Division

Dear Sir:

Reference is made to the San Joaquin River Flood Control Project, and in particular to the Completion Phase, Right and Left Banks, San Joaquin River and Stanislaus River, Specification No. 3455, Contract No. DACW05-68-C-0086.

A review of this work was made in the field on December 27, 1968. The work was found to conform to the contract plans and specifications and the involved reclamation districts have been informed of the completion of project construction in this reach of the San Joaquin and Stanislaus Rivers.

Sincerely yours,

/s/ A. E. McCOLLAM
A. E. McCOLLAM
Chief Engineer and
General Manager

EXHIBIT F

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THE RECLAMATION BOARD
STATE OF CALIFORNIA

January 15, 1970

District Engineer
Corps of Engineers
U. S. Army
650 Capitol Mall
Sacramento, California 95814

Dear Sir:

Reference is made to your letter of November 19, 1969 concerning transfer to the State of California of the levee break repair and rehabilitation of wave wash damage on the Stanislaus and San Joaquin Rivers in Reclamation District 2031 for continued maintenance and operation.

This work was constructed in accordance with Specification No. 3660, Contract No. DACW05-70-C-0020, Drawing No. 7-4-1745.

The Reclamation Board, at its meeting of January 9, 1970, formally accepted the above-referred to work for operation and maintenance.

Sincerely yours,

/s/
A. E. McCOLLAM
Chief Engineer and General Manager

EXHIBIT F

SPKCO-C

19 November 1969

The Reclamation Board
State of California
1416 - 9th Street, Room 1335
Sacramento, California 95814

Gentlemen:

Reference is made to the completed emergency project levee restoration work in Reclamation District No. 2031, authorized by Section 2304 (a) (1), Title 10, U.S.C. and Section 5 of the Flood Control Act of 18 August 1941 as amended (Public Law 99, 84th Congress, 1st Session).

The authorized emergency work referred to above was jointly inspected and completed on 17 November 1969, in accordance with Specification No. 3660, Contract No. DACW05-70-C-0020, and Drawing No. 7-4-1745. This work consisted of restoring approximately 18,550 feet of eroded levee at 9 sites and constructing approximately 372 feet of levee on the left bank of the San Joaquin and Stanislaus Rivers.

The completed project emergency work shall be maintained and operated by the State of California in accordance with the Standard Operation & Maintenance Manual, Unit No. 4, Lower San Joaquin River and Tributaries Project, California.

Sincerely yours,

COLEMAN/ffs

HENSON

HART

SKINNER
21 Nov 69

1 Incl
General Orders No. 7

GEORGE B. SKINNER
Lieutenant Colonel, CE
Acting District Engineer

Copy furnished:
DWR-ATTN: John Wright

cc: Coleman

Unit #1

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

Transfer file

CO

SPKCO-F

30 November 1966

The Reclamation Board
State of California
1416 - 9th Street, Room 1335
Sacramento, California 95814

Gentlemen:

Reference is made to the joint inspection of 2 & 7 November 1966, made for the purpose of transferring a completed portion of the flood control work on the Lower San Joaquin River and Tributaries Project to the State of California for operation and maintenance. This portion of work laps the reach of work that was completed on 21 December 1965, and transferred to the State of California on 4 January 1966.

The work consists of levee enlargement, shaping levee crown, levee construction, levee setback, bank sloping and stone protection on right and left banks of San Joaquin River between Tuolumne River and Stanislaus River. The work unit No. 80, as shown on the attached tabulation, was completed on 8 November 1966, in accordance with Specification No. 2894, Contract No. DA-04-167-CIVENG-65-21, and Drawing No. 7-4-1666. The work was performed under the general authority of the Lower San Joaquin River and Tributaries Project, which was authorized by the Flood Control Act of 1944, 78th Congress, 2nd Session.

This completed flood control work now meets the requirements of the Lower San Joaquin River and Tributaries Project. Therefore, said flood control work, together with the waterway banks contiguous thereto, are hereby transferred to the State of California for operation and maintenance.

The maintenance work required under the provisions of the Lower San Joaquin River and Tributaries Project shall be performed in accordance with the inclosed Flood Control Regulations. These regulations have been prescribed by the Secretary of the Army pursuant to Section 3 of the Act of Congress, approved 22 June 1936, as amended and supplemented by a Standard Operation and Maintenance Manual for the Lower San Joaquin River and Tributaries Project. As provided under Paragraph 208.10(10) of these

Unit 4,12

RE LTR TO RB
10 OCT 69
FOR REPAIR OF
LEVEE @ 76.2 LEFT BANK

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

SPKKO-F 30 November 1966
The Reclamation Board

regulations, a supplement to the Standard Operation and Maintenance Manual covering the above work will be furnished to you upon completion.

Sincerely yours,

2 Incl
1. Tabulation
2. F.C. Regulations

T. S. MEADE
Lieutenant Colonel, CE
Acting District Engineer

Copy furnished:
Dept Water Resources
O.C.E.
S.P.D.

cc: Engrg Div-Lev & Chan
Engrg Div-Prog Dev
Valley Res Ofc
F&A (Cordano)

MORGAN/KO-F/pnp
COLEMAN/KO-F
HENSON/KO
HARMAN/KO
MEADE/VA

SPKRD-F 4 January 1966

The Reclamation Board
State of California
1416 - 9th Street, Room 1335
Sacramento, California 95814

Gentlemen:

Reference is made to the joint inspection made on 21 December 1965, on the flood control project work pertaining to the Lower San Joaquin River and Tributaries Project for the purpose of transferring it, upon completion, to the State of California for operation and maintenance.

The work consists of levee enlargement, shaping levee crown and slopes, levee construction, levee setback and stone protection on the left bank of the Stanislaus River from Kiernan Avenue to San Joaquin River. The work as shown on the attached tabulation, was completed on 21 December 1965, in accordance with Specification No. 2894, Contract No. DA-04-167-CIVENG-65-21, and Drawing No. 7-4-1666.

The work was performed under the general authority of the Lower San Joaquin River and Tributaries Project, which was authorized by the Flood Control Act of 1944, 78th Congress, 2nd Session.

The above flood control work now meets the requirements of the Lower San Joaquin River and Tributaries Project. Therefore, said flood control work, together with the waterway banks contiguous thereto, are hereby transferred to the State of California for operation and maintenance.

The maintenance work required under the provisions of the Lower San Joaquin River and Tributaries Project, shall be performed in accordance with existing Flood Control Regulations, inclosed herewith, which have been prescribed by the Secretary of the Army pursuant to Section 3 of the Act of Congress, approved 22 June 1936, as amended and supplemented by a Standard Operation and Maintenance Manual for the Lower San Joaquin River and Tributaries Project. As provided under Paragraph 208.10(o) of these regulations, a supplement to the Standard Operation and

Unit 4

CERTIFIED MAIL unit No. 79.

RETURN RECEIPT REQUESTED

SPKKO-F 4 January 1966
The Reclamation Board

Maintenance Manual covering the above work will be furnished to you upon completion.

Sincerely yours,

2 Incl
P.C. Regs
Summary Sheet

ROBERT E. MATHE
Colonel, CE
District Engineer

Copy furnished:
Dept Water Resources
O.C.E.
S.P.D.

cc: Dev & Chan
Prog Dev
Valley Res
F&A (Cordano)

MORGAN/jl
COLEMAN
HENSON
HARR
MATHE

Unit 4

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

THE RECLAMATION BOARD
State of California

December 28, 1966

C
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Refer to: 4130.37.401
Contract No. 65-21

C
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Y

District Engineer
Corps of Engineers
U. S. Army
650 Capitol Mall
Sacramento, California

Dear Sir:

Reference is made to your letter of November 30, 1966 concerning transfer to the State of California of the Lower San Joaquin River Flood Control Project between Stanislaus and Tuolumne River, in accordance with Specification No. 2894.

The Reclamation Board, at its meeting of December 15, 1966, formally accepted the above referred to work for operation and maintenance subject to certain conditions.

The conditions mentioned above are the provisions of such additional work by the Corps of Engineers as was indicated in our letters to you of November 21 and December 12, 1966.

Sincerely yours,

/s/ A. E. McCollam
A. E. MCCOLLAM
General Manager

EXHIBIT F
Sheet 1 of 4

THE RECLAMATION BOARD
State of California

November 21, 1966

C
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Refer to: 4130.37.401

C
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District Engineer
Corps of Engineers
U. S. Army
650 Capitol Mall
Sacramento, California

Dear Sir:

Reference is made to the San Joaquin River Flood Control Project, Stanislaus River to Tuolumne River, Specification No. 2894.

As a result of the precompletion inspection held on November 2 and 7, 1966 it has been determined that the following work should be undertaken in order to bring the work to acceptable standards prior to transfer of this project to Reclamation District No. 2031 for operation and maintenance.

At the time of the precompletion inspection, Reclamation District No. 2031 was asked to forward its comments regarding the project to the Reclamation Board. To date we have received no such list of comments regarding this project and it presently appears that we will not receive such a list of comments from Reclamation District No. 2031 until some later date. The following comments, therefore, are those of the State Reclamation Board only from its staff's appraisal of the completed work. It is possible that a supplementary list of comments will be forwarded to you upon receipt of such comments from Reclamation District No. 2031.

We request that you examine these comments and institute such directives as are necessary in order to accomplish the required work. We further request that you provide us with an estimated time of completion of the work involved. We recognize the fact that by this time some, if not most, of the work required by the following comments will have been accomplished; however, this resume reflects our thoughts at the time of the precompletion inspection.

C O P Y

1. Station -2+40±: A gate post was sawed off approximately six inches above the ground. - Remove and backfill hole.

2. Station 33+80±: The downstream end of the pipe under the ramp at this location shows considerable erosion. - Repair this erosion and provide grouted riprap.

3. The barbed wire fence crossing the ditch at Station 33+80± is high allowing cattle to crawl underneath. - Add an additional wire at the bottom.

4. Station 66+27±: Erosion is appearing at the downstream end of the pipe under the ramp at this location. - Repair and add grouted riprap.

5. Station 71+25±: Erosion is appearing at the downstream end of the pipe under the ramp at this location. - Repair and add grouted riprap.

6. Station 19+00±: Stub traverse: Drainage along the waterward levee toe discharged onto the berm in the vicinity of the drain pipe. This runoff water is sloughing the berm severly in the vicinity of a drain pipe. - Repair and provide rock riprap to prevent further erosion.

7. Station 24+00±: Drainage slough discharging into the San Joaquin River at this location crosses the levee berm. It would appear continued discharge over this area will erode the waterside berm. - Provide grouted outfall ditch across the berm and down the bank.

8. Station 47+70±: There is an apparent leak in the concrete distribution box relocated on the landside of the levee. - Repair leak.

9. Station 114+00±: Provide gate in right-of-way fence at ramp in this location. - Crown and reshape ramp.

10. Station 158+30±: Post on cattle guard has been hit and bent. Repair.

11. Station 111+50±: (Davies-Koetitz property line) to Station 148+00±: Near Davies home. Relay gravel patrol road (Davies property).

12. Station 17+00± (Koetitz property): Levee ramp and crown damaged by cattle. - Repair.

13. Station 85+00±: (Koetitz property): Levee ramp and crown damaged by cattle. - Repair

C
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14. It was observed throughout the length of the project that the leaf gates did not operate properly. It is requested that these be reconstructed in such a manner as to properly open and close.

15. Throughout the length of the project some damage was noted to the cattle guards provided by project construction. It is requested that these be investigated and where found to be damaged that repairs be made.

16. It was noted throughout the length of the project that some covers had not been placed on siphon and valve wells. It is requested that this project be inspected and such covers as are missing be installed.

Sincerely yours,

/s/ A. E. McCollam
A. E. MCCOLLAM
General Manager

EXHIBIT F
Sheet 4 of 4

EXHIBIT G

SUGGESTED SEMI-ANNUAL REPORT FORM

TO: The District Engineer
Sacramento District
Corps of Engineers
650 Capitol Mall
Sacramento, California

(1 May 19__)
(1 Nov 19__)

Dear Sir:

The semi-annual report for the period (1 May 19__ to 31 October 19__) (1 November 19__ to 30 April 19__) Unit No. 4 of the Lower San Joaquin River and Tributaries Project is as follows:

a. The physical condition of the protective works is indicated by the inspector's report, copies of which are inclosed, and may be summarized as follows:

(Superintendent's summary of conditions)

It is our intention to perform the following maintenance work in order to repair or correct the conditions indicated:

(Outline the anticipated maintenance operations for the following 6 months.)

b. During this report period, major high water periods (water level in excess of 28.0 feet on the Vernalis gage on the San Joaquin River at Durham Ferry Bridge or when the Stanislaus River flows at Ripon, California, exceed 8,000 c.f.s.) occurred on the following dates:

Dates	Maximum Elevation
_____	_____
_____	_____
_____	_____

EXHIBIT G
Sheet 1 of 2

Comments on the behavior of the protective works during such high water periods are as follows:

(Superintendent's log of flood observations)

During the high water stages when the water level at Vernalis gage reached a height of _____, on the gage or excess thereof (Dates) _____, it was necessary to organize and carry out flood operations as follows:

(See Maintenance Manual _____.)

c. The inspections have indicated (no) or (the following) encroachments or trespasses upon the project right-of-way.

d. (No) (_____) permits have been issued for (the following) improvements or construction within the project right-of-way.

Executed copies of the permit documents issued are transmitted for your files.

e. The status of maintenance measures, indicated in the previous semi-annual report as being required or as suggested by the representatives of the District Engineer, is as follows:

(Statement of maintenance operations, item by item with percent completion.)

f. The fiscal statement of the Superintendent's operations for the current report period is as follows::

	Labor	Material	Equipment	Overhead	Total
1. Inspection					
2. Maintenance					
3. Flood fighting operations					
TOTAL					

Respectfully submitted,

_____
Superintendent of Works

EXHIBIT G
Sheet 2 of 2