

# Compilation of 2018 Delta Levee Five-Year Plan Data

**California Natural Resources Agency  
Department of Water Resources  
Delta Levees Special Flood Control Projects Program**



**March 2025**



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## Contents

Acronyms and Abbreviations	vi
Key Terms	vii
<b>Executive Summary</b>	<b>1</b>
<b>1. Introduction</b>	<b>1</b>
<b>2. Background</b>	<b>3</b>
History of the Delta Levees Program	3
<b>3. 2009 Five-Year Plans</b>	<b>5</b>
Assessment of the status of existing levee system (2009)	5
Multibenefit Projects	7
Levee Projects to Meet a Level of Protection	7
Additional Protection	11
Studies	11
Habitat Enhancement Projects	11
Emergency Planning	11
<b>4. 2018 Five-Year Plans</b>	<b>13</b>
Assessment of the Status of Existing Levee System, 2018	13
Work Completed Since 2009 Five-Year Plans	14
2018 Five-Year Plans Proposed Work	18
2018 Proposed Multibenefit Projects	18
Levee Projects to Meet a Level of Protection	19
Additional Protection	28
Existing Project Funding Agreements	31
Proposed Work Highlighted by Delta Stewardship Council’s Levee Investment Priorities	34
<b>5. Summary</b>	<b>37</b>
<b>Appendix A. Delta Levees Special Projects 2018 Requirements for the Five-Year Plans</b>	<b>A-1</b>
General Content	A-1
Section 1: Executive Summary (recommend one page)	A-1
Section 2: Background (recommend five pages)	A-1
Section 3: Plan for Flood Protection (recommend 12 pages)	A-3

Section 4: Plan for Permits and Habitat (recommend two pages)	A-5
<b>Appendix B. 2018 Project Solicitation Package</b>	<b>B-1</b>
Introduction	B-1
Background	B-1
Five-Year Plan Cost Share Solicitation	B-2
Requirements for the Five-Year Plan	B-4
General Content	B-4
<b>Appendix C. Levee Maintaining Agencies Participating in the 2018 Five-Year Plan</b>	<b>C-1</b>
<b>Appendix D. Local Maintaining Agencies and Levee Mileage at Their Highest Levee Standard</b>	<b>D-1</b>
<b>Appendix E. Local Maintaining Agencies and Cost of Proposed Work within Five Years</b>	<b>E-1</b>
<b>Appendix F. 2009 Requirements for the Five-Year Plan</b>	<b>F-1</b>
Requirements for the Five-Year Plan	F-1
<b>Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council’s Levee Investment Priorities</b>	<b>G-1</b>
<b>Tables</b>	
<b>Table ES-1 Levee Miles for 2018 Five-Year Plan Work</b>	<b>ES-2</b>
<b>Table ES-2 Estimated Cost of Proposed Work From 2018 Plans</b>	<b>ES-2</b>
<b>Table ES-3 Funding Needed for Proposed Work</b>	<b>ES-3</b>
<b>Table 1 2009 Multibenefit Propose Projects</b>	<b>7</b>
<b>Table 2 2009 Five-Year Plans Proposed Levee Standards</b>	<b>8</b>
<b>Table 3 2009 Estimated Cost of Work Proposed</b>	<b>12</b>
<b>Table 4 Projects Completed Through the Delta Levees Program Since the 2009 Five-Year Plans</b>	<b>14</b>

<b>Table 5</b>	<b>Levee Work Completed Since the 2009 Five-Year Plan to Meet Desired Level of Protection</b>	<b>17</b>
<b>Table 6</b>	<b>Additional Work Completed Since 2009 Five-Year Plan</b>	<b>17</b>
<b>Table 7</b>	<b>Cost of Projects Proposed Beyond 5 Years</b>	<b>18</b>
<b>Table 8</b>	<b>2018 Proposed Multibenefit Projects</b>	<b>19</b>
<b>Table 9</b>	<b>2018 Proposed Levee Projects to meet Desired Level of Protection</b>	<b>24</b>
<b>Table 10</b>	<b>2018 Five-Year Plans Proposed Levee Standards</b>	<b>26</b>
<b>Table 11</b>	<b>2018 Cost Estimate of Proposed Work</b>	<b>31</b>
<b>Table 12</b>	<b>Cost Estimate of Proposed Work, Including Years 6+</b>	<b>31</b>
<b>Table 13</b>	<b>Total Cost for the 2018 Five-Year Plans Proposed Work</b>	<b>35</b>
<b>Table A-1</b>	<b>Required Tabulated Information</b>	<b>A-6</b>
<b>Table B-1</b>	<b>Required Tabulated Information</b>	<b>B-9</b>
<b>Table D-1</b>	<b>Local Maintaining Agencies and Levee Mileage at Their Highest Levee Standard</b>	<b>D-1</b>
<b>Table E-1</b>	<b>Local Maintaining Agencies and Cost of Proposed Work</b>	<b>E-1</b>
<b>Table G-1</b>	<b>Delta Stewardship Council Very High Priority Levee Investments</b>	<b>G-1</b>
<b>Table G-2</b>	<b>Delta Stewardship Council High Priority Levee Investments</b>	<b>G-5</b>
<b>Table G-3</b>	<b>Delta Stewardship Council Other Priority Levee Investments</b>	<b>G-8</b>
<b>Figures</b>		
<b>Figure 1</b>	<b>2009 Existing Levee Miles at Levee Standard</b>	<b>6</b>
<b>Figure 2</b>	<b>2009 Percentage of Levee Miles at Standard</b>	<b>6</b>

<b>Figure 3 2009 Percentage of Levee Miles Proposed to be Improved to a Desired Level of Protection (Levee Standard)</b>	<b>8</b>
<b>Figure 4 2009 Proposed Desired Level of Protection</b>	<b>9</b>
<b>Figure 5 2009 Minimum Standard Noting Desired Levee System Standard (in miles)</b>	<b>10</b>
<b>Figure 6 2018 Current Levee Miles at Levee Standard</b>	<b>13</b>
<b>Figure 7 2018 Percentage of Levee Miles at Standard</b>	<b>14</b>
<b>Figure 8 Description of Levee Standards</b>	<b>21</b>
<b>Figure 9 2018 Percentage of Levee Miles Proposed to be Improved to a Desired Level of Protection (Levee Standard)</b>	<b>23</b>
<b>Figure 10 2018 Proposed Desired Level of Protection</b>	<b>25</b>
<b>Figure 11 2018 Current Minimum Standards Noting Desired Levee Standards (in miles)</b>	<b>27</b>

## Acronyms and Abbreviations

Delta	Sacramento San Joaquin Delta
DWR	California Department of Water Resources
HMP	hazard mitigation plan
LMA	levee maintaining agency
mi.	mile
PL 84-99	Public Law 84-99
Plan	five-year plan
RD	reclamation district
Requirements	2018 five-year plan requirements
Special Projects Program	Delta Levees Special Flood Control Projects Program
Subventions Program	Delta Levees Maintenance Subventions Program



## Key Terms

**Additional protection** — Proposed work which can include rock slope protection, levee armoring, stability toe berms, setback levees, vegetation control, all-weather road improvements, seepage control, and raising utilities to maintain a sustainable levee standard.

**Bulletin 192-82 design standards** — Agricultural Bulletin 192-82 standards, see Figure 8 for description of levee standard.

**Delta** — The area of the Sacramento-San Joaquin Delta as defined in Section 12220 of the California Water Code. Also referred to as the "Legal Delta."

**Delta Project levees** — The Sacramento Flood Control Project was authorized by Congress in 1917 and was completed by the U.S. Army Corps of Engineers in 1960. Storage reservoirs and other protective measures have been provided on the San Joaquin River. These systems denoted "project levees" are part of the Federal Flood Control Project and are built to standards that comply with U.S. Army Corps of Engineers guidelines.

**Habitat projects** — Projects that support net long-term habitat improvement or habitat mitigation sites. This category includes planning and on-going management where appropriate.

**HMP design standards** — Agricultural hazard mitigation plan standards, see Figure 8 for description of levee standard.

**Levee maintaining agency** — A reclamation district, levee district, or other public agency responsible for the maintenance of a non-project levee as defined in California Water Code Section 12980(e) or a project levee as defined in California Water Code Section 12980(f).

**Level of protection** — In this report, the standards proposed to achieve (i.e., Agricultural Bulletin 192-82, Public Law 84-99 (PL 84-99), HMP, or below HMP).

**Multibenefit projects** — Projects that can help simultaneously improve the environment, flood management, and water supply reliability.

**Non-project levees** — “Non-project” distinguishes these levees from those that are part of federal flood control projects. Local districts are responsible for maintaining these levees and are reimbursed for a portion of the costs under the Delta Levees Special Flood Control Projects Program.

**PL84-99 design standards** — Agricultural Public Law 84-99 design standards, see Figure 8 for description of levee standard.

**Primary Zone** — The Delta land and water area of primary State concern situated within the boundaries of the Delta, as described in Section 12220 of the California Water Code, but that is not within either the urban limit line or sphere of influence line of any local government's general plan or studies existing as of January 1, 1992. The precise boundary lines of the Primary Zone include the land and water areas as shown on the "Delta Protection Zones" map on file with the California State Lands Commission. Where the boundary between the Primary Zone and Secondary Zone is a river, stream, channel, or waterway, the boundary line shall be the middle of that river, stream, channel, or waterway. The Primary Zone consists of approximately 500,000 acres (California Public Resources Code Section 29728).

**Secondary Zone** — The Delta land and water area within the boundaries of the legal Delta not included within the Primary Zone, subject to the land use authority of local government, and that includes the land and water areas as shown on the "Delta Protection Zones" map on file with the California State Lands Commission. The Secondary Zone consists of approximately 238,000 acres (California Public Resources Code Section 29731).

# Executive Summary

This report provides a summary of the information gathered from the 2018 five-year plans funded by the Delta Levees Special Projects Flood Control Projects Program under the California Department of Water Resources (DWR) Division of Multibenefit Initiatives. Seventy-four levee maintaining agencies (LMAs) submitted a five-year plan (Plan) in accordance with the Delta Levees Special Flood Control Projects Program 2018 Five-Year Plan Solicitation, released on February 23, 2018. A copy of the *2018 Projects Solicitation Package for the 2018 Five Years* is included in Appendix B. A list of all LMAs submitting a Plan is included in Appendix C.

Information provided in the Plans of the participating 74 LMAs include the level of protection of the LMA's levee system at the time of the creation of the Plans, the proposed work within the next five years to bring the LMA's levee system to their desired level of protection, and a summary of the cost related to the proposed work. Proposed work includes multibenefit projects, levee projects to meet a desired level of protection, studies, emergency planning, habitat enhancement projects, and additional protection. Also in this report is a summary of the LMAs' 2009 five-Year plans, which were submitted to DWR in accordance with the Delta Levees Special Flood Control Projects Program 2009 Five-Year Plan Solicitation. A list of the 2009 requirements of the five-year plans is included in Appendix F.

There are 843 levee miles taken into consideration for this document. Table ES-1 shows the current levee miles at the four different levee standards and the levee miles if all the proposed five-year plan work is addressed. A description and cross-section of the levee standards discussed in this report are illustrated in Figure 8.

**Table ES-1 Levee Miles for 2018 Five-Year Plan Work**

Category	Current Levee Miles at Standard	If All Proposed Five-Year Plan Projects are Addressed
Below HMP	68	51
HMP	233	23
PL 84-99	144	311
Bulletin 192-82	397	458
<b>Total</b>	<b>843</b>	<b>843</b>

Table ES-1 Note: HMP = hazard mitigation plan.

A breakdown of the types of projects proposed in the Plans along with their respective estimated costs are in Table ES-2 below.

**Table ES-2 Estimated Cost of Proposed Work From 2018 Plans**

Type of Project	Estimated Cost
Levee Improvement Projects to Meet Level of Protection	\$683 million
Additional Protection Projects	\$310 million
Multibenefit Projects	\$60 million
Studies	\$0.5 million
Emergency Planning Projects	6.6 million
<b>Total</b>	<b>\$1.06 Billion</b>

Table ES-2 Notes: The \$465.6 million for proposed work on Tyler, Venice, and Twitchell Islands for years 5+ is not included as part of the total, nor is \$239 million for existing construction and habitat projects funded through the Delta Levees Program.

Based on the information provided by the participating LMAs, it has been determined that there is a funding need of approximately \$1.06 billion in the next five years for LMAs to achieve the desired level of protection for their levee system. The cost estimate is the sum of proposed work that includes construction of multibenefit projects, levee projects, studies, emergency planning, and additional protection, which can include rock slope protection, levee armoring, stability toe berms, setback levees, vegetation control, all-weather road improvements, seepage control, and raising utilities to maintain a sustainable levee standard. Any routine levee maintenance proposed within a Plan has been excluded from the summary of data in this report.

Three LMAs included work beyond the 5-year scope as part of their Plan, totaling \$466 million. The total proposed work included in the five-year plans covers not only the work planned for the next five years of \$1.06 billion, but also the work proposed for year six and beyond, which together totals approximately \$1.526 billion (Table ES-3).

**Table ES-3 Funding Needed for Proposed Work**

<b>Category</b>	<b>Funding Needed</b>
Proposed Work in Five Years	\$1.060 Billion
Proposed Work in Years 6+	\$0.466 Billion
<b>Total</b>	<b>\$1.526 Billion</b>

Levee repairs and levee maintenance are crucial in protecting and maintaining the Sacramento-San Joaquin Delta (Delta). The Delta provides drinking water to 27 million Californians and irrigation water on more than 3 million acres of agriculture land. It holds hundreds of species of plants and wildlife, including 55 species of fish. Along with protecting habitat, the Delta levees protect residents, farm operations, legacy communities, recreational areas, and the deep-water shipping channel. The Delta is a unique place that provides benefits not only locally, but statewide, including protection of water quality and the State Water Project, fisheries, major electrical and natural gas infrastructure, highways, and other assets of statewide importance. As a result, it is important to address the threats the Delta levees face from flooding, rising sea levels, earthquakes, levee stability, levee integrity issues, and continuing subsidence of the farmland behind them.



# 1. Introduction

The California Department of Water Resources' (DWR's) Delta Levees Special Flood Control Projects Program (Special Projects Program) provided an opportunity for levee maintaining agencies LMAs in the Delta to develop a five-year plan (Plan) for rehabilitation of their facilities to a necessary level of protection. In 2018, the Special Projects Program provided as much as \$3.5 million in local assistance funding from Propositions 1E and 84 to solicit the LMA's to develop or update their Plan to support levee work in the Delta that integrates levee and habitat improvements while protecting discrete and identifiable public benefits. Continued eligibility for any Delta Levees Program funds requires that LMAs have an accepted and updated Plan on file with the Special Projects Program.

Although Plans were solicited in 2018, any LMA with a project or non-project levee in the Primary Zone of the Delta, or non-project levee in the Secondary Zone of the Delta, is eligible to request funding to develop a Plan at any time if funding is available.

The Plans provide information of each participating LMA and include discussions on levee improvements, habitat enhancement, emergency response, seismic resilience, and export water supply reliability. Future project work incorporated into new or updated Plans follow criteria under the current program guidelines: *Delta Levees Special Flood Control Projects Program's 2014 Guidelines for Providing Funding to Local Public Agencies* (Special Projects Guidelines), dated June 18, 2014. The 2018 requirements for the five-year-plan (Requirements) specified the format and content for the Plans. A copy of the Requirements is included in Appendix A.

In recent years, State law and executive orders require State agencies to account for climate change in all planning, infrastructure, and investments, including grant-making. LMAs incorporate climate change into their planning and design of levee standards as part of their projects.

For LMAs developing a Plan for the first time, the Special Projects Program funded 100% State cost share of the first \$50,000 spent on the preparation of the Plan and 75% State cost share of any costs of more than \$50,000, up to a maximum amount payable of \$75,000. For LMAs updating their 2009

Plan, the Special Flood Control Projects Program funded 100% of the first \$35,000 spent on the update of the Plan and 75% State cost share of any costs of more than \$35,000, up to a maximum amount payable of \$50,000.

The 74 Plans from LMAs that participated in the 2018 solicitation have been compiled to produce this document. This report will include background information on the 2009 five-year plans (2009 Plans). Inclusion of 2009 Plan information in this document will support a frame of reference to the information provided in the 2018 Plans. The data in the 2018 Plans will furnish information for future plans as well as assist the Special Projects Program to forecast the needs of the LMAs and support planning efforts that include financial decisions on future grant opportunities for eligible LMAs in the Delta.



## 2. Background

### **History of the Delta Levees Program**

The Delta Levees Program provides local assistance funds to participating agencies to support their ongoing operations and maintenance activities and to improve levees that protect infrastructure of statewide importance. The program mitigates habitat impacts and includes habitat enhancement efforts that result in net habitat improvement. The Delta Levees Program is comprised of the Delta Levees Maintenance Subventions Program and the Special Flood Control Projects Program.

### **Delta Levees Maintenance Subventions Program**

The Delta Levees Maintenance Subventions Program (Subventions Program) was authorized by Senate Bill 541 in 1973. The passage of the Disaster Preparedness and Flood Prevention Bond Act of 2006 (Proposition 1E), the Safe Drinking Water, Water Quality Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84), and the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1) authorized DWR to make additional funds available for the program. Since the passage of Propositions 1, 1E, and 84, the State has invested approximately \$270 million in flood control and habitat projects carried out by local agencies in the Delta under the Subventions Program.

The Subventions Program provides funding on a cost-share basis to local LMAs for rehabilitation and maintenance of levees in the Delta. The Subventions Program is authorized by the California Water Code to fund levee work with the purpose of preserving the Delta's invaluable resources. The Subventions Program works closely with the Delta Levees Special Flood Control Projects Program within DWR in Delta Multibenefit Initiatives (DMI), and the California Department of Fish and Wildlife.

### **Delta Levees Special Flood Control Projects Program**

The Special Project Program was established in 1988 by Senate Bill 34. It continues to operate under subsequent legislation that extended and provided funding for the Special Projects Program. Originally, the Special Projects Program was authorized to address flooding on the eight Western Delta Islands and in the towns of Thornton and Walnut Grove.

In 1996, Assembly Bill 360 expanded the Special Projects Program to include the entire Delta and portions of the Suisun Marsh (approximately 12 miles of levees on islands bordering the Northern Suisun Bay from Van Sickle Island westerly to Montezuma Slough) as outlined in California Water Code Section 12311.

The passage of Propositions 1E and 84 in November 2006, and the passage of Proposition 1 in November 2014, significantly increased the amount of money available for levee projects in the Delta. DWR's Special Projects Program has invested more than \$400 million dollars in flood control and habitat projects that are carried out by participating local levee maintaining agencies in the Delta. In 2009, the Special Projects Program initiated cost-share agreements to assist local efforts to produce five-year plans to 60 Delta islands and tracts to support levee work. These plans were completed and are used to guide program expenditures in the Delta. This effort was repeated in 2018 and included over 70 Delta Islands.

### **Assets Protected**

The state economy depends on Delta levees for water conveyance and protection of water quality, which serves more than 27 million people and helps irrigate more than 3 million acres of agriculture in the Central Valley and Southern California. The Delta includes nearly 70 major islands and more than 1,100 miles of levees, protecting approximately 500,000 acres of agricultural land. The Delta levee system protects Delta and statewide assets such as population, water supply, natural resources, ecosystems, agriculture; critical facilities such as hospitals, fire and police stations; community facilities including water, wastewater, energy infrastructure, flood control infrastructure, transportation infrastructure, parks, and other recreational amenities.

## 3. 2009 Five-Year Plans

### **Assessment of the status of existing levee system (2009)**

Information from the 2009 five-year plans provide an assessment of the existing Delta levee system for 63 LMAs. There were 14 LMAs accounting for 209 miles of levee at their desired levee system standard, and 49 LMAs accounting for 553 miles of levee needing improvement projects to reach their desired levee system standard. In addition, information from the 2009 Plans provides the different standards met at the time. The different standards considered for evaluation of the levee system in the 2009 Plans included at or above Public Law 84-99 (PL 84-99), and at or below the hazard mitigation plan (HMP).

### **2009 Levee Standards Met**

The 2009 Plans provided information of the types of levee standards met at the time Plans were provided. In 2009, there were 86.8 miles of levee below the HMP standard, 231.8 miles of levee meeting the HMP standard, 333.9 miles of levee meeting the PL 84-99 standard, and 110.9 miles of levee above the PL 84-99 standard. As part of the 2009 Plans, there were 763.4 miles of levees considered for this summary. Figures 1 and 2 depict the 2009 existing levee miles at levee standard and the percentage of levee miles meeting the four different levee standards considered under the 2009 Plans.

**Figure 1 2009 Existing Levee Miles at Levee Standard**

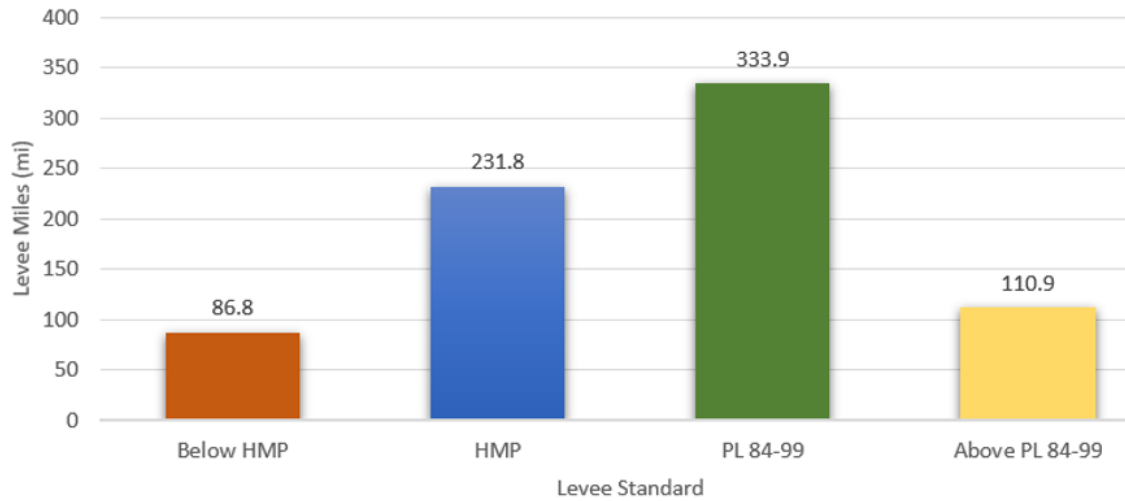


Figure 1 Note: HMP = hazard mitigation plan, PL = project levee  
Data are from 64 levee maintaining agencies covering 763.4 miles.

**Figure 2 2009 Percentage of Levee Miles at Standard**

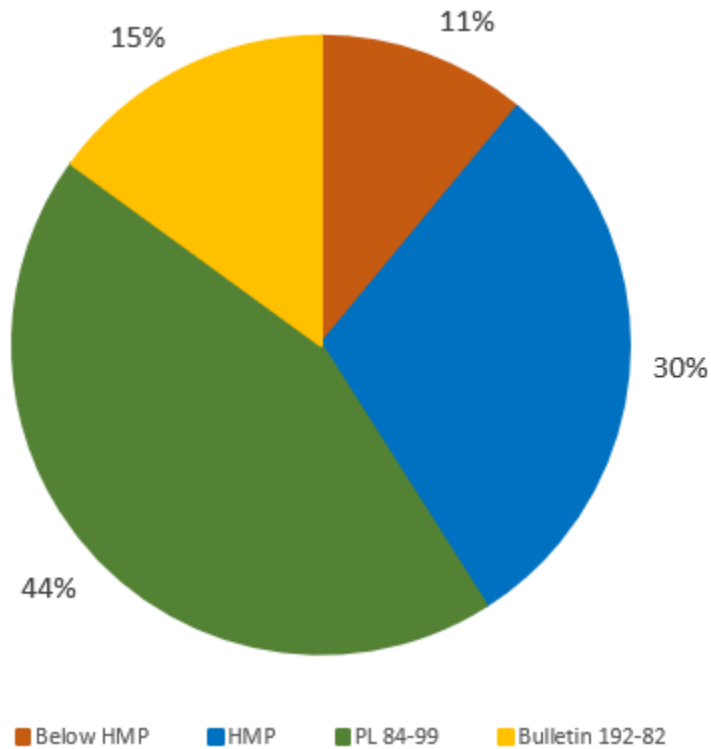


Figure 2 Note: HMP = hazard mitigation plan, PL = project levee.

## 2009 Work Proposed

The 2009 Plans include a discussion of the work proposed by LMAs to meet their desired level of protection. The proposed work included multibenefit projects, studies, habitat enhancement projects, emergency planning, and additional protection such as rock slope protection, levee armoring, stability toe berms, set-back levees, vegetation control, pump station upgrades, all-weather road improvements, seepage control, and raising utilities.

## Multibenefit Projects

From the 2009 Plans, there were six proposed multibenefit projects for a total cost of \$51 million, listed in Table 1.

**Table 1 2009 Multibenefit Propose Projects**

Location	Project	Funding
RD 341	Sherman Island Scour Pond Habitat Enhancement and Levee Stability Project	\$3.5 million
RD 341	Sherman Island San Joaquin Levee improvement and waterside habitat enhancement	\$10.6 million
RD 341	Sherman Island Waterside Rock Reinforcement and Lake habitat planning	\$15.5 million
RD 348	New Hope landside setback and waterside habitat bench	\$7.0 million
RD 2068	Yolano District waterside enhancement and slope improvement	\$6.6 million
RD 2110	McCormack-Williamson Habitat Friendly Levee	\$7.5 million
-	<b>Total</b>	<b>\$51.0 million</b>

Table 1 Note: RD = reclamation district.

## Levee Projects to Meet a Level of Protection

The 2009 five-year plans provide the LMAs' levee standard goal necessary to meet their desired level of protection. Forty-eight LMAs proposed levee projects for an estimated cost of \$435.5 million. The proposed levee standards included levee standards such as at or above PL 84-99 and at or below HMP. The number of miles of levee proposed for improvement, the desired levee standard to be met, and the cost associated with the work are shown in Table 2. Figure 3 depicts the percentage of levee miles proposed to be improved to a desired level of protection (levee standard) out of the total 763.4 levee miles considered for this document. Figure 4 depicts the 2009

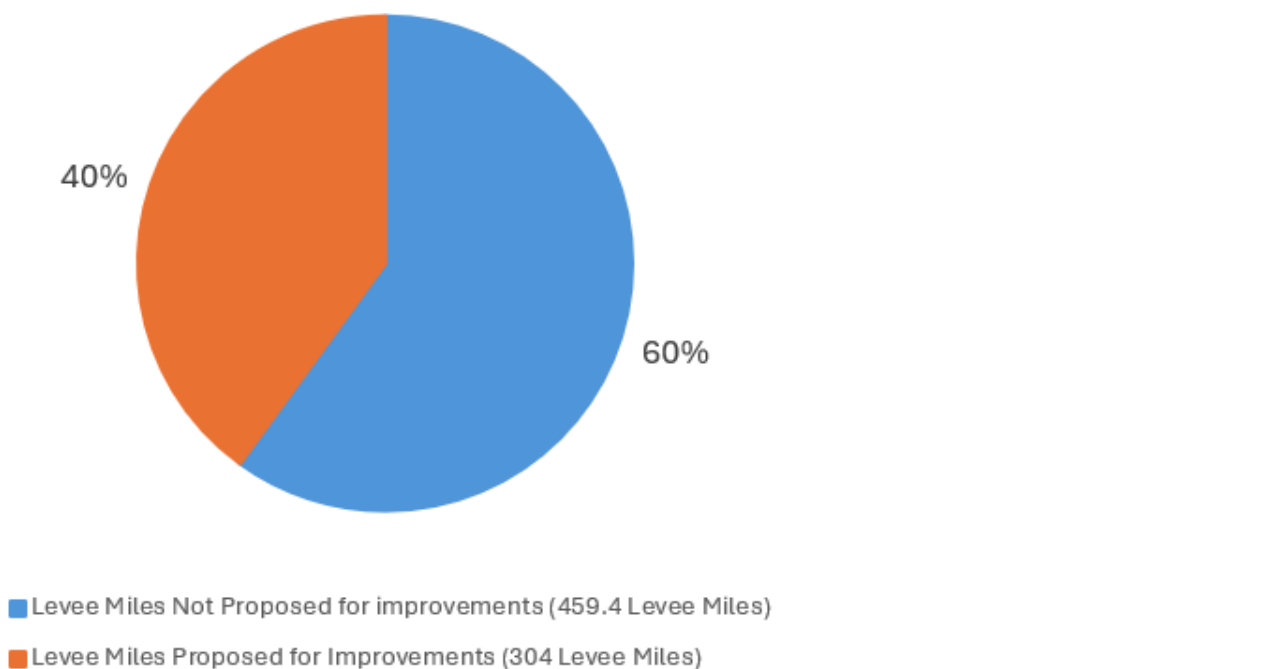
Plans number of existing miles of levee at each of the four desired levels of protection levee standards. The levels are further broken down into the 2009 Plan levee standard goals for the existing levee miles. The numbers of levee miles are also summarized in Figure 5.

**Table 2 2009 Five-Year Plans Proposed Levee Standards**

Number of LMAs	Proposed Levee Miles for Improvement	Levee Standards Proposed	Cost
9	42	Above PL 84-99	\$67.5 million
27	144	PL 84-99	\$189.5 million
13	110	HMP	\$160.5 million
4	8	Below HMP	\$18.0 million
<b>Total</b>	<b>304</b>	-	<b>\$345.5 million</b>

Table 2 Notes: HMP = hazard mitigation plan, LMA = levee maintaining agencies, PL 84-99 = Public Law 84-99.

**Figure 3 2009 Percentage of Levee Miles Proposed to be Improved to a Desired Level of Protection (Levee Standard)**



**Figure 4 2009 Proposed Desired Level of Protection**

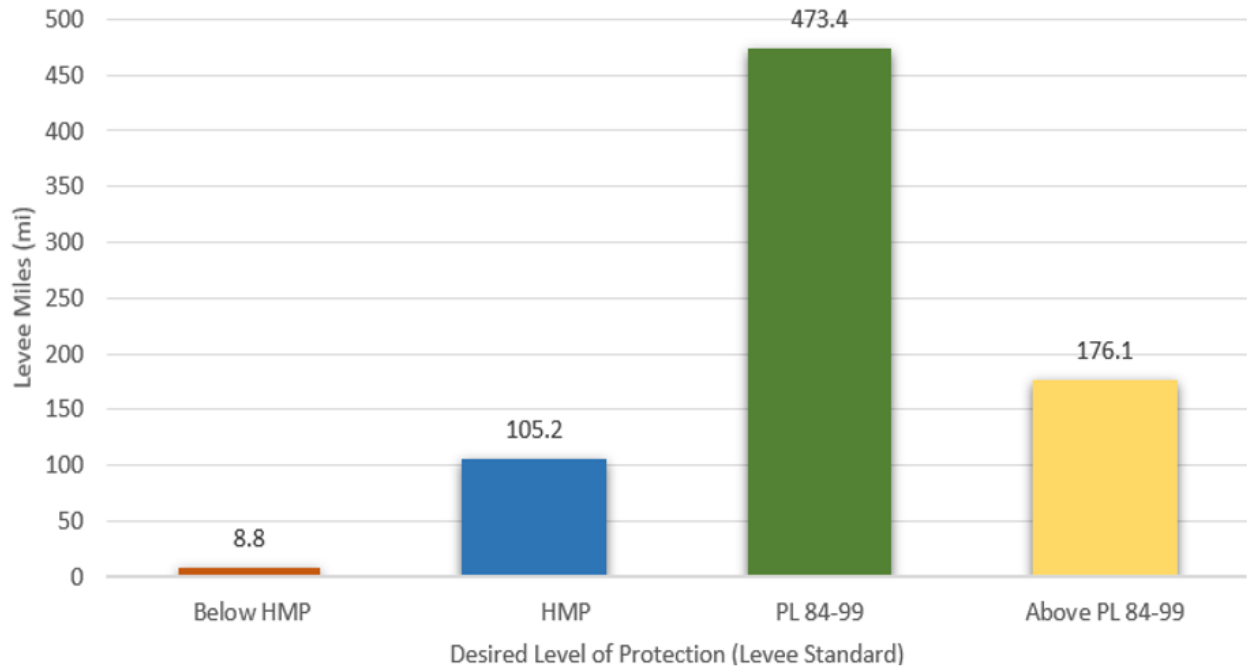


Figure 4 Note: HMP = hazard mitigation plan, PL = public law.

**Figure 5 2009 Minimum Standard Noting Desired Levee System Standard (in miles)**

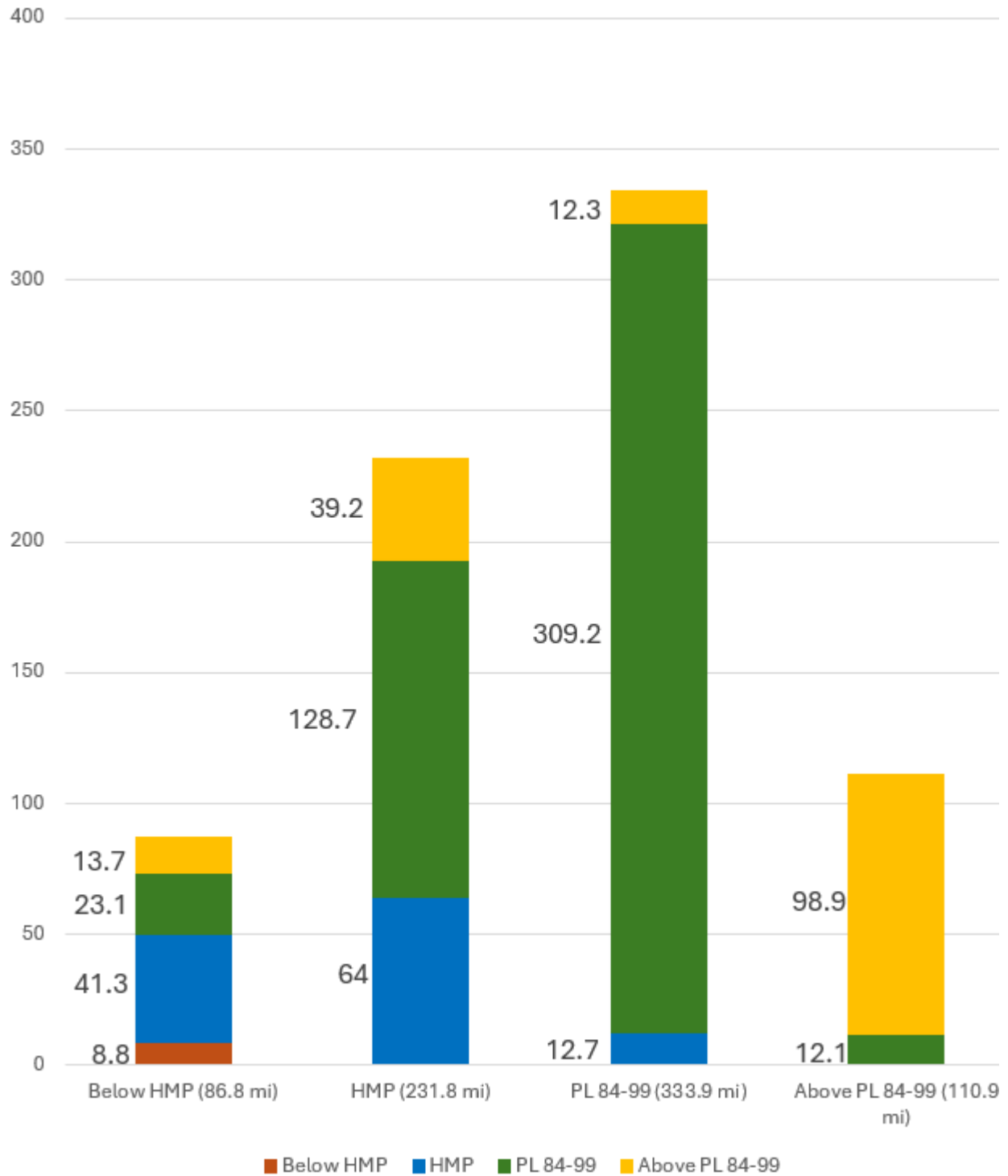


Figure 5 Note: HMP = hazard mitigation plan, PL = public law.



## **Additional Protection**

Proposed additional protection from the 2009 Plans by the LMAs totaled \$149 million and include rock slope protection, levee armoring, stability toe berms, setback levees, vegetation control, all-weather road improvements, seepage control, raising utilities, and studies. Not included as part of the total additional protection cost is the \$110 million Twitchell Island San Joaquin River Levee Berm and Setback Levee project, which is not expected to be completed within the timeline of Twitchell island's five-year plan.

## **Studies**

The 2009 Plans included information about studies planned by LMAs. There were 12 LMAs that included feasibility studies, investigation of levee anomalies, surveys, geotechnical studies, monitoring programs, reviewing easements, sediment testing, or investigations of potential habitat enhancements sites. The total cost of this work was estimated at \$11 million for all 12 LMAs.

## **Habitat Enhancement Projects**

Four LMAs proposed habitat enhancement projects in the 2009 Plans for a total estimated cost of \$42 million. The projects include:

- New Hope construction of a new setback levee to allow for a breach and flooding of new setback levee (\$30 million).
- Sherman Island ecosystem restoration expanding habitat site by 30 acres (\$6 million).
- McCormack Williamson Winery "habitat friendly" levee (\$6 million).
- Pescadero habitat enhancement (\$55,000).

## **Emergency Planning**

Emergency planning from the 2009 Plans totaled \$3.5 million and included the following proposed work:

- Sherman Island: borrow material purchase (\$2.2 million).
- Woodward Island: advance emergency preparation (\$1 million).
- Bethel Island: allocation for emergency riprap (\$300,000).

Table 3 summarizes the types of work proposed in the 2009 Plans, and the estimated costs for each type of work.

**Table 3 2009 Estimated Cost of Work Proposed**

<b>Type of Project</b>	<b>Estimated Cost</b>
Levee Improvement Projects to Achieve Level of Protection	\$435.5 million
Additional Protection Projects	\$149 million
Multibenefit Projects	\$51 million
Habitat Enhancement Projects	\$42 million
Studies	\$11 million
Emergency Planning Projects	\$3.5 million
<b>Total</b>	<b>\$692 million</b>

Table 3 Note: Total does not include \$56 million of existing project funding agreement funding at the time. The \$110 million for the Twitchell Island San Joaquin River Levee Berm and Setback Levee project is not included as part of the Additional Protection Projects because completion is not expected within the timeline of the 2009 five-year plan.

## 4. 2018 Five-Year Plans

### Assessment of the Status of Existing Levee System, 2018

The 2018 five-year plans provided an assessment of the existing levee system for the 74 participating LMAs in the Delta. Approximately 562 miles (67%) of levees in the Delta are at their respective LMA’s desired levee system standard. Approximately 281 miles (33%) of levees for 46 LMAs need improvements to reach the LMA’s desired levee system standard within five years. There are approximately 68 miles (8%) of levee below the HMP standard, 233 miles (28%) of levee meeting the HMP standard, 144 miles (17%) of levee meeting the PL 84-99 standard, and 397 miles (47%) meeting the Bulletin 192-82 standard. There are 843 levee miles considered for this document. Figures 6 and 7 depict the 2018 existing levee miles at levee standard, and the percentage of levee miles meeting the four different levee standards considered under the 2018 Plans. Included in Appendix D is a table with all the participating LMAs and the mileage meeting each of the different levee standards mentioned in this document at the time of the 2018 five-year plans.

**Figure 6 2018 Current Levee Miles at Levee Standard**

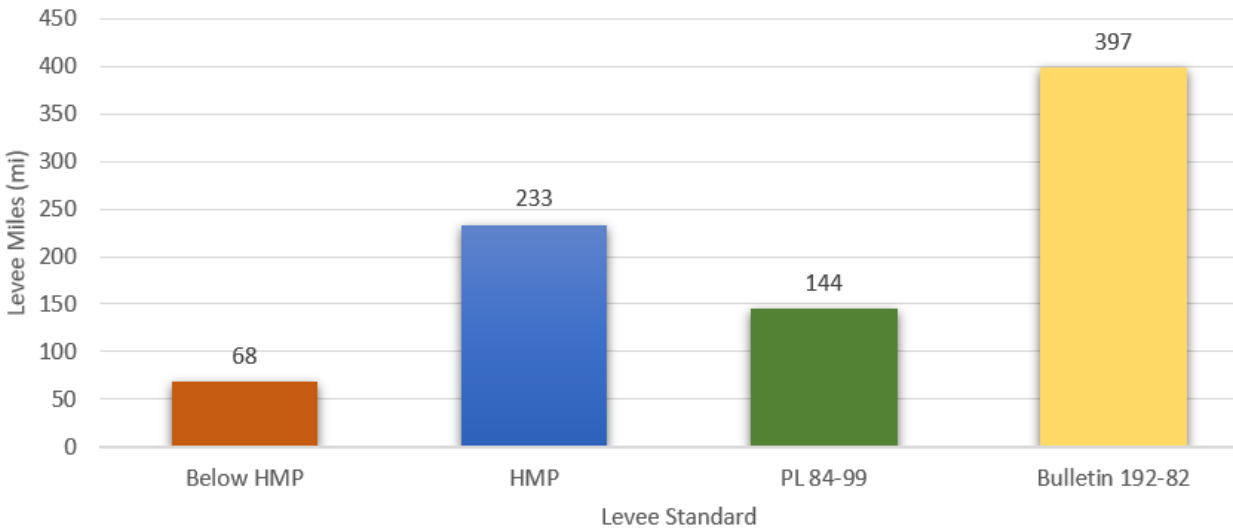


Figure 6 Note: HMP = hazard mitigation plan, PL 84-99 = public law 84-99. Data are from 74 levee maintaining agencies covering 843 miles.

**Figure 7 2018 Percentage of Levee Miles at Standard**

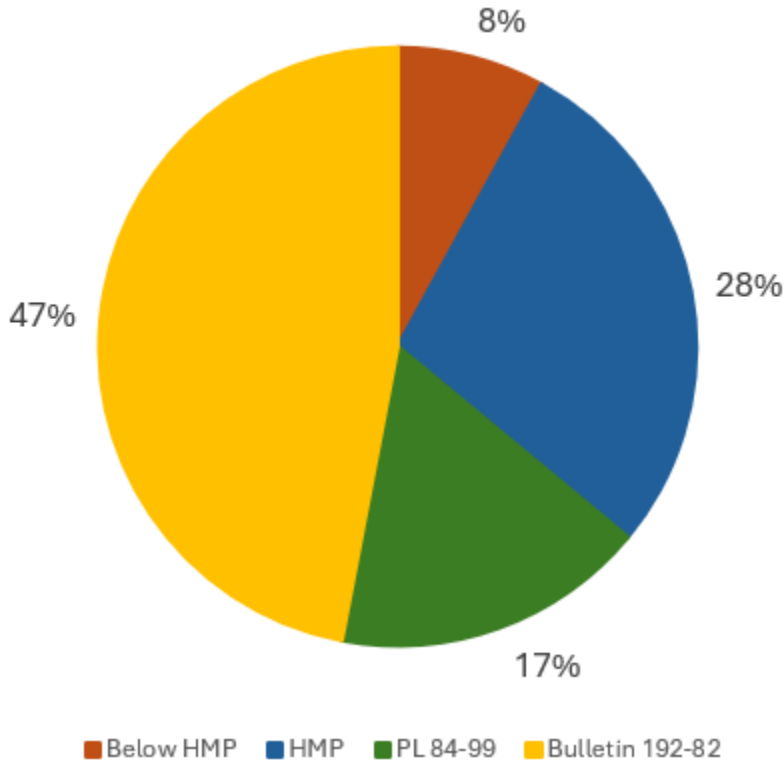


Figure 7 Note: HMP = hazard mitigation plan, PL = public law.

**Work Completed Since 2009 Five-Year Plans**

Since the 2009 Plans, LMAs have undertaken numerous maintenance projects to address things such as waterside levee erosion, rock slope protection, seepage repairs, drainage system repairs, vegetation control, stability berms, and road repairs.

In addition to annual maintenance projects completed through the Delta Levees Maintenance Subventions Program, the 2018 Plans indicate that LMAs have completed levee rehabilitation and improvement work through the 53 Delta Levees Special Flood Control Projects Program projects listed in Table 4.

**Table 4 Projects Completed Through the Delta Levees Program Since the 2009 Five-Year Plans**

Number	Project Name
RD 341	SH-10-1.0-SP: PL 84-99 standard work along 6.1 miles of district levee.
RD 348	NH-12-1.0: HMP standard along 5.8 mi. of district levee.

<b>Number</b>	<b>Project Name</b>
RD 544	RU-12-1.0: HMP standard along 0.76 mi. of district levee.
RD 548	TR-09-2.0: HMP standard along 8 mi. of district levee.
RD 548	TR-10-1.0: PL 84-99 standard along 8 mi. of district levee.
RD 548	TR-12-1.0: HMP standard along 1.19 mi. of district levee.
RD 684	RL-10-1.0: Levee widening for emergency access 3.03 mi., slope protection 4.8 mi., and habitat enhancement 0.27 mi.
RD 648	RL-10-2.0: HMP standard 3.03 mi., stability/seepage berm 0.59 mi., and habitat enhancement levee 0.53 mi.
RD 684	RL-12-1.0: HMP standard project 3.24 mi., all weather road 4.87 mi.
RD 756	BO-09-2.0 HMP 3.1 mi, Geotech investigation, and topographic survey.
RD 756	BO-10-1.0: HMP 1.42 mi.
RD 756	BO-10-2.0: HMP 2.2 mi., blanket drain 0.07 mi.
RD 756	BO-12-2.0: HMP standard 3.6 mi., blanket drain 0.07 mi.
RD 756	BO-12-1.0: HMP standard 9.7 mi.
RD 799	HO-12-1.4: HMP standard 1.9 mi. and rock slope protection 0.47 mi.
RD 830	JR-09-2.2: HMP standard, splash berm, toe berm, and recompacting a shallow trench to improve seepage resistance, all along 1.51 mi. JR-09-2.3: Levee rehabilitation at location of the emergency drought barrier. No less than the minimum HMP, splash berm, toe berm all along 1.04 mi.
RD 830	JR-10-1.0: Support the temporary emergency drought barrier installed in False River. Project included widened levee and an armored splash berm along different levee reaches.
RD 1601	TW-09-1.0: Engineering, environmental documentation, and permitting for setback levee.
RD 1601	TW-10-1.0: HMP standard 0.42 mi.
RD 2023	VE-10-1.0: HMP standard 7.8 mi.
RD 2024	OP-10-1.0: PL 84-99 standard 2.35 mi., seepage/stability berm 0.92 mi.
RD 2024	OP-10-2.0: PL 84-99 standard 6.34 mi, riprap protection 0.97 mi.
RD 2025	HL-10-1.0: PL 84-99 standard 0.73 mi.
RD 2025	HL-10-2.0: PL 84-99 standard 3.41 mi.
RD 2026	WB-10-1.2; PL 84-99 standard 1.27 mi. and splash berm
RD 2026	WB-10-1.2; PL 84-99 standard 3.4 mi. and splash berm
RD 2026	WB-12-1.0 HMP standard 9.61 mi.
RD 2028	BN-09-2.0: Stability berm 2.84 mi., geotechnical exploration 4 mi.
RD 2028	BN-10-1.0: HMP standard 1.42 mi. and toe berm
RD 2028	BN-12-1.0: HMP standard 6.16 mi.
RD 2029	EM-12-1.4: HMP standard 9.1 mi. (entire district levee)

<b>Number</b>	<b>Project Name</b>
RD 2033	BK-10-1.0: HMP standard 2.2 mi.
RD 2033	BK-12-1.0: HMP standard 2.17 mi.
RD 2037	RI-10-1.0: HMP standard 2 mi.
RD 2037	RI-12-1.0: HMP standard 7.1 mi.
RD 2038	LJ-10-1.0: PL 84-99 standard 3.59 mi., setback levee 0.04 mi., habitat enhancement 0.55 mi.
RD 2039	UJ-10-1.0: HMP standard 3.7 mi.
RD 2039	UJ-10-2.0: PL 84-99 standard 0.75 mi., seepage/stability toe berm 0.34 mi., habitat enhancement setback levee 0.3 mi.
RD 2039	UJ-10-3.0: PL 84-99 standard 1.51 mi., seepage/stability berm 0.87 mi.
RD 2040	VI-12-1.0: HMP standard 14.9 mi.
RD 2041	MD-10-1.0: HMP standard 5.9 mi. and bank protection
RD 2044	KI-09-2.0: HMP standard 2.6 mi.
RD 2044	KI-12-1.0: HMP standard 6 mi.
RD 2059	BR-09-2.0: HMP 4 mi., riprap protection on slope 0.38 mi.
RD 2059	BR-10-1.0: Levee improvements 1.97mi.; crown and toe berm improvements, and placement of exploratory core trench at various locations and construction of splash cap
RD 2065	VL-12-1.6: HMP standard 4.36 mi., waterside erosion protection 3.4 mi.
RD 2072	WD-10-1.0: PL 84-99 standard 1.9 mi., habitat enhancement 0.19 mi., emergency preparation at Station 390+00
RD 2072	WD-10-2.0: PL 84-99 standard 6.66 mi., habitat enhancement 0.19 mi., slope protection 0.85 mi., emergency preparation at Station 135+00
RD 2115	SA-12-1.3: HMP standard 4.2 mi.
RD 2119	WE-12-1.0: Bulletin 192-82 standard 7.08 mi.
RD 2137	DS-12-1.3: HMP standard 0.42 mi.
RD BIMID	BI-12-1.0: HMP standard 3.8 mi.
RD BIMID	BI-15-1.0-SP: Bulletin 192-82 standard 0.91 mi., landside habitat enhancement berm 0.19 mi., waterside habitat enhancement berm 0.38 mi.

Table 4 Note: BIMID = Bethel Island Municipal Improvement District, BI = Bethel, BK = Brack, BN = Bacon, BO = Bouldin, BR = Bradford, DS = Dutch Slough, EM = Empire, HL = Holland, JR = Jersey, HO = Hotchkiss, KI = King, MD = Medford, mi. = mile, NH = New Hope, OP = Orwood Palm, PL 84-99 = Public Law 84-99, RD = reclamation district, RI = Rindge, RL = Roberts Lower, RU = Roberts Upper, SA = Shima, SH = Sherman, TR = Terminous, TW = Twitchell, UJ = Upper Jones, LJ = Lower Jones, VE = Venice, VI = Victoria, VL = Veal, WB = Webb, WD = Woodward, WE = Wright Elmwood.

The work identified in the 2009 Five-Year Plans and accomplished through the Special Projects Program include 144 miles of levee brought up to the HMP standard, 46 miles of levee brought up to the PL 84-99 standard, and 8 miles of levee brought up to the Bulletin 192-82 standard, for a total of 198 levee miles as summarized in Table 5.

**Table 5 Levee Work Completed Since the 2009 Five-Year Plan to Meet Desired Level of Protection**

<b>Current Standard Met</b>	<b>Levee Miles</b>
Hazard Mitigation Plan	144
Project Levee 84-99	46
Bulletin 192-82	8
<b>Total Levee Miles</b>	<b>198</b>

In addition to the levee work completed to meet the LMA's prescribed level of protection, there were 58.1 miles of other levee work completed, including installation of a drought barrier in False River, 600 acres of created wetlands, engineering and environmental documentation and permitting for setback levee on Twitchell Island, construction of the Ring Levee on McCormick-Williamson Tract, and emergency preparation at two locations on Woodward Island. Table 6 is a list of additional work completed since the 2009 Plans.

**Table 6 Additional Work Completed Since 2009 Five-Year Plan**

<b>Type of Work</b>	<b>Levee Miles</b>
All-weather Road	5.52
Stability/Seepage Berm	3.23
Habitat Enhancement Levee	6.17
Rock Slope Protection	16.44
Habitat Enhancement	6.42
Seepage Repairs	0.4
Erosion Repairs	0.16
Created Wetlands	600 acres
Engineering, Environmental Documentation, and Permitting for Setback Levee on Twitchell Island	n/a
Splash Berm	4.67
Toe Berm	2.84

Type of Work	Levee Miles
Erosion Protection	3.4
Emergency Preparation at Station 390+00 and 135+00 on Woodward Island	4.83
Engineering and Planning for PFA MW-16-1.0	3.4
Construction of Ring Levee on McCormick-Williamson Tract	n/a
Habitat Enhancement Berm on BIMID	0.57
Blanket drain	0.07

Table 6 Note: BIMID = Bethel Island Mun, PFA = project funding agreement.

### 2018 Five-Year Plans Proposed Work

The 2018 Plans proposed work includes 10 multibenefit projects, levee work to meet a desired level of protection, additional protection, studies, and emergency planning work. Detailed below are the proposed projects, separated into the five different categories mentioned above.

Included in the 2018 Plans were three projects proposed by three different LMAs, which include work planned beyond five years. Table 7 lists these projects and their costs.

**Table 7 Cost of Projects Proposed Beyond 5 Years**

Local Maintaining Agency	Cost
Tyler	\$95 million
Venice	\$193 million
Twitchell	\$177.6 million
<b>Total</b>	<b>\$465.6 million</b>

### 2018 Proposed Multibenefit Projects

With respect to the Delta Levees Special Flood Control Projects Program, multibenefit projects are projects that can help simultaneously improve the environment, flood management, and water supply reliability. Included in the 2018 Plans, there are 10 proposed multibenefit projects at a total estimated cost of \$60 million. These projects will include levee work and creation of habitat at various locations and are listed in Table 8.



**Table 8 2018 Proposed Multibenefit Projects**

<b>Local Maintaining Agency</b>	<b>Project Name</b>	<b>Project Cost</b>
RD 38 – Staten Island	North Mokelumne River Multibenefit Project Phase 2	\$10.5 million
RD 341 – Sherman Island	San Joaquin River Multibenefit Project Phase 2	\$12 million
RD 348 – New Hope Tract	South Mokelumne River Multibenefit Project	\$7.3 million
RD 548 – Terminous Tract	Supplemental Multibenefit Project	\$9.9 million
RD 684 – Lower Roberts Island	Supplemental Multibenefit Project	\$2.3 million
RD 2024 – Orwood and Palm Tracts	Supplemental Multibenefit Project	\$3.6 million
RD 2038 – Lower Jones Tract	Lower Jones Multibenefit Project	\$1.6 million
RD 2039 – Upper Jones Tract	Upper Jones Multibenefit Project	\$4.3 million
RD 2065 – Veal Tract	Veal Tract Multibenefit Project	\$3.9 million
RD 2072 Woodward Island	Woodward Multibenefit Project	\$5 million
<b>Total</b>		<b>\$60.4 million</b>

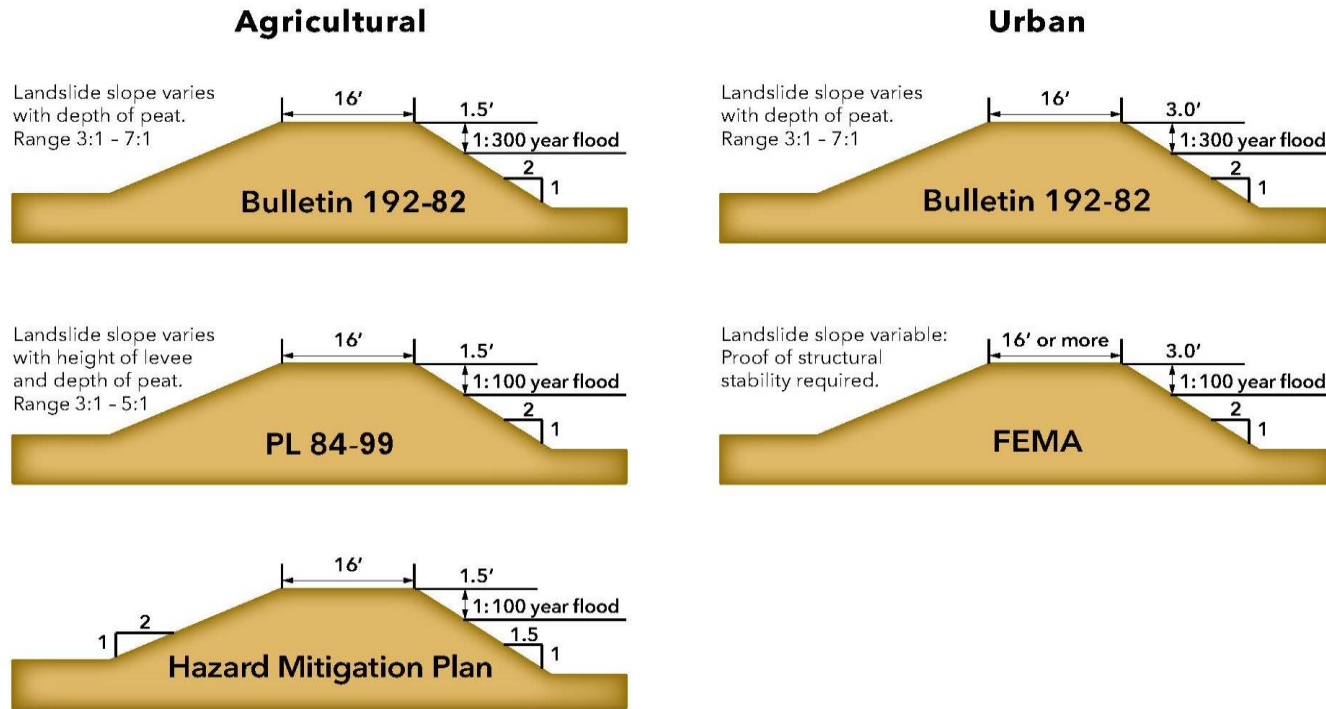
Table 8 Note: RD = reclamation district.

### **Levee Projects to Meet a Level of Protection**

The desired levels of protection discussed in these 2018 Plans are levee standards that include Bulletin 192-82, PL 84-99, and HMP standards, as well as levee work below the HMP criteria. Graphical information and description of levee geometry for these levee standards are depicted in Figure 8.



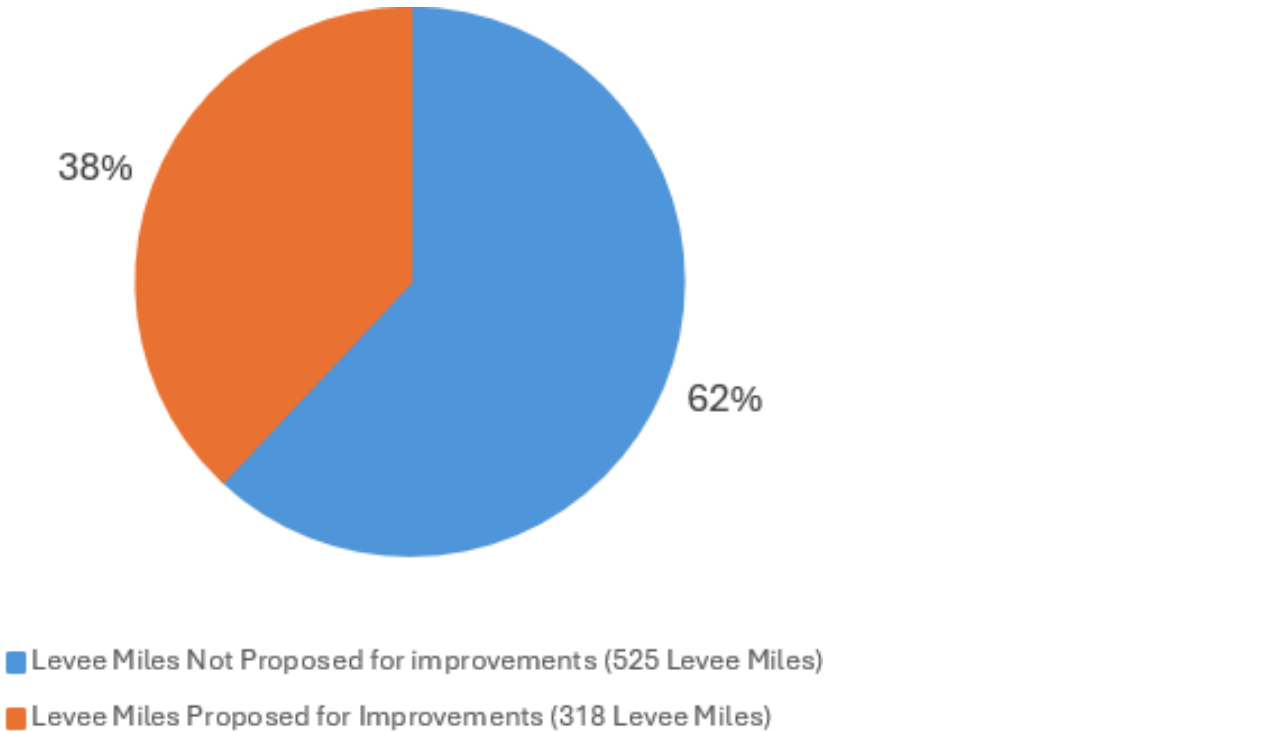
**Figure 8 Description of Levee Standards**





Included in the 2018 Plans are 281 miles of proposed levee work to meet the LMAs desired level of protection. These levee miles equate to 33% of the 843 levee miles considered in the compilation of the 2018 Plans. Figure 9 illustrates the percentage of levee miles proposed and not proposed for levee work to meet the LMAs desired level of protection (levee standard).

**Figure 9 2018 Percentage of Levee Miles Proposed to be Improved to a Desired Level of Protection (Levee Standard)**



Included in the Plans are 47 LMAs proposing levee projects to meet each LMA’s desired level of protection. Table 9 lists the LMAs project cost to meet their desired level of protection and the proposed levee standard to meet. Figure 10 depicts the 2018 Plans proposed desired level of protection at each of the different levee standards. Table 11 depicts the number of LMAs proposing to meet each of the levee standards, the number of levee miles proposed for improvement, the levee standard goal, and the total cost to complete these projects. Figure 11 breaks down the existing levee miles into the 2018 Plan levee standard goals. The estimated total cost for these projects is \$683 million. The proposed levee projects are planned for the next five years presuming funding is available.

**Table 9 2018 Proposed Levee Projects to meet Desired Level of Protection**

<b>Reclamation District (RD) Number and Name</b>	<b>Cost</b>	<b>Desired Levee Standard</b>
RD 2: Union Island West	\$5,993,000	Bulletin 192-82
RD 38: Staten Island	\$26,800,000	PL 84-99
RD 150: Merritt Island	\$3,900,000	PL 84-99
RD 341: Sherman Island	\$5,500,000	PL 84-99
RD 348: New Hope Tract	\$10,453,000	PL 84-99
RD 524: Middle Roberts Island	\$10,360,000	Bulletin 192-82
RD 544: Upper Robets Island	\$33,051,000	Bulletin 192-82
RD 548: Terminous Tract	\$51,201,307	PL 84-99
RD 548: Terminous Tract	\$1,350,218	HMP
RD 551: Pearson District	\$6,500,000	Bulletin 192-82
RD 554: Walnut Grove	\$79,030	PL 84-99
RD 563: Tyler Island	\$6,000,000	Bulletin 192-82
RD 684: Lower Roberts Island	\$3,047,519	PL 84-99
RD 756: Boulding	\$75,392,900	Bulletin 192-82
RD 799: Hotchkiss Tract	\$15,000,000	Bulletin 192-82
RD 830: Jersey Island	\$19,957,767	Bulletin 192-82
RD 999: Netherlands	\$3,500,000	PL 84-99
RD 1002: Glanville Tract	\$2,003,109	PL 84-99
RD 1007: Pico-Naglee	\$5,212,053	PL 84-99
RD 1607: Van Sickle Island	\$24,230,000	Below HMP
RD 2023: Venice Island	\$12,000,000	Bulletin 192-82
RD 2024: Orwood and Palm Tract	\$ 2,042,083	Bulletin 192-82
RD 2025: Holland Tract	\$9,300,000	Bulletin 192-82
RD 2026: Webb Tract	\$21,300,000	Bulletin 192-82
RD 2027: Mandeville Island	\$43,686,000	Bulletin 192-82
RD 2028: Bacon Island	\$49,369,200	Bulletin 192-82
RD 2029: Empire Tract	\$26,390,000	Bulletin 192-82
RD 2030: McDonald Island	\$9,516,000	Bulletin 192-82
RD 2033: Brack Tract	\$33,440,000	Bulletin 192-82
RD 2037: Rindge Tract	\$31,443,000	Bulletin 192-82
RD 2038: Lower Jones Tract	\$2,464,918	PL 84-99
RD 2039: Upper Jones Tract	\$6,723,321	PL 84-99
RD 2040: Victoria Island	\$10,821,000	Bulletin 192-82

Reclamation District (RD) Number and Name	Cost	Desired Levee Standard
RD 2041: Medford Island	\$11,243,000	Bulletin 192-82
RD 2044: King Island	\$22,460,000	Bulletin 192-82
RD 2059: Bradford Island	\$11,780,925	HMP
RD 2072: Woodward Island	\$2,520,361	PL 84-99
RD 2090: Quimby Island	\$10,377,000	Bulletin 192-82
RD 2111: Deadhorse Island	\$10,569,000	Bulletin 192-82
RD 2113: Fay Island	\$8,396,000	Bulletin 192-82
RD 2114: Rio Blanco Tract	\$837,000	Bulletin 192-82
RD 2115: Shima Tract	\$3,802,000	Bulletin 192-82
RD 2117: Coney Island	\$5,127,000	Bulletin 192-82
RD 2127: Simmons-Wheeler	\$701,850	Below HMP
RD 2136: Grizzly West	\$4,176,000	Below HMP
BALMD: Brannan-Andrus Island	\$936,469	PL 84-99
BIMID: Bethel Island	\$20,000,000	HMP
CLD: Collinsville	\$2,372,400	HMP

Table 9 Note: BALMD = Brannan Andrus Levee Maintenance District, BIMID = Bethel Island Municipal Improvement District, CLD = Collinsville Levee District, HMP = hazard mitigation plan, PL 84-99 = Public Law 84-99.

**Figure 10 2018 Proposed Desired Level of Protection**

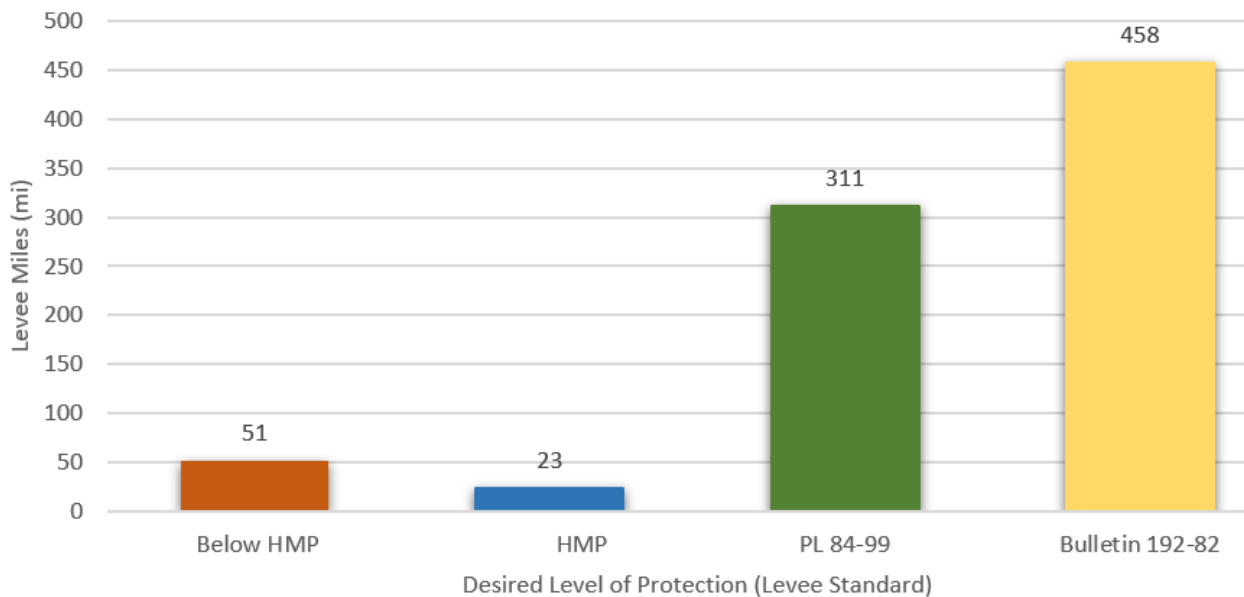


Figure 10 Note: HMP = hazard mitigation plan, PL 84-99 = Public Law 84-99.

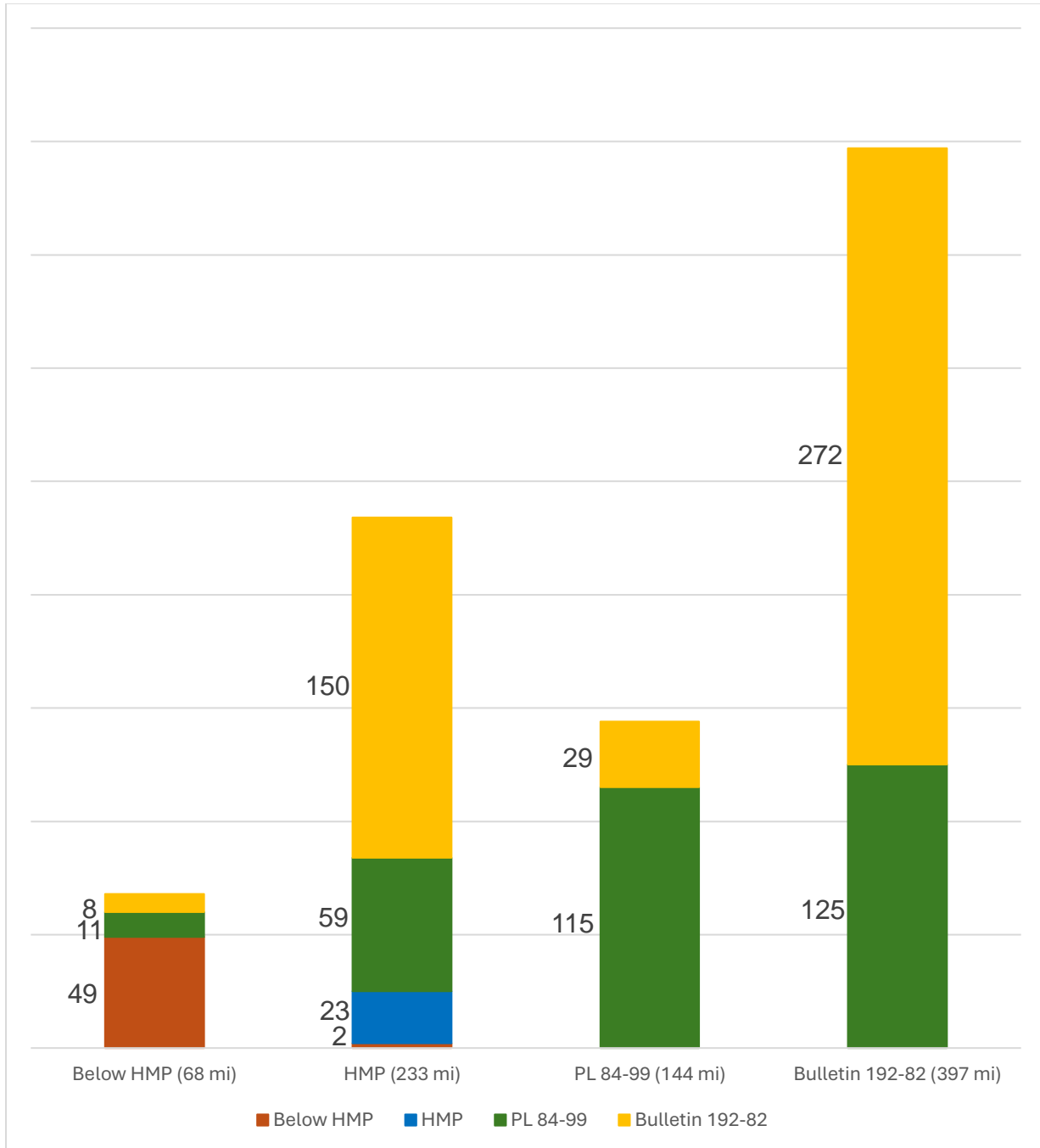
**Table 10 2018 Five-Year Plans Proposed Levee Standards**

Number of LMAs	Proposed Levee Miles for Improvement	Levee Standards Proposed	Cost
3	14	Below HMP	\$29 million
4	10	HMP	\$36 million
13	106	PL 84-99	\$124 million
27	188	Bulletin 192-82	\$494 million
<b>Total 47</b>	<b>318</b>		<b>\$683 million</b>

Table 11 Note: HMP = hazard mitigation plan, PL 84-99 = Public Law 84-99.



**Figure 11 2018 Current Minimum Standards Noting Desired Levee Standards (in miles)**



**Figure 11 Note: HMP = hazard mitigation plan, PL 84-99 = Public Law 84-99.**

## Additional Protection

There are 34 LMAs proposing a total of \$310 million for additional protection. Additional protection work includes rock slope protection, levee armoring, stability toe berms, setback levees, vegetation control, all-weather road improvements, seepage control, and raising utilities to maintain a sustainable levee standard, among other things. The following is a list of the proposed additional protection projects along with the estimated cost of the work.

### 2018 Additional Protection Work

- RD 1 Union Island East: rock slope protection and pipe penetration project (\$9,028,000).
- RD 2 Union Island West: rock slope protection and seepage repair (\$14,161,000).
- RD 3 Grand Island: erosion repair and seepage repair (\$5,659,750).
- RD 307 Lisbon: rock slope protection (\$7,793,000).
- RD 341 Sherman Island: erosion repair (\$5,810,000).
- RD 348 New Hope: debris removal (\$3,630,000).
- RD 501 Ryer Island: rock slope protection (\$12,282,000).
- RD 524 Middle Roberts Island: rock slope protection and 24" wide levee crown (\$7,949,000).
- RD 536 Egbert Tract: repairs, work to regain PL 84-99 status, participate in the Delta Maintenance Program and the Flood System Repair Program (\$3,070,000).
- RD 544 Upper Roberts Island: riprap slope protection and additional 24-foot-wide crown (\$15,874,000).
- RD 551 Pearson District: erosion repairs (\$740,000).
- RD 554 Walnut Grove: erosion repairs and replacement of toe ditch with French drain (\$1,012,591).
- RD 563 Tyler Island: rock slope protection, levee failure repair project, and seepage repair (\$11,814,000).
- RD 684 Lower Roberts Island: work on a dryland levee (\$1,608,703).

- RD 773 Fabian Tract: rock slope protection and levee stability project (\$59,531,000).
- RD 799 Hotchkiss Tract: seepage and erosion control (\$7,200,000).
- RD 800 Byron Tract: rock slope protection and levee stability work (\$14,258,000).
- RD 828 Weber Tract: rock slope protection (\$1,032,000)
- RD 1007 Pico-Naglee: expansion of the Paradise Cut Bypass (\$4,431,344).
- RD 1601 Twitchell Island: setback levee project (\$41,281,050).
- RD 1614 Smith Tract: rock slope protection (\$2,880,000).
- RD 2023 Venice Island: rock slope protection (\$2,901,010).
- RD 2027 Mandeville Island: incremental widening of the levee crest to 24 feet (\$20,850,000).
- RD 2030 McDonald Island: rock slope protection (\$442,000).
- RD 2040 Victoria Island: incremental widening of levee crest to 24 feet, seepage repair and rock slope protection (\$8,551,000).
- RD 2059 Bradford Island: seepage control (\$6,760,000).
- RD 2060 Hastings Tract: Replacement of aging infrastructure, embankment repairs, repair of remaining 2017 emergency erosion sites, bank protection, and evaluation of design deficiencies on bypass levee (\$7,750,000).
- RD 2111 Deadhorse Island: rock slope protection and incremental widening of levee crest to 24 feet (\$8,912,000).
- RD 2113 Fay Island: levee seepage berm protection (\$1,834,000).
- RD 2114 Rio Blanco: rock slope protection and incremental widening of levee crest to 24 feet (\$3,954,000).
- RD 2115 Shima Tract: rock slope protection and incremental widening of levee crest to 24 feet (\$4,675,000).
- RD 2117 Coney Island: rock slope protection and incremental widening of levee crest from 16 feet to 24 feet (\$6,697,000).

- RD 2136 Grizzly West: toe berm (\$1,373,000).
- BALMD Brannan-Andrus Island: stability berm, erosion repair, and French drain (\$4,476,608).

### **Studies**

The 2018 Plans included one proposal from Bradford Island RD 2059 to do a geotechnical investigation, estimated to cost \$500,000. There were no other studies proposed in the participating LMAs' Plans.

### **Habitat Enhancement Projects**

The 2018 Plans did not include any proposed independent habitat enhancement projects. All proposed habitat enhancement projects were part of planned multibenefit projects.

### **Emergency Planning**

The 2018 Plans included nine LMAs proposing emergency planning work, totaling an estimated \$6.6 million.

- Grand Island: emergency response and planning (\$109,000).
- Merritt Island: emergency planning and supplies (\$100,000).
- Egbert Tract: emergency response (repair levee cracking) (\$100,000).
- Terminous Tract: State emergency preparedness (\$3,839,551).
- Netherlands: emergency planning and supplies (\$100,000).
- Upper Jones Tract: emergency planning (\$140,000).
- Bradford: emergency access, traffic control, turnouts (\$750,000).
- Deadhorse Island: emergency response project, installing three new siphons (\$1,416,000).
- Grizzly West: develop emergency operation plan and flood fight materials (\$75,000).

Table 11 summarizes the total cost of all the proposed work included in the 2018 Plans.

**Table 11 2018 Cost Estimate of Proposed Work**

Type of Project	Estimated Cost
Levee Improvement Projects to Meet Level of Protection	\$683 million
Additional Protection Projects	\$310 million
Multibenefit Projects	\$60 million
Studies	\$0.5 million
Emergency Planning Projects	6.6 million
<b>Total</b>	<b>\$1.06 billion</b>

Table 11 Note: \$466 million for work on Tyler, Venice, and Twitchell Islands in years six and beyond is not included as part of the total, nor is \$239 million for existing construction and habitat projects through the Delta Levees Program.

The total proposed work included in the Plans covers not only the work planned for the next five years of \$1.06 billion, but also the work proposed by three LMAs for years six and beyond, which together totals approximately \$1.526 billion (Table 12).

**Table 12 Cost Estimate of Proposed Work, Including Years 6+**

Time Range	Funding Needed
Proposed Work in Five Years	\$1.061 billion
Proposed Work in Years 6+	\$0.466 billion
<b>Total</b>	<b>\$1.527 billion</b>

### Existing Project Funding Agreements

At the time of the expiration of the 2018 Plan project funding agreements, March 31, 2023, there were 15 active construction projects (\$144 million) and 10 active habitat enhancement projects (\$95 million) funded through the Delta Levees Program. A list of these projects is included below:

#### Construction Projects

- RD 38 Staten Island.
  - ST-19-1.2-SP: Engineering and construction of levee improvement and rehabilitation to meet PL 84-99 standard with seven setback levees to create riparian habitat benches where the levee is experiencing erosion below the normal waterline. Modification of

12-inch irrigation siphons is required to accommodate the levee rehabilitation (\$19,950,000).

- RD 341 Sherman Island.
  - SH-10-2.11: Construction of a levee repair project to add drainage system along the landside of the project levee bordering the Sacramento River (\$4,166,000).
  - SH-17-1.1-SP: Construction of setback levee and counterbalance berm to PL 84-99 standards and creation of waterside benches that will support variety of habitats (\$9,626,550).
- RD 348 New Hope Tract.
  - NH-17-1.2-SP: Setback levee construction to meet the PL 84-99 and creation of tidally inundated waterside benches to support a variety of habitats (\$12,000,000).
- RD 756 Bouldin Island.
  - BO-17-1.1-SP: Engineering and construction of levee, habitat improvement, and rehabilitation activities, which will consist of construction of a setback levee to meet the HMP standard and create or expand waterside benches that will support a variety of habitat (\$9,540,000).
  - BO-19-1.3-SP: Engineering and design of district levee improvement and rehabilitation for approximately 22,677 lineal feet of levee to meet Bulletin 192-82 standard. The levee will be widened and raised, a toe berm constructed, and waterside slope revetment (\$15,800,000).
- RD 2024 Orwood Palm Tract.
  - OP-17-1.1-SP: Improvement of 3.33 miles of levee at various locations to the Bulletin 192-82 standard. This project will establish 800 feet of waterside habitat enhancement consisting of shade riverine aquatic (\$2,091,000).
- RD 2028 Bacon Island.
  - BN-15-1.4-SP: Engineering and construction of levee habitat improvement and rehabilitation activities to meet HMP (\$14,075,590).

- BN-19-1.2-SP: Engineering and design of levee improvements, rehabilitation, habitat improvements and activities to meet Bulletin 192-82 standards (\$13,650,000).
- RD 2038 Lower Jones Tract.
  - LJ-17-1.1-SP: Levee work to achieve the PL 84-99 standard (\$4,967,600).
- RD 2072 Woodward Island.
  - WD-17-1.0-SP: Multibenefit project which will improve levee to Bulletin 192-82 standard and includes establishment of 1,000 feet of waterside habitat enhancement consisting of shaded riverine aquatic (\$5,184,500).
- RD 2127 Simmons-Wheeler.
  - SW-12-1.7-SP: Engineering and construction of levee improvement and rehabilitation to improve 6 miles of levee to HMP standard (\$843,900).
- BALMD Brannan-Andrus.
  - BA-15-1.4-SP: Revetment protection and development of a vegetated bench with a planted terrawall and gripper lock system along the Sacramento River for approximately 1.4 miles. Project will also provide fish-friendly channel margin habitat through the creation of wetland and riparian benches (\$19,686,016).
  - BA-17-1.1-SP: The project will reestablish the PL 84-99 standard and improve 1,500 feet of levee with waterside habitat enhancement (\$2,275,200).
- RD BIMID Bethel Island.
  - BI-17-1.2-SP: Project will rehabilitate approximately 2.5 miles of levee to the Bulletin 192-82 standard, where feasible, create a waterside bench for fish-friendly habitat, installation of a blanket drain, and installation of new or enhanced existing riprap as needed (\$9,711,908).

### **Habitat Enhancement Projects**

- RD 2137 Dutch Slough.

- DS-21-1.0: Dutch Slough Tidal Marsh Restoration Project, Phase II Burroughs (\$17,392,000).
- DS-22-1.0: deferred habitat maintenance tasks related to Dutch Slough Project (\$3,850,000).
- New Hope Tract.
  - NH-21-1.0: North Delta Grizzly Slough Floodplain Restoration Project (\$11,900,800).
  - NH-21-1.0: Grizzly Slough Site II B Mitigation Project (\$3,700,000).
- RD 1601 Twitchell Island.
  - TW-21-1.0: planning, engineering, and construction of the Twitchell Island Mitigation and Enhancement Site Project (\$5,177,543).
- RD 2059 Bradford Island.
  - BR-22-1.0: habitat establishment on Bradford Island (Northwest Levee Project) (\$284,625).
  - BR-23-1.0: deferred habitat mitigation reconstruction on Bradford Island (\$2,500,000).
- RD 2110 McCormack-Williamson Tract.
  - MW-16-1.0: McCormack-Williamson Tract (Phase A includes mitigation): construction of levee slope enhancement and Tower Levee on the McCormack-Williamson Tract (\$15,800,000).
  - MW-22-1.0: North Delta McCormack-Williamson Tract Levee Modification and Restoration Project implementation (\$32,200,000).
  - MW-23-1.0: deferred maintenance on McCormack Williamson Tract (\$1,800,000).

### **Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities**

Included in Appendix G is a list of the 2018 Five-Year Plans LMAs' proposed work highlighted by the Delta Stewardship Council Levee Investment Priorities, which include Very High Priority, High Priority, and Other Priority.



**Table 13 Total Cost for the 2018 Five-Year Plans Proposed Work**

<b>Category</b>	<b>Cost</b>
Proposed work under 2018 Five-Year Plans	\$1,061.0 million
Proposed work for Years 6 and beyond	\$465.6 million
Current projects as of expiration of the 2018 Five-Year Plans	\$239.0 million
<b>Total</b>	<b>\$1.766 billion</b>

Table 13 Note: Costs include work proposed for Year six and beyond, in addition to existing projects at the time of the expiration of the 2018 five-year plans.



## 5. Summary

The 2018 Plans indicate there is a large need for funding to complete proposed levee work in the Delta. The Plans estimate it will cost \$1.527 billion to improve the levee systems to reach prescribed levee standards. Of that amount, \$1.061 billion has been identified as an immediate need over the next five years. The remaining \$466 million will be needed in future years.

The LMA five-year plans call for improving 318 miles of levees to the following standards:

- Bulletin 192-82 standard: 188 miles.
- PL 84-99 standard: 106 miles.
- HMP standard: 10 miles.
- Below HMP standard: 14 miles.

In addition, the proposed work includes multibenefit projects (\$60 million) that incorporate habitat enhancement with levee improvements, additional protection work (\$310 million), studies (\$0.5 million), and emergency planning (\$6.6 million).

Because of the estimated \$1.527 billion in future levee, flood control, and habitat improvements proposed in the 2018 Plans, it is recommended that funding support continues to be provided for the Delta Levees Maintenance Subventions Program and the Delta Levee Special Flood Control Projects Program. Since their inception, these programs have proven to be very important in the Delta for providing funds to complete much-needed levee maintenance and flood control improvements. As has been discussed in this document, throughout the years of the programs' existence, there has been a noticeable reduction in levee failures. The programs have provided such a positive impact to levees and flood control in the Delta, it is recommended that substantial financial support continue to keep these successful programs going.



# Appendix A. Delta Levees Special Projects 2018 Requirements for the Five-Year Plans

This appendix on requirements for five-year plans (Requirements) specifies the format and content for the five-year plan (Plan) submittal in response to the 2018 five-year plan solicitation by the Delta Levees Special Flood Control Projects (Delta Levees Special Projects) Program. Please also complete the Table A-1, Required Information in these Requirements. Items in the table may be discussed separately in the Plan text but must be provided in tabular form for the Plan to be considered for funding.

## **General Content**

1. A cover page.
2. A table of contents.
3. A clear description of each item listed in the Requirements.
4. An index for the appendices.

## **Section 1: Executive Summary (recommend one page)**

Provide a summary of the Plan, including:

1. The objective of the Plan.
2. The desired level of protection for the local agency's levee system.
3. How involvement with DWR will help the local agency achieve this goal.
4. How involvement with other agencies will help the local agency achieve this goal.

## **Section 2: Background (recommend five pages)**

### **Assessment of the Status of Existing Levee System**

1. Describe historical flood problems, including:
  - A. Dates of events.
  - B. Estimated flood frequencies of events.

- C. Levee performance during these events.
  - D. Consequences of events.
2. What is the existing level of protection provided by the levee system? Include the source of this information. Specifically:
- A. What portion of the levee is below or at the hazard mitigation plan (HMP) standard?
  - B. What portion of the levee is at the PL84-99 or Bulletin 192-82 standard?
  - C. What portion of the levee is above the PL84-99 or Bulletin 192-82 standard?
  - D. If the local agency is not able to reach the HMP standard, explain why and what standard the local agency is working toward. Include the dimensions of the levee standard.
  - E. Provide cross-sectional surveys taken within the past five years for every 100 feet of the local agency's levee system. If there are no existing surveys, contact the Delta Levees Special Projects Program; new field surveys will be funded under the Subventions Program.
3. Provide a map showing the existing level of protection by the levee system, including:
- A. The portion of the levee below the HMP standard.
  - B. The portion of the levee at the HMP standard.
  - C. The portion of the levee at the PL84-99 or Bulletin 192-82 standard.
  - D. The portion of the levee above the PL84-99 or Bulletin 192-82 standard.

**Previous Five-Year-Plan Progress Report**

- 1. State if the local agency has previously submitted a Plan to the program.
- 2. Provide a review of your 2009 Plan submittal, including:
  - A. Steps taken to achieve the objectives outlined in the Plan.

- B. A statement of whether the objectives were achieved completely, partially, or not.
- C. If the objectives were not achieved, provide a summary of why and what should be done differently to achieve the goals outlined in this Plan.

### **History with Delta Levees Program**

- 1. Describe your past involvement with the Delta Levees Special Projects and Delta Levees Maintenance Subventions programs. Include a statement as to whether and how that participation allowed the local agency to meet the 2009 Plan objectives. Please provide as much information as possible.

### **Section 3: Plan for Flood Protection (recommend 12 pages)**

#### **Desired Level of Protection and Strategy to Meet this Goal**

The Plan should elaborate on the desired level of protection at the end of five years, including:

- 1. A description of the desired level of protection as a goal to achieve in the next five years, including:
  - A. A typical cross-section of the desired level of protection.
  - B. Justification if the levee standard selected is not one that is specifically supported by the program.
- 2. Phasing of the work, along with a list and description of proposed projects needed to achieve the five-year goal, including:
  - A. The stationing of levee improvements for each project.
  - B. An approximation of the materials to be used for each project.
  - C. Studies and reports that are anticipated to be conducted for each project.
  - D. Providing a phasing map to specify the location of proposed projects.
- 3. Total estimated cost of the work and its distribution for each project over the five years, including:

- A. The estimated cost of planning, design, engineering, and construction costs.
- B. A paragraph describing any major assumptions made in the development of the cost estimate.
4. Potential cost sharing with other partners (other than the Delta Levees Special Projects and Delta Levees Maintenance Subventions programs).
5. Requested cost sharing with the Delta Levees Special Projects Program, including:
  - A. A justification explaining how the local agency determined this amount.
6. Estimated schedule of work.
7. A statement of how you expect the Delta Levees Special Projects and Delta Levees Maintenance Subventions programs will contribute toward achievement of the five-year goals.
8. A statement of how you expect other agencies to contribute toward achievement of the five-year goals.
9. Discussion of potential constraints and obstacles to meet the desired level of protection and how the local agency plans to mitigate or overcome them.

**Identification of Need for Improvements to Reduce Existing Hazards**

The Plan should provide an inventory of the local and non-local assets and critical infrastructure, both public and private, that is protected by the levees. Local assets are those for which the local agency can levy assessments for flood protection; non-local assets are those that the local agency cannot levy assessments. The local agency should identify public benefits where applicable, such as:

1. Water quality.
2. Recreation.
3. Navigation.
4. Fish and wildlife.
5. Protection of State infrastructure.



6. Other (specify).

### **Identification of the Risks for Current Land Use Based on the Existing Assets**

The Plan needs to discuss levee risks. In particular:

1. Consequences of levee failure or breach.
2. Existing deficiencies in the system, including low spots, rapid settlement areas, erosion sites, undercutting, seepage, boils, or voids under the levee, including:
  - A. The location (stationing) of existing deficiencies.
3. Urgency of repair work.

### **Identification of opportunities for multibenefit projects**

The Plan should, at a minimum, describe opportunities and significant constraints for achieving the following objectives:

1. Ecosystem restoration and habitat enhancement.
2. Reversing land subsidence.
3. Ensuring adequate and effective emergency response plans.
4. Improving water quality.
5. Improving water supply reliability.
6. Improving levee stability and integrity.
7. Addressing actions listed in the *California Water Action Plan*.

## **Section 4: Plan for Permits and Habitat (recommend two pages)**

### **Habitat Mitigation and Enhancement**

The Plan should describe how work to be carried out under the Plan will meet the requirements of California Water Code Section 12314 which requires no net loss of habitat and consistency with net habitat improvement. The Plan should briefly describe the following:

1. Baseline habitat conditions prior to the Plan.
2. The anticipated impact and benefit to habitats in the Plan.

**Compliance with the California Environmental Quality Act and Obtaining all Required Permits.**

The Plan should describe all the following:

1. Types of permits and environmental compliance documents required.
2. Status of the environmental documentation (if already underway).
3. Status of the permit process (if already underway).
4. The requirements and how they will be met for all local, State, and federal agencies that were considered while preparing their Plans.

**Table A-1 Required Tabulated Information**

Required Information	Value/Units	Discussion
Total acreage protected by local agency levees		
Total levee miles maintained by local agency		
Levee miles in the local agency service area that are not maintained through the Delta Levees Program (e.g., dry levees, cross levees)		
Percentage of local agency's levee system at or above HMP levee standard		
Miles of local agency's levee system raised to meet the minimum HMP standard through the Delta Levees Special Projects Program		
Percentage of local agency's levee system at or above Bulletin 192-82 levee standard		
Miles of local agency's levee system raised to meet the Bulletin 192-82 levee standard through the Delta Levees Special Projects Program		
Number of levee rehabilitation projects funded through the Delta Levees Special Projects Program		

Appendix A. Delta Levees SP 2018 Req for 5-Year Plans

Required Information	Value/Units	Discussion
Total State funds expended for levee rehabilitation projects on the local agency's island or tract through the Delta Levees Special Projects Program		
List of local and non-local assets and critical infrastructure protected by the local agency's levee system		

Appendix A. Delta Levees SP 2018 Req for 5-Year Plans

# Appendix B. 2018 Project Solicitation Package

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY

EDMUND G. BROWN JR., Governor

## DEPARTMENT OF WATER RESOURCES

DIVISION OF FLOOD MANAGEMENT  
P.O. BOX 219000  
SACRAMENTO, CA 95821-9000



February 23, 2018

### **Delta Levees Special Flood Control Projects Program – Five-Year Plan Solicitation**

Dear:

#### **Introduction**

The Delta Levees Special Flood Control Projects Program (Program) is pleased to announce the release of the 2018 Five-Year Plan Solicitation (Solicitation). This Solicitation provides up to \$3,500,000 in local assistance funding from Propositions 1E and 84 for the development or update of Five-Year Plans to support levee work in the Sacramento-San Joaquin Delta (Delta) that integrates levee and habitat improvement while protecting discrete and identifiable public benefits. **Note that continued eligibility for any Program funds will require that local agencies have an acceptable and updated Five-Year Plan on file with the Program.**

#### **Background**

The Program was established in 1988 by Senate Bill 34 and continues to operate under subsequent legislation that extends and provides funding for the Program. Originally authorized to address flooding on the Eight Western Islands and the towns of Thornton, New Hope, and Walnut Grove, the Program was expanded in 1996 to the entire Delta and to portions of Suisun Marsh. The passage of Proposition 1E and Proposition 84 in November 2006 significantly increased the amount of money available for levee projects in the Delta. The Department has invested over \$350 million dollars in flood control and habitat projects that are carried out by participating local levee

maintaining agencies in the Delta. In 2009, the Program initiated cost share agreements to assist local efforts to produce Five-Year Plans for 60 Delta islands/tracts to support levee work. These plans were completed and are used to guide Program expenditures in the Delta.

### **Five-Year Plan Cost Share Solicitation**

This Solicitation seeks eligible plans that include but are not limited to levee improvement, habitat enhancement, emergency response, seismic resiliency, and export water supply reliability. Future Project work incorporated into new or updated

Five-Year Plans will follow criteria under the current Program Guidelines: *2014 Guidelines for Providing Funding to Local Public Agencies*. The Guidelines are available on the [California Department of Water Resources website](#).

The Program will provide 100% cost share funding up to \$35,000 per plan to update existing Five-Year Plans and up to \$50,000 per plan for the development of new Five-Year Plans (the higher limit is only available to islands/tracts that did not participate in Five-Year Plan development in 2009). The Program will provide 50% cost share funding on new Five-Year Plans that exceed \$50,000 and on updates to an existing Five-Year Plan that exceeds the \$35,000 limit. The Program will not cost share plan development costs in excess of \$75,000 (0% State cost share).

Interested applicants are requested to submit a Five-Year Plan Letter Proposal requesting participation. Applicants who participate in the development of a Five-Year Plan must follow the requirements provided in the attached *2018 Requirements for Five-Year Plans*. **Applicants are also encouraged to coordinate with local, State and federal agencies, as appropriate, while preparing their Five-Year Plans.**

**Letter proposals are due to the Department of Water Resources by April 2, 2018.**

Letter proposals may be mailed or hand delivered to:

**Andrea L. Lobato, P.E., Manager  
Delta Levees Program**

**Department of Water Resources  
3310 El Camino Avenue, Room 152  
Sacramento, California 95814**

Submittals by U.S. Post Office **must be postmarked no later than April 2, 2018.**

If you have any questions, please call me at (916) 480-5367, or Jon Wright at (916) 480-5369.

Sincerely,



Andrea L. Lobato, P.E., Manager  
Delta Levees Program

Attachment

## Attachment

### Requirements for the Five-Year Plan

This *Requirements for the Five-Year Plan* (Requirements) specifies the format and content for the Five-Year Plan (Plan) submittal in response to the 2018 Five-Year Plan Solicitation by the Delta Levees Special Flood Control Projects Program (Special Projects). Please also complete the *Table of Required Information* in these Requirements. Items in the table may be discussed separately in the Plan text but must be provided in tabular form for the Plan to be considered for funding.

### General Content

1. A cover page.
2. A table of contents.
3. A clear description of each item listed in the Requirements.
4. An index for the appendices.

### Section 1: Executive Summary (recommend 1 page)

1. Provide a summary of the Plan, including:
  - A. The objective of the Plan.
  - B. The desired level of protection for the local agency's levee system.
  - C. How involvement with DWR will help the local agency achieve this goal.
  - D. How involvement with other agencies will help the local agency achieve this goal.

### Section 2: Background (recommend 5 pages)

1. **Assessment of the status of the existing levee system.**
  - A. Describe historical flood problems, including:
    - i. Dates of events.
    - ii. Estimated flood frequencies of events.
    - iii. Levee performance during these events.



- iv. Consequences of events.
- B. What is the existing level of protection provided by the levee system? Include the source of this information. Specifically:
- i. What portion of the levee is below or at the Hazard Mitigation Plan (HMP) standard?
  - ii. What portion of the levee is at the PL84-99 or Bulletin 192-82 standard?
  - iii. What portion of the levee is above the PL84-99 or Bulletin 192-82 standard?
  - iv. If the local agency is not able to reach the HMP standard, explain why and what standard the local agency is working toward. Also, include the dimensions of the levee standard.
  - v. Provide cross-sectional surveys taken within the past five years for every 100 feet of the local agency's levee system. If there are no existing surveys, contact the Delta Levees Special Projects Program; new field surveys will be funded under the Subventions Program.
- C. Provide a map showing the existing level of protection by the levee system, including:
- i. The portion of the levee below the HMP standard.
  - ii. The portion of the levee at the HMP standard.
  - iii. The portion of the levee at the PL84-99 or Bulletin 192-82 standard.
  - iv. The portion of the levee above the PL84-99 or Bulletin 192-82 standard.

**2. Previous Five Year-Plan progress report.**

- A. State if the local agency has previously submitted a Plan to the program.
- B. Provide a review of your 2009 Five-Year Plan submittal, including:
  - i. Steps taken to achieve the objectives outlined in the Plan.

- ii. A statement of whether the objectives were achieved completely, partially, or not at all.
- iii. If objectives were not achieved, provide a summary of why and what should be done differently to achieve the goals outlined in this Plan.

**3. History with the Delta Levees Program.**

- A. Describe your past involvement with the Delta Levees Special Projects and Delta Levees Maintenance Subventions programs. Include a statement as to whether and how that participation allowed the Local Agency to meet the 2009 Five-Year Plan objectives. Please provide as much information as possible.

**Section 3: Plan for Flood Protection (recommend 12 pages)**

**1. Desired level of protection and strategy to meet this goal.**

The Plan should elaborate on the desired level of protection at the end of five years, including:

- A. A description of the desired level of protection as a goal to achieve in the next five years, including:
  - i. A typical cross-section of the desired level of protection.
  - ii. Justification if the levee standard selected is not one that is specifically supported by the program.
- B. Phasing of the work, along with a list and description of proposed projects needed to achieve the five-year goal, including:
  - i. The stationing of levee improvements for each project.
  - ii. An approximation of the materials to be used for each project.
  - iii. Studies and reports that are anticipated to be conducted for each project.
  - iv. Provide a phasing map to specify the location of proposed projects.
- C. Total estimated cost of the work and its distribution for each project over the five years, including:
  - i. The estimated cost of planning, design and engineering, and construction costs.

- ii. A paragraph describing any major assumptions made in the development of the cost estimate.
- D. Potential cost sharing with other partners (other than the Delta Levees Special Projects and Delta Levees Maintenance Subventions programs).
- E. Requested cost sharing with the Delta Levees Special Projects Program, including:
  - i. A justification explaining how the local agency determined this amount.
- F. Estimated schedule of work.
- G. A statement of how you expect the Delta Levees Special Projects and Delta Levees Maintenance Subventions programs will contribute toward the achievement of the five-year goals.
- H. A statement of how you expect other agencies to contribute toward the achievement of the five-year goals.
- I. Discussion of potential constraints and obstacles to meet the desired level of protection and how the local agency plans to mitigate or overcome them.

**2. Identification of need for improvements to reduce existing hazards.**

The Plan should provide an inventory of the local and non-local assets and critical infrastructure, both public and private, that is protected by the levees. Local assets are those for which the local agency can levy assessments for flood protection; non-local assets are those that the local agency cannot levy assessments. The local agency should identify public benefits where applicable, such as:

- A. Water quality.
- B. Recreation.
- C. Navigation.
- D. Fish and wildlife.
- E. Protection of State infrastructure.
- F. Other (specify).

**3. Identification of the risks for current land use based on the existing assets.**

The Plan needs to discuss levee risks. In particular:

- A. Consequences of levee failure or breach.
- B. Existing deficiencies in the system, including low spots, rapid settlement areas, erosion sites, undercutting, seepage, boils, or voids under the levee, including the location (stationing) of existing deficiencies.
- C. Urgency of repair work.

**4. Identification of opportunities for multibenefit projects.**

The Plan should, at a minimum, describe opportunities and significant constraints for achieving the following objectives:

- A. Ecosystem restoration and habitat enhancement.
- B. Reversing land subsidence.
- C. Ensuring adequate and effective emergency response plans.
- D. Improving water quality.
- E. Improving water supply reliability.
- F. Improving levee stability and integrity.
- G. Addressing actions listed in the *California Water Action Plan*.

**Section 4: Plan for Permits and Habitat (recommend 2 pages)**

**1. Habitat Mitigation and Enhancement.**

The Plan should describe how work to be carried out under the Plan will meet the requirements of Water Code Section 12314 which requires no net loss of habitat and consistency with net habitat improvement. The Plan should briefly describe the following:

- A. Baseline habitat conditions prior to the Plan.
- B. The anticipated impacts and benefits to habitats in the Plan.

**2. Compliance with the California Environmental Quality Act and obtaining all required permits.**

The Plan should describe all of the following:

- A. Types of permits and environmental compliance documents required.
- B. Status of the environmental documentation (if already underway).
- C. Status of the permit process (if already underway).
- D. The requirements and how they will be met for all local, State, and federal agencies that were considered while preparing their Five-Year Plans.

**Table B-1 Required Tabulated Information**

Required Information	Value/Units	Discussion
Total acreage protected by local agency levees		
Total levee miles maintained by local agency		
Levee miles in the local agency service area that are not maintained through the Delta Levees Program (e.g. dry levees, cross levees)		
Percentage of local agency's levee system at or above HMP levee standard		
Miles of local agency's levee system raised to meet the minimum HMP Standard through the Delta Levees Special Projects Program		
Percentage of local agency's levee system at or above Bulletin 192-82 levee standard		

Appendix B. 2018 Project Solicitation Package

Required Information	Value/Units	Discussion
Miles of local agency's levee system raised to meet the Bulletin 192-82 levee standard through the Delta Levees Special Projects Program		
Number of levee rehabilitation projects funded through the Delta Levees Special Projects Program		
Total State funds expended for levee rehabilitation projects on the local agency's island or tract through the Delta Levees Special Projects Program		
List of local and non-local assets and critical infrastructure protected by the local agency's levee system		

## Appendix C. Levee Maintaining Agencies Participating in the 2018 Five-Year Plan

There were 74 levee maintaining agencies that participated in the 2018 five-year plan. Listed below are their reclamation district (RD) number and names.

RD 1	Union Island East
RD 2	Union Island West
RD 3	Grand Island
RD 38	Staten Island
RD 150	Merritt Island
RD 307	Lisbon District
RD 341	Sherman Island
RD 348	New Hope Tract
RD 349	Sutter Island
RD 403	Rough and Ready Island
RD 404	Boggs Tract
RD 501	Ryer Island
RD 524	Middle Roberts Island
RD 536	Egbert Tract
RD 544	Upper Roberts Island

California Department of Water Resources

RD 548	Terminous Tract
RD 551	Pearson District
RD 554	Walnut Grove
RD 556	Upper Andrus Island
RD 563	Tyler Island
RD 684	Lower Roberts Island
RD 756	Bouldin Island
RD 773	Fabian Tract
RD 799	Hotchkiss Tract
RD 800	Byron Tract
RD 828	Weber Tract
RD 830	Jersey Island
RD 999	Netherlands
RD 1002	Glanville Tract
RD 1007	Pico-Naglee
RD 1601	Twitchell Island
RD 1607	Van Sickle Island
RD 1608	Lincoln Village West
RD 1614	Smith Tract
RD 1667	Prospect Island



California Department of Water Resources

RD 2023 Venice Island  
RD 2024 Orwood and Palm Tracts  
RD 2025 Holland Tract  
RD 2026 Webb Tract  
RD 2027 Mandeville Island  
RD 2028 Bacon Island  
RD 2029 Empire Tract  
RD 2030 McDonald Island  
RD 2033 Brack Tract  
RD 2037 Rindge Tract  
RD 2038 Lower Jones Tract  
RD 2039 Upper Jones Tract  
RD 2040 Victoria Island  
RD 2041 Medford Island  
RD 2042 Bishop Tract  
RD 2044 King Island  
RD 2059 Bradford Island  
RD 2060 Hastings Tract  
RD 2065 Veale Tract  
RD 2068 Yolano District

California Department of Water Resources

RD 2072 Woodward Island  
RD 2084 Little Egbert Tract  
RD 2089 Stark Tract  
RD 2090 Quimby Island  
RD 2098 Cache Haas Area  
RD 2110 McCormack-Williamson Tract  
RD 2111 Deadhorse Island  
RD 2113 Fay Island  
RD 2114 Rio Blanco Tract  
RD 2115 Shima Tract  
RD 2117 Coney Island  
RD 2119 Wright-Elmwood Tract  
RD 2126 Atlas Tract  
RD 2127 Simmons-Wheeler  
RD 2136 Grizzly West  
RD 2137 Dutch Slough  
RD BALMD Brannan-Andrus Island  
RD BIMID Bethel Island  
RD CLD Collinsville

# Appendix D. Local Maintaining Agencies and Levee Mileage at Their Highest Levee Standard

**Table D-1 Local Maintaining Agencies and Levee Mileage at Their Highest Levee Standard**

RD Number	RD Name	Levee Miles	Highest Levee Standard Met			
			Miles of Levees not Meeting HMP	Miles of Levee Meeting HMP	Miles of Levee Meeting PL 84-99	Miles of Levee at or Exceeding Bulletin 192-82
1	Union Island East	15.05	0.00	0.00	0.00	15.05
2	Union Island West	16.23	0.00	1.61	0.00	14.62
3	Grand Island	28.77	0.00	0.00	0.00	28.77
38	Staten Island	25.30	0.00	9.50	15.80	0.00
150	Merritt Island	17.73	0.00	0.01	0.00	17.72
307	Lisbon District	6.58	0.00	0.00	0.00	6.60
341	Sherman Island	19.50	0.00	0.60	18.90	0.00
348	New Hope Tract	17.40	0.00	7.83	9.57	0.00
349	Sutter Island	12.41	0.00	0.00	0.00	12.41
403	Rough and Ready Island	5.70	0.00	5.70	0.00	0.00
404	Boggs Tract	4.80	0.00	0.00	0.00	4.80
501	Ryer Island	20.31	0.00	0.00	0.00	20.31
524	Middle Roberts Island	18.82	0.00	4.81	0.00	13.99

California Department of Water Resources

RD Number	RD Name	Levee Miles	Highest Levee Standard Met			
			Miles of Levees not Meeting HMP	Miles of Levee Meeting HMP	Miles of Levee Meeting PL 84-99	Miles of Levee at or Exceeding Bulletin 192-82
536	Egbert Tract	10.60	0.01	0.12	0.00	10.48
544	Upper Roberts Island	15.16	0.00	8.27	0.00	6.90
548	Terminus Tract	16.10	0.00	14.87	0.00	1.23
551	Pearson (or "Pierson") District	15.89	0.00	0.00	0.00	15.80
554	Walnut Grove	2.85	0.00	0.00	0.00	2.85
556	Upper Andrus Island	11.20	0.00	0.00	11.20	0.00
563	Tyler Island	22.93	1.87	13.99	0.00	7.08
684	Lower Roberts Island	14.51	0.19	3.15	11.17	0.00
755	Randall Island	0.00	0.00	0.00	0.00	0.00
756	Bouldin Island	17.93	0.00	7.53	8.50	1.90
773	Fabian Tract	18.75	0.00	0.00	0.00	18.75
799	Hotchkiss Tract	8.90	0.00	3.12	4.00	1.78
800	Byron Tract	9.70	0.00	0.28	0.00	9.42
828	Weber Tract	1.67	0.00	0.00	0.00	1.67
830	Jersey Island	15.51	0.00	10.31	0.00	5.20
999	Netherlands	32.18	0.00	0.08	0.00	32.10
1002	Glanville Tract	13.40	0.00	9.13	4.27	0.00
1007	Pico-Naglee	9.10	7.59	0.00	1.48	0.00
1601	Twitchell Island	11.79	4.59	5.88	0.00	1.32
1607	Van Sickle Island	9.71	8.74	0.97	0.00	0.00
1608	Lincoln Village West	3.54	0.00	0.69	0.00	2.85
1614	Smith Tract	2.83	0.00	0.00	0.00	2.83

California Department of Water Resources

RD Number	RD Name	Levee Miles	Highest Levee Standard Met			
			Miles of Levees not Meeting HMP	Miles of Levee Meeting HMP	Miles of Levee Meeting PL 84-99	Miles of Levee at or Exceeding Bulletin 192-82
1667	Prospect Island	6.80	6.35	0.38	0.00	0.07
2023	Venice Island	12.43	2.51	9.77	0.00	0.15
2024	Orwood and Palm Tracts	14.39	0.00	0.20	0.00	14.10
2025	Holland Tract	11.00	0.00	1.70	2.00	7.30
2026	Webb Tract	12.93	0.00	0.83	8.00	4.10
2027	Mandeville Island	14.31	0.62	10.34	0.00	3.35
2028	Bacon Island	14.34	0.00	7.50	6.50	0.40
2029	Empire Tract	10.50	1.00	9.22	0.00	0.28
2030	McDonald Island	13.75	0.00	0.87	0.00	12.87
2033	Brack Tract	11.14	0.00	10.96	0.00	0.18
2037	Rindge Tract	15.75	0.04	14.99	0.00	0.72
2038	Lower Jones Tract	9.03	0.99	0.00	8.04	0.00
2039	Upper Jones Tract	9.30	0.00	4.57	4.88	0.00
2040	Victoria Island	15.09	0.00	3.30	0.00	11.79
2041	Medford Island	5.90	0.00	5.68	0.00	0.22
2042	Bishop Tract	8.00	0.00	0.00	0.00	8.00
2044	King Island	9.10	0.20	8.79	0.00	0.11
2059	Bradford Island	7.40	0.11	7.29	0.00	0.00
2060	Hastings Tract	16.40	0.04	0.51	0.00	15.85
2065	Veale Tract	5.03	0.01	3.68	0.00	1.34
2068	Yolano District	8.79	0.00	0.00	0.00	8.80
2072	Woodward Island	8.90	0.00	0.59	0.00	8.30

California Department of Water Resources

RD Number	RD Name	Levee Miles	Highest Levee Standard Met			
			Miles of Levees not Meeting HMP	Miles of Levee Meeting HMP	Miles of Levee Meeting PL 84-99	Miles of Levee at or Exceeding Bulletin 192-82
2084	Little Egbert Tract	5.37	5.37	0.00	0.00	0.00
2089	Stark Tract	3.69	0.00	0.00	0.00	3.69
2090	Quimby Island	7.00	0.20	2.46	0.00	4.35
2098	Cache Haas Area	10.97	0.00	0.00	0.00	10.97
2110	McCormack-Williamson Tract	9.80	9.80	0.00	0.00	0.00
2111	Deadhorse Island	2.58	0.40	2.18	0.00	0.00
2113	Fay Island	1.61	1.09	0.41	0.00	0.10
2114	Rio Blanco Tract	4.30	0.65	0.65	0.00	3.65
2115	Shima Tract	6.82	0.00	2.37	0.00	4.45
2117	Coney Island	5.48	0.02	2.49	0.00	2.97
2119	Wright-Elmwood Tract	7.08	0.00	0.00	0.00	7.08
2126	Atlas Tract	3.08	0.00	0.00	0.00	3.08
2127	Simmons-Wheeler	7.20	6.20	1.00	0.00	0.00
2136	Grizzly West	6.80	6.12	0.68	0.00	0.00
2137	Dutch Slough	9.10	0.00	7.40	0.00	1.60
BALMD	Brannan-Andrus Island	26.40	2.49	0.76	21.71	0.00
BIMID	Bethel Island	11.50	0.00	2.39	8.17	0.95
CLD	Collinsville	1.49	0.96	0.43	0.00	0.10
	<b>Total Miles</b>	<b>843.41</b>	<b>68.16</b>	<b>232.85</b>	<b>144.19</b>	<b>397.43</b>

Table D-1 Notes: BALMD = Brannan Andrus, BIMID = Bethel, CLD = Collinsville, HMP = hazard mitigation plan, PL 84-99 = public law 84-99, RD = reclamation district.

# Appendix E. Local Maintaining Agencies and Cost of Proposed Work within Five Years

**Table E-1 Local Maintaining Agencies and Cost of Proposed Work**

RD Number	RD Name	Emergency Planning	Studies	Habitat Enhancement	Additional Protection	Levee Projects to Meet Level of Protection	Multibenefit Projects
1	Union Island East	\$0	\$0	\$0	\$9,028,000	\$0	\$0
2	Union Island West	\$0	\$0	\$0	\$14,161,000	\$5,993,000	\$0
3	Grand Island	\$109,000	\$0	\$0	\$5,659,750	\$0	\$0
38	Staten Island	\$0	\$0	\$0	\$0	\$26,800,000	\$10,500,000
150	Merritt Island	\$100,000	\$0	\$0	\$0	\$3,900,000	\$0
307	Lisbon District	\$0	\$0	\$0	\$7,793,000	\$0	\$0
341	Sherman Island	\$0	\$0	\$0	\$5,810,000	\$5,500,000	\$12,000,000
348	New Hope Tract	\$0	\$0	\$0	\$3,630,000	\$10,453,000	\$7,315,000
349	Sutter Island	\$0	\$0	\$0	\$0	\$0	\$0
403	Rough and Ready Island	\$0	\$0	\$0	\$0	\$0	\$0
404	Boggs Tract	\$0	\$0	\$0	\$0	\$0	\$0
501	Ryer Island	\$0	\$0	\$0	\$12,282,000	\$0	\$0
524	Middle Roberts Island	\$0	\$0	\$0	\$7,949,000	\$10,360,000	\$0
536	Egbert Tract	\$100,000	\$0	\$0	\$3,070,000	\$0	\$0

Appendix E. Local Maintaining Agencies and Cost of Proposed Work

RD Number	RD Name	Emergency Planning	Studies	Habitat Enhancement	Additional Protection	Levee Projects to Meet Level of Protection	Multibenefit Projects
544	Upper Roberts Island	\$0	\$0	\$0	\$15,874,000	\$33,051,000	\$0
548	Terminus Tract	\$3,839,551	\$0	\$0	\$0	\$52,551,525	\$9,882,631
551	Pearson ("Pierson") District	\$0	\$0	\$0	\$740,000	\$6,500,000	\$0
554	Walnut Grove	\$0	\$0	\$0	\$1,012,591	\$79,030	\$0
556	Upper Andrus Island	\$0	\$0	\$0	\$0	\$0	\$0
563	Tyler Island	\$0	\$0	\$0	\$11,814,000	\$6,000,000	\$0
684	Lower Roberts Island	\$0	\$0	\$0	\$1,608,703	\$3,047,519	\$2,261,468
755	Randall Island	\$0	\$0	\$0	\$0	\$0	\$0
756	Bouldin Island	\$0	\$0	\$0	\$0	\$75,392,000	\$0
773	Fabian Tract	\$0	\$0	\$0	\$59,531,000	\$0	\$0
799	Hotchkiss Tract	\$0	\$0	\$0	\$7,200,000	\$15,000,000	\$0
800	Byron Tract	\$0	\$0	\$0	\$14,258,000	\$0	\$0
828	Weber Tract	\$0	\$0	\$0	\$1,032,000	\$0	\$0
830	Jersey Island	\$0	\$0	\$0	\$0	\$19,957,767	\$0
999	Netherlands	\$100,000	\$0	\$0	\$0	\$3,500,000	\$0
1002	Glanville Tract	\$0	\$0	\$0	\$0	\$2,003,109	\$0
1007	Pico-Naglee	\$0	\$0	\$0	\$4,431,344	\$5,212,053	\$0
1601	Twitchell Island	\$0	\$0	\$0	\$41,281,050	\$0	\$0
1607	Van Sickle Island	\$0	\$0	\$0	\$0	\$24,230,000	\$0



Appendix E. Local Maintaining Agencies and Cost of Proposed Work

<b>RD Number</b>	<b>RD Name</b>	<b>Emergency Planning</b>	<b>Studies</b>	<b>Habitat Enhancement</b>	<b>Additional Protection</b>	<b>Levee Projects to Meet Level of Protection</b>	<b>Multibenefit Projects</b>
1608	Lincoln Village West	\$0	\$0	\$0	\$0	\$0	\$0
1614	Smith Tract	\$0	\$0	\$0	\$2,880,000	\$0	\$0
1667	Prospect Island	\$0	\$0	\$0	\$0	\$0	\$0
2023	Venice Island	\$0	\$0	\$0	\$2,901,010	\$12,000,000	\$0
2024	Orwood and Palm Tracts	\$0	\$0	\$0	\$0	\$2,042,083	\$3,588,852
2025	Holland Tract	\$0	\$0	\$0	\$0	\$9,300,000	\$0
2026	Webb Tract	\$0	\$0	\$0	\$0	\$21,300,000	\$0
2027	Mandeville Island	\$0	\$0	\$0	\$20,850,000	\$43,686,000	\$0
2028	Bacon Island	\$0	\$0	\$0	\$0	\$49,329,200	\$0
2029	Empire Tract	\$0	\$0	\$0	\$0	\$26,390,000	\$0
2030	McDonald Island	\$0	\$0	\$0	\$442,000	\$9,516,000	\$0
2033	Brack Tract	\$0	\$0	\$0	\$0	\$33,440,000	\$0
2037	Rindge Tract	\$0	\$0	\$0	\$0	\$31,443,000	\$0
2038	Lower Jones Tract	\$0	\$0	\$0	\$0	\$2,464,918	\$1,566,017
2039	Upper Jones Tract	\$140,000	\$0	\$0	\$0	\$6,723,321	\$4,256,017
2040	Victoria Island	\$0	\$0	\$0	\$8,551,000	\$10,821,000	\$0
2041	Medford Island	\$0	\$0	\$0	\$0	\$11,243,000	\$0
2042	Bishop Tract	\$0	\$0	\$0	\$0	\$0	\$0
2044	King Island	\$0	\$0	\$0	\$0	\$22,460,000	\$0
2059	Bradford Island	\$750,000	500,000	\$0	\$6,760,000	\$11,780,925	\$0

Appendix E. Local Maintaining Agencies and Cost of Proposed Work

<b>RD Number</b>	<b>RD Name</b>	<b>Emergency Planning</b>	<b>Studies</b>	<b>Habitat Enhancement</b>	<b>Additional Protection</b>	<b>Levee Projects to Meet Level of Protection</b>	<b>Multibenefit Projects</b>
2060	Hastings Tract	\$0	\$0	\$0	\$7,750,000	\$0	\$0
2065	Veale Tract	\$0	\$0	\$0	\$0	\$0	\$3,905,000
2068	Yolano District	\$0	\$0	\$0	\$0	\$0	\$0
2072	Woodward Island	\$0	\$0	\$0	\$0	\$2,520,361	\$4,996,663
2084	Little Egbert Tract	\$0	\$0	\$0	\$0	\$0	\$0
2089	Stark Tract	\$0	\$0	\$0	\$0	\$0	\$0
2090	Quimby Island	\$0	\$0	\$0	\$0	\$10,377,000	\$0
2098	Cache Haas Area	\$0	\$0	\$0	\$0	\$0	\$0
2110	McCormack-Williamson Tract	\$0	\$0	\$0	\$0	\$0	\$0
2111	Deadhorse Island	\$1,416,000	\$0	\$0	\$8,912,000	\$10,569,000	\$0
2113	Fay Island	\$0	\$0	\$0	\$1,834,000	\$8,396,000	\$0
2114	Rio Blanco Tract	\$0	\$0	\$0	\$3,954,000	\$837,000	\$0
2115	Shima Tract	\$0	\$0	\$0	\$4,675,000	\$3,802,000	\$0
2117	Coney Island	\$0	\$0	\$0	\$6,697,000	\$5,127,000	\$0
2119	Wright-Elmwood Tract	\$0	\$0	\$0	\$0	\$0	\$0
2126	Atlas Tract	\$0	\$0	\$0	\$0	\$0	\$0
2127	Simmons-Wheeler	\$0	\$0	\$0	\$0	\$701,850	\$0
2136	Grizzly West	\$75,000	\$0	\$0	\$1,373,000	\$4,176,000	\$0
2137	Dutch Slough	\$0	\$0	\$0	\$0	\$0	\$0
BALMD	Brannan-Andrus Island	\$0	\$0	\$0	\$4,476,608	\$936,469	\$0

Appendix E. Local Maintaining Agencies and Cost of Proposed Work

<b>RD Number</b>	<b>RD Name</b>	<b>Emergency Planning</b>	<b>Studies</b>	<b>Habitat Enhancement</b>	<b>Additional Protection</b>	<b>Levee Projects to Meet Level of Protection</b>	<b>Multibenefit Projects</b>
BIMID	Bethel Island	\$0	\$0	\$0	\$0	\$20,000,000	\$0
CLD	Collinsville	\$0	\$0	\$0	\$0	\$2,372,400	\$0
<b>Total</b>		<b>\$6,629,551</b>	<b>\$500,000</b>	<b>\$0</b>	<b>\$310,221,056</b>	<b>\$683,324,530</b>	<b>\$60,271,648</b>
<b>Grand Total</b>						<b>\$1,060,946,785</b>	

Table E-1 Note: BALMD = Brannan Andrus, BIMID = Bethel, CLD = Collinsville, RD = reclamation district.

Appendix E. Local Maintaining Agencies and Cost of Proposed Work

# Appendix F. 2009 Requirements for the Five-Year Plan

## Requirements for the Five-Year Plan

### **1. Assessment of the status of the existing levee system and future goals.**

The Plan should provide a clear description of the following:

- Describe historical flood problems, including:
  - Dates of events.
  - Estimated flood frequencies of events.
  - Levee performance during these events.
  - Consequences of events.
- What is the existing level of protection provided by the levee system? Include the source of this information. Specifically,
  - What portion of the levee is below or at HMP standard?
  - What portion of the levee is at PL84-99 standard?
  - What portion of the levee is above PL 84-99 standard?
- What level of protection is expected to be achieved at the end of the five years? Provide justifications in support of the anticipated outcomes.

### **2. Strategy to meet the desired level of protection.**

The Plan should elaborate on the desired level of protection at the end of five years and discuss the following:

- A complete description of the desired level of protection as a goal to achieve in the next five years.
- Phasing of the work, including a description of recommended projects needed to achieve the five-year goal.
- Total estimated cost of the work and its distribution on a project-by-project basis over the five years.

- Potential cost sharing with other partners.
- Schedule of work.
- Discussion of potential obstacles to meet the desired goal.

### **3. Identification of the need for improvements to alleviate or minimize existing hazards.**

The Plan should provide an inventory of the local and non-local assets and critical infrastructures, both public and private, being protected by the levees. Local assets are those for which the local agency can levy assessments for flood protection; non-local assets are those for which the local agency cannot levy assessments. The local agency should identify public benefits where applicable, such as:

- Water quality.
- Recreation.
- Navigation.
- Fish and wildlife.
- Protection of State infrastructure.
- Other.

### **4. Identification of the risks for current land use based on the existing assets.**

The Plan needs to discuss the risks associated with levee failure, in particular:

- Consequences of levee failure or breach.
- Existing deficiencies in the system, including existing seepage, boils, or voids under the levee.
- Urgency of repair work.

### **5. Identification of opportunities for multi-objective projects.**

The Plan should, at a minimum, describe opportunities and significant constraints for achieving the following objectives:

- Ecosystem restoration and habitat enhancement component.
- Reversing land subsidence.

- Ensuring adequate and effective emergency response plans.
- Benefitting water quality.
- Improving water supply reliability.

#### **6. Habitat mitigation and enhancement.**

The plan should describe how work to be carried out under the Plan will meet the requirements of California Water Code Section 12314, which requires no net loss of habitat and consistency with net habitat improvement. The plan should describe the following:

- Baseline habitat conditions prior to the plan.
- The anticipated impact to habitats and anticipated extent of the impact based on the identified needs for levee repair and other work outlined in the plan.
- How the requirements for no net loss of habitat and net habitat enhancement will be met.

#### **7. Compliance with the California Environmental Quality Act and obtaining required permits.**

The Plan should describe all the following:

- Types of permits and environmental compliance documents required.
- Status of the environmental documentation.
- Status of the permit process.

Appendix F. 2009 Requirements for the Five-Year Plan



# Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities

**Table G-1 Delta Stewardship Council Very High Priority Levee Investments**

Maintaining Agency	Location	Very High Priority Work	Cost
RD 2028	Bacon Island	Phase 1-6: Bulletin 192-82 standard levee project.	\$49,369,200
BIMID	Bethel Island	To meet Bulletin 192-82 standard. 1. Levee rehabilitation. 2. Seepage control project. 3. Erosion control project.	\$20,000,000
RD 2042	Bishop Tract	Maintenance.	\$0
RD 404	Boggs Tract	Maintenance.	\$0
BALMD	Brannan Andrus	1. Crown raising to PL 84-99 standard. 2. Crown raising and erosion repair. 3. French drain. 4. French drain and stability berm. 5. Crown raising and stability berm.	\$5,413,077
RD 800	Byron Tract	1. Rock slope protection project. 2. Levee stability project.	\$14,258,000
CLD	Collinsville	1. Below HMP levee work. 2. At HMP or above levee work. 3. At Bulletin 192-82 standard or above levee work.	\$2,372,400
RD 2137	Dutch Slough	Maintenance.	\$0

Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities

<b>Maintaining Agency</b>	<b>Location</b>	<b>Very High Priority Work</b>	<b>Cost</b>
RD 2136	Grizzly West	Phase 1: Below HMP levee project. Phase 2: Below HMP levee project. Phase 3: Development of emergency operation plan and flood flight materials. Toe berm.	\$5,624,000
RD 2060	Hasting Tract	1. Hasting Cut/Lindsey-Cache Slough Tide gate project. 2. Erosion repair project. Planning/Permitting/Design projects: 1. Lindsey Slough seepage investigation. 2. Cache Slough/Wright Cut levee rehabilitation.	\$7,750,000
RD 799	Hotchkiss Tract	1. Levee rehabilitation and other flood control project. 2. Seepage control. 3. Erosion control.	\$22,200,000
RD 830	Jersey Island	Phases 1–5: Splash berm, placement of fill on the landside, and placement of aggregate base on the levee crown.	\$19,957,767
RD 2039	Jones Tract Upper	Above PL 84–99 and includes additional components for stability, seepage and enhancement. Also includes additional water side slope and quarry stone for slope protection.	\$11,119,338
RD 2038	Jones Tract Lower	Above PL 84–99 and includes additional components for stability, seepage, and enhancement. Includes additional waterside slope with quarry stone for slope protection.	\$4,030,935
RD 1608	Lincoln Village West	Only routine maintenance work.	\$0
RD 2110	McCormack-Williamson	Maintenance.	\$0

Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities

<b>Maintaining Agency</b>	<b>Location</b>	<b>Very High Priority Work</b>	<b>Cost</b>
RD 2030	McDonald Island	1. Rock slope protection. 2. Meet Dames & Moore standard. 3. Identification of potential multibenefit projects to incorporate into levee improvement projects.	\$9,958,000
RD 524	Middle Roberts Island	Phase 1: Riprap rock slope protection. Phase 2: Bulletin 192-82 levee improvements.	\$18,309,000
RD 544	Upper Roberts Island	Phase 1: Riprap rock slope protection. Phase 2: Bulletin 192-82 levee improvements.	\$48,925,000
RD 348	New Hope Tract	1. PL 84-99 Beaver Slough rehabilitation project. 2. PL 84-99 Mokelumne River. 3. Multibenefit project. 4. Debris removal.	\$21,398,000
RD 501	Ryer Island	Rock slope protection.	\$12,282,000
RD 348	Sherman Island	Phase 1: PL 84-99 rehabilitation project. Phase 2: Highway 160 erosion repair project. Phase 3: San Joaquin River multibenefit project — Phase 2.	\$23,310,000
RD 2127	Simmons-Wheeler	Below HMP standard levee work.	\$701,850
RD 1614	Smith Tract	Meet above PL 84-99. 1. Rock slope protection project. 2. Smith Canal gate project. 3. Wisconsin pump station upgrade project.	\$2,880,000
RD 38	Staten Island	Phase 1: Multibenefit project. Phase 2-5: PL 84-99 rehabilitation project.	\$37,300,000

Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities

<b>Maintaining Agency</b>	<b>Location</b>	<b>Very High Priority Work</b>	<b>Cost</b>
RD 548	Terminous Tract	Phase 1: HMP standard levee project. Phase 2–6: PL 84-99 standard levee project. Multibenefit project. Emergency preparedness.	\$66,273,707
RD 1601	Twitchell Island	1. Rock slope protection. 2. Bulleting 192-82 standard levee project. 3. San Joaquin River levee project — construct toe berm and a setback levee. The setback levee will create channel margin habitat along the waterside of San Joaquin River.	\$41,281,050
RD 556	Upper Andrus Island	Maintenance.	\$0
RD 1	Union Island East	Phase 1: Rock Slope Protection. Phase 2: Pipe Penetration Project.	\$9,028,000
RD 2	Union Island West	Phase 1: Rock Slope Protection. Phase 2: Bulletin 192-82 Levee Project. Phase 3: Levee Seepage Repair.	\$20,154,000
RD 1607	Van Sickle Island	Phase 1: Levee rehabilitation, addressing areas with landside and slope stability issues. Phase 2–4: Levee rehabilitation, land side berm, and crown raising.	\$24,230,000
RD 2040	Victoria Tract	Rock slope protection. Bulletin 192-82 levee project with 28" levee crest. Levee seepage project.	\$19,372,000
RD 2026	Webb Tract	Phase 1–4: Bulletin 192-82 levee project.	\$21,300,000
RD 828	Weber Tract	Rock slope protection.	\$1,032,000
<b>Very High Priority Total</b>			<b>\$539,829,324</b>

**Table G-2 Delta Stewardship Council High Priority Levee Investments**

<b>Maintaining Agency</b>	<b>Location</b>	<b>High Priority Work</b>	<b>Cost</b>
RD 756	Boulding Island	Phases 1–6: Levee rehabilitation to the Bulletin 192-82 standard. Phase 7: Minimal levee rehabilitation and placement of aggregate base on the levee crown.	\$75,392,000
RD 2033	Brack Tract	Phase 1. Construction of stability berm and rehabilitation of the levee to Bulletin 192-82 standard. Phase 2: Levee rehabilitation to Bulletin 192-82 standard. Phase 3: Bulletin 192-82 levee project. Phase 4: Bulletin 192-82 and construction of a toe berm project. Phase 5: Bulletin 192-82 levee project.	\$33,440,000
RD 2059	Bradford Island	1. HMP standard levee project. 2. Seepage control project. 3. Scour/erosion control project.	\$19,790,925
RD 2098	Cache Haas	Maintenance.	\$0
RD 536	Egbert Tract	Phase 1: Emergency Response. Phase 2: Maintaining PL 84-99 eligibility. Phase 3: Repairs, participation in the DWR Differed Maintenance Program (DMP) and the DWR Flood System Repair Program (FSRP).	\$3,170,000
RD 773	Fabian Tract	Phase 1: Rock slope protection project. Phase 2: Levee slope stability project, which includes construction of stability berm. Phase 3: Bulletin 192-82 levee project. Phase 4: Bulletin 192-82 levee project.	\$59,531,000
RD 1002	Glanville Tract	Levee improvement to meet PL 84-99 standard.	\$2,003,109

Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities

<b>Maintaining Agency</b>	<b>Location</b>	<b>High Priority Work</b>	<b>Cost</b>
RD 3	Grand Island	Phase 1: Erosion repair. Phase 2: Seepage repair. Phase 3: Erosion repair. Phase 4: Encroachment inspection/outreach. Phase 5: Emergency response planning.	\$5,768,750
RD 2025	Holland Tract	Phases 1-4: Bulletin 192-82 levee project.	\$9,300,000
RD 2084	Little Egbert	Routine maintenance.	\$0
RD 684	Lower Roberts Island	Phase 1: Construction of toe berm, removal of existing encroachment, and seepage repairs. Phase 2: Construction of seepage/stability toe berm and PL 84-99 back slope. Phase 3: Reestablish existing toe berm original elevation. Phase 4: Restore PL 84-99 standard multibenefit project.	\$6,917,690
RD 2027	Mandeville Island	Meet Bulletin 192-82 standard for levee geometry and addressing any specific geotechnical seepage and or stability issues.	\$64,536,000
RD 999	Netherlands	1 and 2. PL 84-99 maintenance and waterside erosion repair on Sutter Slough and Elk Slough. 3. PL 84-99 maintenance and repair levee slope stability, landside erosion, and cracking. 4. PL 84-99 maintenance, encroachment evaluation, and inspection. 5. Emergency planning.	\$3,600,000

Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities

<b>Maintaining Agency</b>	<b>Location</b>	<b>High Priority Work</b>	<b>Cost</b>
RD 2024	Orwood and Palm Tracts	Phase 1: Above PL 84-99 standard. Phase 2: Levee widening, building up the landside slope and relocation of pump station to allow the existing landside to be filled. Phase 3: Addressing non-confirming encroachments, erosion repairs, and improving an all-weather road. Phase 4: Slope protection, erosion repairs, and emergency preparedness. Multibenefit project on Middle River and Old River, providing habitat and emergency stockpiles.	\$5,630,935
RD 551	Pearson District (aka "Pierson District")	1. Repairs and deferred maintenance. 2. Seepage repairs and crown subsidence work. 3. Erosion repairs, ongoing landowner coordination on encroachment issues.	\$7,240,000
RD 2037	Rindge Tract	Phase 1–5: Bulletin 192-82 and construction of a toe berm.	\$31,443,000
RD 2115	Shima Tract	1. Rock slope protection project. 2. Bulletin 192-82 levee project with 24" wide levee crest.	\$8,477,000
RD 563	Tyler Island	1. Rock slope protection. 2. Levee failure repair. 3. Levee seepage repair. 4-5. Bulletin 192-82 Levee project, 24" wide levee crest.	\$17,814,000
RD 2065	Veal Tract	Phase 1: Bulletin 192-82 levee project. Phase 2: Bulletin 192-82 levee project. Phase 3: Habitat enhancement project.	\$3,905,000
RD 554	Walnut Grove	1. Levee erosion repairs. 2. Crown raising to meet above PL 84-99 standard. 3. French drain and toe ditch replacement.	\$1,091,621

Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities

Maintaining Agency	Location	High Priority Work	Cost
RD 2072	Woodward Island	Phase 1: PL 84-99, HMP, and above PL 84-99 levee project. Phase 2: PL 84-99, HMP, and above PL 84-99 levee project. Phase 3: Multibenefit project.	\$7,517,024
RD 2068	Yolano District	Maintenance	\$0
<b>High Priority Total</b>			<b>\$366,568,054</b>

**Table G-3 Delta Stewardship Council Other Priority Levee Investments**

Maintaining Agency	Location	Other Priority Work	Cost
RD 2126	Atlas Tract	Maintenance	\$0
RD 2117	Coney Island	Bulletin 192-82 standard levee project while addressing any specific geotechnical seepage and stability issues.	\$11,824,000
RD 2111	Dead Horse Island	1. Rock slope protection. 2. Bulletin 192-82 with 24' levee crown. 3. Emergency response.	\$20,897,000
RD 2029	Empire Tract	Phase 1: Meet Bulletin 192-82 standard and construction of a toe berms.	\$26,390,000
RD 2113	Fay Island	1. Rock slope protection. 2. Bulletin 192-82 levee project 24' wide levee crest. 3. Levee seepage berm project.	\$10,230,000
RD 2044	King Island	Phase 1: Bulletin 192-82 levee project, seepage berm, toe berm. Phase 2: Bulletin 192-82 levee project with toe berm. Phase 3: Bulletin 192-82 levee project with toe berm. Phase 4: Bulletin 192-82 levee project. Phase 5: Bulletin 192-82 levee project with toe berm.	\$22,460,000



Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities

<b>Maintaining Agency</b>	<b>Location</b>	<b>Other Priority Work</b>	<b>Cost</b>
RD 307	Lisbon District	Phases 1–5: Rock slope protection.	\$7,793,000
RD 2041	Medford Island	Phase 1: Bulletin 192-82 levee rehabilitation project. Phase 2: Bulletin 192-82 levee rehabilitation project plus a 24' wide levee crest. Phase 3: Bulletin 192-82 levee rehabilitation project plus toe berm. Phase 4: Bulletin 192-82 levee project plus toe berm.	\$11,243,000
RD 150	Merritt Island	Phase 1-4: PL 84-99 bank protection, maintenance and repair, damage repairs, permitting, design, and encroachment evaluation and inspections. Phase 5: Emergency planning.	\$4,000,000
RD 1007	Pico Naglee	Levee work to meet PL 84-99 or above. Obstructive vegetation will be removed, access ramps will be provided through the addition of supplemental fill. Waterside slopes will be stabilized, dredging will be performed for beneficial reuse.	\$9,643,397
RD 1667	Prospect Island	Only routine maintenance work.	\$0
RD 2090	Quimby Island	1. Rock slope protection project. 2. Bulletin 192-82 levee project. 3. 24' levee crest.	\$10,377,000
RD 2114	Rio Blanco Tract	1. Rock slope protection project. 2. Bulletin 192-82 with 24' wide levee crest.	\$4,791,000
RD 403	Rough and Ready Island	Maintenance	\$0
RD 2089	Stark Tract	Maintenance	\$0
RD 349	Sutter Island	Maintenance	\$0

Appendix G. 2018 Proposed Work Highlighted by Delta Stewardship Council's Levee Investment Priorities

<b>Maintaining Agency</b>	<b>Location</b>	<b>Other Priority Work</b>	<b>Cost</b>
RD 2023	Venice Island	1. Rock slope protection. 2. Bulletin 192-82 project with 24' wide levee crest. 3. Bulletin 192-82.	\$14,901,010
RD 2119	Wright-Elmwood Tract	Maintenance.	\$0
<b>Other Priority Total</b>			<b>\$154,549,407</b>
<b>Total for All Work</b>			<b>\$1,060,946,785</b>

