

GUIDANCE ON GENERAL PLAN AMENDMENTS FOR ADDRESSING FLOOD RISK

September 2014



Front Cover Photo: aerial view of the Sacramento River, South Land Park, and the Little Pocket neighborhood (November 2009)
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**STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES**



**GUIDANCE
ON GENERAL PLAN AMENDMENTS
FOR ADDRESSING FLOOD RISK**

SEPTEMBER 2014

Preface

Since the mid-1800s, flooding has caused the destruction of economic assets and the loss of lives in the Central Valley. These flooding events have prompted local, State of California (State), and federal entities to construct major flood management facilities along the Sacramento and San Joaquin rivers and tributaries to alleviate flooding conditions and reduce flood damages. Many of these facilities comprise the State Plan of Flood Control (SPFC). Despite the construction of flood management projects, four floods in the past 30 years (1983, 1986, 1995, and 1997) have caused over \$3 billion in damage within the Central Valley, shedding light on the susceptibility of areas within the Central Valley, including growing communities, to major flood events.

The devastation and loss of life resulting from Hurricane Katrina in 2005 further raised public awareness of super storm events throughout the nation. In response, California voters in November 2006 passed the [Disaster Preparedness and Flood Prevention Bond Act](#) (Proposition 1E) and the [Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act](#) (Proposition 84), authorizing the sale of nearly \$5 billion in State bonds for flood management improvements throughout the State with over \$4 billion of this amount specifically earmarked for repairs and improvements to State and federal flood projects within the Central Valley.

Recognizing the linkages between sustainable flood management and land use planning, the California Department of Water Resources (DWR) in 2006 launched the [FloodSAFE California \(FloodSAFE\)](#) initiative. The following year, the California Legislature passed the 2007 flood legislation package of six landmark bills addressing flood risk, which require DWR, and other entities such as cities and counties, to address the relationship between land use planning and flood safety. Through systemwide approaches, infrastructure improvements, and flood risk awareness, both efforts aim to link prudent land use planning and flood risk management in a holistic manner to effectively reduce the potential adverse consequences of flooding.

As part of its ongoing technical assistance efforts, in October 2010, DWR published a guidance document, entitled [Implementing California Flood Legislation into Local Land Use Planning: A Handbook for Local Communities \(2010 Handbook\)](#) that describes how four of the six bills from the 2007 flood legislation affect the responsibility of cities and counties to address flood risks as part of local land use planning



processes. As implementation of the 2007 legislation has progressed, the [2010 Handbook](#) has benefited cities and counties in subsequent local land use decisions, further strengthening the linkage between flood management and local land use actions in flood prone areas.

DWR was given a number of responsibilities by the California Legislature in the 2007 flood legislation and subsequent amendments. Based on these directives, DWR has completed the [2012 Central Valley Flood Protection Plan \(2012 CVFPP\)](#), which was adopted by the [Central Valley Flood Protection Board \(CVFPB\)](#) on June 29, 2012. As part of separate but related efforts, DWR in May 2012 completed the [Urban Levee Design Criteria](#), which provides engineering criteria and guidance in situations where levees and floodwalls are used to provide an urban level of flood protection. Subsequently, in November 2013, DWR completed the [Urban Level of Flood Protection Criteria](#) describing procedural criteria associated with making an Urban Level of Flood Protection (ULOP) finding consistent with State law.

In addition, as directed by [California Water Code §9610\(d\)\(1\)](#), DWR provided informational materials, including floodplain maps, to urban areas in the Sacramento-San Joaquin Valley to support them in making determinations relating to their level of flood protection. These maps provide information about flooding if SPFC facilities were to fail during a 200-year flood event. It is important to note that these maps are in addition to, and differ from, regulatory federal maps prepared by the Federal Emergency Management Agency (FEMA) to support the National Flood Insurance Program (NFIP) and flood management studies conducted by the U.S. Army Corps of Engineers (USACE).

Given the continuing and evolving implementation of the 2007 flood legislation, subsequent legislative amendments, and State flood management program developments, DWR released this *Guidance on General Plan Amendments for Addressing Flood Risk (Guidance)* as an advisory resource to help cities and counties in the Sacramento-San Joaquin Valley address flood risk based on [California Government Code §65302.9](#) general plan amendment requirements.

DWR developed this *Guidance* for technical assistance purposes, consistent with its authority and responsibility. DWR does not have an implementation role in the general plan amendment process. DWR will, however, continue to collaborate with local agencies to provide DWR-generated data and other information based on the direction in [California Government Code §65302.9\(c\)](#).

To obtain additional information on this Guidance or the [2010 Handbook](#) go to DWR's Local Flood Risk Planning and Guidance website at www.water.ca.gov/localfloodriskplanning. Similar to the [2010 Handbook](#), this Guidance can also be a resource for cities and counties statewide.

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SECTION 1 Introduction

- 1.1 2007 California Flood Legislation
- 1.2 General Plan Amendment Requirements and Compliance Schedule
- 1.3 Related Legislation, Programs, Activities, and Initiatives
- 1.4 Document Organization

The 2007 California flood legislation package contained many provisions related to the requirements for incorporating flood risk considerations into land use planning and management. Some of these provisions are to be applied statewide, while other provisions are specifically applicable to the Sacramento-San Joaquin Valley, and still others are applicable to areas also within the [Sacramento-San Joaquin Drainage District](#), over which the [CVFPB](#) has direct jurisdiction.

This *Guidance* has been prepared by the California Department of Water Resources (DWR) to assist cities and counties in the **Sacramento-San Joaquin Valley**, as defined in [California Government Code §65007\(h\)](#), in amending their general plans for compliance with the requirements of [California Government Code §65302.9](#) to address flood risk in specified ways.

DWR recognizes that most of the 2007 legislative directives are ultimately a local agency's responsibility and will require significant efforts by those affected local jurisdictions to address; however, DWR will collaborate and assist cities and counties with these efforts by providing information and other technical assistance. DWR also encourages local agencies to cooperate and share information, resources, and approaches both independently and through associations such as the [California State Association of Counties \(CSAC\)](#), [League of California Cities](#), [Rural County Representatives of California \(RCRC\)](#), and the [California Central Valley Flood Control Association \(CCVFCA\)](#) to achieve economies of scale and efficiencies in documentation when amending their general plans.

This Guidance neither guarantees local agency compliance nor constitutes an extension of regulatory requirements in the general plan amendment process.

Follow the data request procedure in Appendix C to acquire more information or other technical assistance from DWR.

1.1 2007 California Flood Legislation

Recognizing the significance of flood risk in California and its negative consequences to public safety, economic development, and environmental sustainability, the California Legislature enacted six interrelated bills in 2007—Senate Bills (SB) [5](#) and [17](#), and Assembly Bills (AB) [5](#), [70](#), [162](#), and [156](#)—to improve flood management in a sustainable way, strengthen the linkage between local land use planning decisions and flood management practices, and guide the use of Propositions 1E and 84 funds. Together, these bills added or amended over 25 sections in the California Government Code, Health and Safety Code, Public Resources Code, and Water Code.

The 2007 California flood legislation package outlined a comprehensive approach to improving flood management at the State and local levels, with elements to address both the chance of flooding (e.g., improvements to reduce the probability that floods will occur) and the consequences when flooding occurs. State and local actions related to the legislation can largely be grouped into the following three categories:

1. provide updated information on flood risks statewide,
2. require local land use planning and management to consider potential flood risks in the Sacramento-San Joaquin Valley, and
3. develop plans to address flood management system problems in areas protected by the SPFC.

For the definition of the Sacramento-San Joaquin Valley and the SPFC see Appendix B, Acronyms and Definitions.

DWR implements these legislative requirements through their FloodSAFE initiative, which was created in 2006 and is a long-term strategic initiative developed to reduce flood risk in California. FloodSAFE establishes a vision for a sustainable integrated water management and emergency response system throughout California that improves public safety, protects and enhances environmental and cultural resources, and supports economic growth by reducing the probability of destructive floods, promoting beneficial floodplain processes, and minimizing damage caused by flooding.

Many programs and projects conducted under this initiative address one or multiple aspects of the legislative intent of the 2007 California flood legislation. Recognizing that addressing the risks of flood damage in the Central Valley and statewide will take decades, FloodSAFE as a whole is an important component of DWR's larger integrated water management (IWM) initiative to achieve a sustainable, robust, and resilient system to benefit Californians.

Since 2007, there have been legislative amendments to [SB 5 \(2007\)](#) that relate to land use planning requirements. [SB 1278 \(2012\)](#), [AB 1965 \(2012\)](#), and [AB 1259 \(2013\)](#), for example, are the most recent amendments. These amendments provided further clarifications and directed DWR by July 2, 2013, to release 200-year informational floodplain maps as directed by [California Water Code §9610\(d\)](#) for urban areas in the Sacramento-San Joaquin Valley in the event of the failure of SPFC facilities, and modified the requirements for applicable land use decisions. [AB 1165 \(2009\)](#) added conditions associated with adequate progress toward meeting an Urban Level of Flood Protection, and [SB 1070 \(2010\)](#) clarified the Sacramento-San Joaquin Valley's southern boundary by excluding lands lying within the Tulare Lake basin, including the Kings River.

1.2 General Plan Amendment Requirements and Compliance Schedule

This *Guidance* focuses on the [SB 5 \(2007\)](#) legislative requirements, as amended, that are most relevant to local land use planning and provide the directives for cities and counties in the Sacramento-San Joaquin Valley to amend their general plans based on the [2012 Central Valley Flood Protection Plan \(2012 CVFPP\)](#). More specifically, [California Government Code §65302.9](#) requires that cities and counties within the Sacramento-San Joaquin Valley amend their general plans to include:

- the locations of SPFC facilities and areas protected by the facilities;
- location of flood hazard zones; and
- goals, policies, objectives, and feasible mitigation measures based on the data and analysis contained in the CVFPP for the protection of lives and property to reduce the risk of flood damage.

Additionally, in compliance with the requirements of [California Government Code §65860.1](#), jurisdictions in the Sacramento-San Joaquin Valley will need to amend their zoning and other applicable ordinances to be consistent with the newly revised general plan content within one year of adopting general plan amendments.

This Guidance focuses on the 2007 California flood legislation [SB 5](#) requirements for Sacramento-San Joaquin Valley communities.

See Section 3 for a detailed explanation of general plan amendment requirements and associated recommendations and considerations.

It is important for cities and counties to understand that [SB 5 \(2007\)](#), as amended does not specify any review, approval, or enforcement authority by any State agency, but instead relies on the due diligence of cities and counties to incorporate flood risk considerations into floodplain management and planning in compliance with the general plan amendment requirements ([California Government Code §65302.9](#)).

Once the zoning consistency has been completed, other provisions in [SB 5 \(2007\)](#), as amended, become effective, including provisions relating to certain land use decisions based on a finding that the land use decision satisfies an Urban Level of Flood Protection or the national Federal Emergency Management Agency (FEMA) standard for flood protection. Because local jurisdictions may wish to anticipate these future Urban Level of Flood Protection or FEMA finding requirements in their general plan amendments, this *Guidance* also includes and/or references recommendations regarding how that may be accomplished.

[SB 1278 \(2012\)](#) also modified the [SB 5 \(2007\)](#) compliance schedule for cities and counties to amend their general plans and zoning ordinances from the [2012 CVFPP](#) adoption to July 2, 2013, and the schedule date for the availability of [California Water Code §9610\(d\)](#) maps, as follows:

- cities and counties have up to 24 months after July 2, 2013 (or no later than July 2, 2015) to amend their local general plans, incorporating the aforementioned information, and
- an additional 12 months thereafter (or by the 12 months after the general plan amendment adoption date or no later than July 2, 2016) to update local zoning ordinances, which can also include updates to the local floodplain management ordinance, as applicable, to be consistent with their amended general plan.

Overall, the requirement that all cities and counties within the Sacramento-San Joaquin Valley, as defined in [California Government Code §65007\(h\)](#), make findings related to an Urban Level of Flood Protection or the national FEMA standard of flood protection for affected land use decisions applies after the general plan and zoning ordinance amendments are adopted through individual local planning processes, or beginning no later than July 2, 2016.

California Government Code [§65865.5](#), [§65962](#), and [§66474.5](#) requirements are effective once the general plan and zoning ordinance amendments are adopted through local planning processes, or no later than July 2, 2016.

OTHER RELEVANT 2007 FLOOD LEGISLATION GENERAL PLAN AMENDMENT REQUIREMENTS

As part of the 2007 California flood legislation, there are other floodplain management related general plan requirements that apply to cities and counties **statewide** and also within the **Sacramento-San Joaquin Drainage District**. Most prominent are those general plan requirements in [California Government Code §65302](#) enacted by [AB 162 \(2007\)](#). The [AB 162 \(2007\)](#) requirements have been in effect for over five years and are triggered by the first amendment to the local agency's housing element occurring on or after January 1, 2009. Sacramento-San Joaquin Valley communities should be aware of these additional requirements, described further below, to be as consistent and efficient as possible with compliance efforts when amending their general plans to address flood risk.

[AB 162 \(2007\)](#) requires every city and county across the State to review and amend, as appropriate, the land use ([California Government Code §65302\(a\)](#)), conservation ([California Government Code §65302\(d\)](#)), and safety ([California Government Code §65302\(g\)](#)) elements of its general plan for the consideration and incorporation of information regarding flood hazards; mapping; and the establishment of flood risk management goals, policies, objectives, and feasible implementation measures to help protect their communities from the effects of flooding. No amendments have been made to [AB 162](#) since it was chaptered in 2007. Cities and counties should refer to the [2010 Implementing California Flood Legislation into Local Land Use Planning: A Handbook for Local Communities \(2010 Handbook\)](#) for the best available information on the [AB 162 \(2007\)](#) statutory requirements.

Many of the [AB 162 \(2007\)](#) requirements overlap with the [SB 5 \(2007\)](#) requirements discussed in this *Guidance*. For example, [AB 162 \(2007\)](#) states that the safety element amendment is required to establish “a set of comprehensive goals, policies, and objectives . . . for the protection of the community from the unreasonable risks of flooding” Because these requirements overlap to a significant degree, and since many jurisdictions throughout the State still need to adopt the required general plan land use, safety, and conservation element amendments based on [AB 162 \(2007\)](#), this *Guidance* can also provide recommendations regarding the other statewide requirements.

It is important to view the general plan requirements in the context of the entire 2007 California flood legislation package.

Cities and counties statewide and within the [Sacramento-San Joaquin Drainage District](#) should refer to the [2010 Handbook](#) for the best available information on [AB 162 \(2007\)](#) general plan land use, conservation, and safety element requirements. Alternatively due to legislative updates and the adoption of the CVFPP since the [2010 Handbook](#) was released, Sacramento-San Joaquin Valley communities should refer to this *Guidance* document as the source for the latest general plan flood management information to address [SB 5 \(2007\)](#) requirements, as amended.

Cities and counties should also refer to the [2010 Handbook](#) for information regarding [AB 2140 \(2006\)](#), which allows local jurisdictions statewide to adopt a local hazard mitigation plan (LHMP) as part of the general plan safety element to qualify for an increased State share of California Disaster Assistance Act funding. Additional information may also be obtained on Cal OES' website at: [http://www.oes.ca.gov/HazardMitigation/Pages/Local-Hazard-Mitigation-Planning-Program-\(LHMP\).aspx](http://www.oes.ca.gov/HazardMitigation/Pages/Local-Hazard-Mitigation-Planning-Program-(LHMP).aspx).

The CVFPB's review of the general plan safety element under [AB 162 \(2007\)](#) is a separate requirement for Sacramento-San Joaquin Drainage District communities. [SB 5 \(2007\)](#) as amended does not specify any review, approval, or enforcement authority by any State agency for compliance with the general plan amendments as outlined under [California Government Code §65302.9](#).

[AB 162 \(2007\)](#) further requires that cities and counties within the [Sacramento-San Joaquin Drainage District](#) consult with the [CVFPB](#) prior to preparing or revising their safety element ([California Government Code §65302\(g\)\(5\)](#)) and to submit the draft element to the [CVFPB](#) for review and comment ([California Government Code §65302.7](#)).

To ensure a general plan safety element is submitted to the [CVFPB](#) that addresses the statutory requirements of [AB 162 \(2007\)](#), refer to [Implementing California Flood Legislation into Local Land Use Planning: A Handbook for Local Communities \(2010 Handbook\)](#) for additional information and technical assistance. Cities and counties within the [Sacramento-San Joaquin Drainage District](#) are also encouraged to utilize the [General Plan Safety Element Review Crosswalk](#), which is a step-by-step tool that walks through the statutory requirements.

The following provides additional information the [CVFPB](#) recommends city and county general plans include, as applicable, for local conditions:

- Evacuation routes in the event of flooding from any source.
- If the city or county is vulnerable to multiple sources of flooding, delineate each flooding source and resulting inundation area.
- A land plan that differentiates the existing and planned development areas.
- Geographic information systems (GIS) electronic mapping that layers, when possible, floodplain mapping information, land use designations, safety evacuation routes, natural features, dam failure inundation, and other applicable flood management information on one figure.

Lastly, as a reminder for cities and counties within the [Sacramento-San Joaquin Drainage District](#), the [CVFPB](#) has an encroachment permit requirement that must be adhered to and should be included as a general plan policy, as applicable, for local conditions:

- If any project, including the modification of an existing project, falls within the jurisdiction regulated by the [CVFPB](#) (e.g., levees, regulated streams, and designated floodways), the city or county must apply for an encroachment permit from the [CVFPB](#).

The [CVFPB](#) exercises jurisdiction over the levee cross-section, the waterward area between project levees, a minimum 10-foot-wide strip adjacent to the landside levee toe, within 30 feet of the top of the banks of unleveed project channels, and within designated floodways adopted by the [CVFPB](#). Activities outside of these limits which could adversely affect flood management projects are also under [CVFPB](#) jurisdiction.

1.3 Related Legislation, Programs, Activities, and Initiatives

Cities and counties should coordinate, as appropriate, with local, regional, State, and federal flood management agencies as well as other neighboring jurisdictions for programs and projects that could be useful with their general plan amendment needs. The following provides additional relevant information on the associated State legislation and DWR programs, activities, and initiatives that are related to this *Guidance*.

FLOODSAFE CALIFORNIA PROGRAMS AND ACTIVITIES

The following is a brief summary of DWR's FloodSAFE California multi-faceted initiative, designed to improve flood management in the State using an integrated approach to flood management. As previously mentioned, FloodSAFE encompasses programs and activities related to the development, update, and implementation of the CVFPB, flood management-related data and information collection and development that supports the CVFPB and other statewide efforts, and other statewide programs and projects. DWR's FloodSAFE includes the following Mega Programs, or five categories of programs, projects, and activities.

- 1. Flood Management Planning.** This includes formulating strategies, plans, and investment priorities for implementation of flood management projects.
- 2. Floodplain Risk Management.** This includes working closely with local governments and federal agencies in promoting prudent management of floodplains to reduce flood risk.
- 3. Flood Risk Reduction Projects.** This includes working in coordination with local and federal agencies to implement new flood projects.

For more information on what is included within the [2012 CVFPB](#) refer to Appendix A.



4. **Flood System Operations & Maintenance.** This includes reducing risk through maintaining levees, hydraulic control structures, pumping plants, bridges, and channels as the responsible agency.
5. **Flood Emergency Response.** This includes preparing for and responding to flood threats in close coordination with local, State, and federal entities.

This *Guidance* is an activity developed under the Floodplain Risk Management Mega Program to support cities and counties with their implementation of flood management actions.

DWR recommends joining the FloodSAFE California mailing list at floodsafe@water.ca.gov to stay informed about FloodSAFE programs, activities, and accomplishments.

DWR will work in close coordination with State, federal, and local agencies for development and implementation of all these programs and activities. As a result, all data, analyses, and information generated through these efforts are all potentially available for cities and counties to use in their current and future general plan update and regional flood management planning efforts.

INTEGRATED WATER MANAGEMENT INITIATIVE

DWR in 2013 began promoting a modern, holistic approach to water management under the integrated water management (IWM) initiative. Expanding from the vision and implementation experience of FloodSAFE, IWM is a framework for planning and implementation to actively address three major categories of benefits and objectives:

1. Improving Public Safety
2. Fostering Environmental Stewardship
3. Supporting Economic Stability

The vision of IWM is to establish State government investment priorities in innovation and infrastructure; develop protocols for evaluating and reporting of water resource system performance, resilience, and return of benefits on investment; compose an implementation plan with identified potential sources of funding for implementation of Governor Jerry Brown's 2014 [California Water Action Plan](#); and provide a catalyst for aligning and streamlining government agencies' policies, regulations, data, tools, plans, and programs for improved efficiency and delivery.

DWR developed the [2012 CVFPP](#) with practices and an integrated approach consistent with IWM. Furthermore, IWM is incorporated in the [California Water Plan](#) 2013 update as a common approach to all resources management strategies and is also reflected in the

November 2013 [California's Flood Future: Recommendations for Managing the State's Flood Risk](#) for statewide flood management considerations.

CENTRAL VALLEY FLOOD PROTECTION PLAN

The CVFPP is a critical document that guides California's participation with cooperation from federal and local agencies in managing flood risk along the Sacramento and San Joaquin river systems. The CVFPP includes a State Systemwide Investment Approach (SSIA) approach for sustainable, integrated water management in areas currently protected by facilities of the SPFC. The CVFPP will be updated every five years, with each update providing support for subsequent program and project implementation.



Pursuant to [California Water Code §9600 through §9625](#), DWR completed the draft CVFPP in December 2011 and the [Central Valley Flood Protection Board](#) adopted the final CVFPP on June 29, 2012, relying in part on a Program Environmental Impact Report (PEIR). The [2012 CVFPP](#) includes important SPFC documentation (e.g., [2010 SPFC Descriptive Document](#) and the [2011 Flood Control System Status Report](#)) and ties to subsequent documents (e.g., [2012 Central Valley Flood System Conservation Framework](#), [2012 Urban Levee Design Criteria](#) and [2013 Urban Level of Flood Protection Criteria](#)). The CVFPP was prepared as part of activities under FloodSAFE, incorporating data, analyses, and information from many other FloodSAFE programs, projects, and activities, including but not limited to, levee and geotechnical evaluation with new exploration data, routine inspection data, hydrologic and hydraulic data and tool development and analyses, conservation and environmental stewardship opportunities, and significant stakeholder input.

The [2012 Central Valley Flood Protection Plan](#) describes the State's vision for a sustainable flood management practice in the Central Valley. With consideration of a range of potential approaches, the CVFPP recommends a SSIA that includes a 200-year Urban Level of Flood Protection for existing urban and urbanizing areas that receive protection from the SPFC, and a 100-year level of flood protection for small communities, where feasible, through a combination of physical improvements and nonstructural actions. The State's investments in the remaining rural-agricultural areas support flood management improvements in rural areas that preserve rural-agricultural viability consistent with local land use planning.

See the [2012 CVFPP](#) for more detail on the State Systemwide Investment Approach and associated management actions for urban and urbanizing areas, small communities, and rural-agricultural areas.

With early implementation of some elements in the CVFPP beginning in 2007 with available bond funding, DWR is implementing the CVFPP in coordination with State and federal agencies, regional and local flood management agencies, and other interest parties, marking an important step toward maintaining and improving SPFC facilities to achieve sustainable flood management in the Central Valley.

The 2007 flood legislation also required that the CVFPP be amended in five-year intervals, with the first amendment set to occur in 2017. In preparation for the [2017 CVFPP update](#), DWR is undertaking both regional and basin-wide planning processes, developing a conservation strategy, and working on other implementation actions under FloodSAFE, all in collaboration with affected stakeholders.

CALIFORNIA WATER CODE §9610(d) MAPS

An important element in developing local land use flood safety provisions is the identification and mapping of those areas at risk of flooding. As directed by [California Water Code §9610\(d\)\(1\)](#), DWR provided informational materials, including floodplain maps, to urban areas in the Sacramento-San Joaquin Valley to support them in making determinations relating to their level of flood protection. These maps provide information about flooding, including the water surface elevations, if SPFC facilities were to fail during a 200-year flood event.

Consistent with the 2012 CVFPP SSIA, DWR provided the following urban area communities with the [California Water Code §9610\(d\)](#) maps:

- City of Chico
- Yuba City and City of Marysville
- Sacramento Metropolitan Area (cities of Sacramento, West Sacramento, and Elk Grove)
- Cities of Woodland and Davis
- Stockton Metropolitan Area (cities of Stockton and Lathrop)
- City of Merced

These informational maps were a significant undertaking developed as part of the DWR FloodSAFE Floodplain Risk Management Mega Program. It is important to note that these maps are in addition to, and differ from, regulatory federal maps prepared by FEMA to support the NFIP and flood management studies conducted by USACE. Specifically, the maps reflect conditions consistent with the [Urban Level of Flood Protection Criteria](#) and [Urban Levee Design Criteria](#).

The [California Water Code §9610\(d\)](#) requirements were satisfied as of July 2, 2013. It is not anticipated that DWR will prepare additional 200-year informational floodplain maps for other areas within the Sacramento- San Joaquin Valley.

California Water Code §9610(d) maps are not intended for regulatory use and are not subject to the review and approval of the Office of Administrative Law or to any other requirements of Chapter 3.5 (commencing with §11340) of Part 1 of Division 3 of Title 2 of the Government Code.

To acquire hydrology and hydraulics, topography, and levee reliability data, a request can be made to DWR by following the data request procedure in Appendix C.

The DWR mapping effort was intended as the first step in the preparation of 200-year floodplain maps for consideration by the applicable urban area communities in their local planning processes. Local agencies may wish to use these informational maps as the basis to refine local flood risk information. To help further develop 200-year floodplain mapping, as well as for other applications, DWR has made available the underlying hydrology and hydraulics (H&H), topography (including LiDAR), levee reliability data, and other information used in developing the [California Water Code §9610\(d\)](#) maps to the applicable cities and counties. However, even with this information, in some areas these maps may not reflect all sources of flooding, such as non-project levees, contributing streams, or local drainage. As a result, communities will need to evaluate local conditions to determine if these maps are sufficient to support their planning actions or general plan amendment requirements.

URBAN LEVEL OF FLOOD PROTECTION CRITERIA

As discussed above, once the [California Government Code §65302.9](#) general plan amendments and conforming [California Government Code §65860.1](#) zoning ordinance amendments have been adopted, local agencies must then make certain findings regarding an Urban Level of Flood Protection, or the national FEMA standard for flood protection in connection with certain affected land use decisions. To support this future process, DWR developed its [Urban Level of Flood Protection Criteria](#) in November 2013.

As defined in the 2007 California flood legislation and amended by subsequent legislation (e.g., [SB 1278](#) and [AB 1965 of 2012](#)); specifically, [California Government Code §65007\(n\)](#) reads:

"Urban Level of Flood Protection" means the level of protection that is necessary to withstand flooding that has a 1-in-200 chance of occurring in any given year using criteria consistent with, or developed by, the Department of Water Resources. "Urban Level of Flood Protection" shall not mean shallow flooding or flooding from local drainage that meets the criteria of the national Federal Emergency Management Agency standard of flood protection."

Much of the legislative background and information related to an Urban Level of Flood Protection was included in [Implementing California Flood Legislation into Local Land Use Planning: A Handbook for Local Communities \(2010 Handbook\)](#). However, it is important to note that the subsequent 2012 legislative amendments through [SB 1278 \(2012\)](#) and [AB 1965 \(2012\)](#) modified the definition of an Urban

200-Year Floodplain. Pursuant to [California Government Code §65300.2\(a\)](#) for the purposes of general plan amendments, a "200-year floodplain" is an area that has a 1-in-200 chance of flooding in any given year, based on hydrological modeling and other engineering criteria accepted by DWR.

Level of Flood Protection to allow exclusion of shallow flooding and flooding from local drainage that meets the criteria of the national FEMA standard of flood protection, as reflected in the [California Government Code §65007\(n\)](#) above.

[SB 1278 \(2012\)](#) and [AB 1965 \(2012\)](#) also clarified that, for general plan purposes, an “undetermined risk area” is presumed to be at risk during flooding that has a 1-in-200 chance of occurring in any given year unless deemed otherwise by the SPFC, an official National Flood Insurance Program rate map issued by FEMA, or a finding made by a city or county based on a determination of substantial evidence by a local flood agency ([California Government Code §65302.9\(b\)](#)). An “undetermined risk area” means an urban or urbanizing area within a moderate flood hazard zone, as delineated on an official flood insurance rate map issued by FEMA, which has not been determined to have an Urban Level of Flood Protection ([California Government Code §65007\(k\)](#)).

As previously described in the [2010 Handbook](#), and amended by [SB 1278 \(2012\)](#) and [AB 1259 \(2013\)](#), California Government Code [§65865.5](#), [§65962](#), and [§66474.5](#) require that all cities and counties within the Sacramento-San Joaquin Valley, as defined in [California Government Code §65007\(h\)](#), make findings related to an Urban Level of Flood Protection, or the national FEMA standard of flood protection for any of the following affected land use decisions:

- Entering into a Development Agreement for all types of property development
- Approving a discretionary permit or other discretionary entitlement for all development projects
- Approving a ministerial permit for all projects that would result in the construction of a new residence
- Approving a tentative map consistent with the Subdivision Map Act for all subdivisions
- Approving a parcel map for which a tentative map is not required consistent with the Subdivision Map Act for all subdivisions

Per the requirements in [California Government Code §65007\(n\)](#), DWR completed the [Urban Level of Flood Protection Criteria](#), which cities and counties can use to make findings related to an Urban Level of Flood Protection. It is critical to note that cities and counties may develop their own criteria as long as they are consistent with DWR's criteria. In this context, through collaboration with local flood management agencies, interested parties, and stakeholders, DWR developed the *Urban Level of Flood Protection Criteria* in a manner that satisfies the legislative requirements while minimizing interference on local land use authority, providing reasonable details and flexibility, and promoting prudent floodplain management in concert with other State law provisions related to general plans, zoning ordinances, and local land use approvals.

The *Urban Level of Flood Protection Criteria* presents mostly procedural criteria associated with making a finding consistent with the legislative requirements. An Urban Level of Flood Protection could be achieved by either structural or nonstructural means, or a combination of both. Therefore, DWR's [Urban Levee Design Criteria](#) is referenced in the *Urban Level of Flood Protection Criteria* to provide engineering criteria and guidance in situations where levees and floodwalls are used as structural means to provide an Urban Level of Flood Protection.

In 2012, DWR completed the [Urban Levee Design Criteria](#) through a separate, multi-year collaborative process, building on the interim criteria developed by DWR and stakeholders for implementing early facility improvement actions and with funding available through California bond measures, Propositions 1E and 84. Based on the levee design criteria of FEMA and the USACE, the *Urban Levee Design Criteria* also serves as engineering criteria and guidance for DWR when performing urban levee evaluations and participating in urban levee projects. The *Urban Levee Design Criteria* may be updated from time to time, reflecting changes in engineering understanding and standards or evaluation methodology. DWR may also include the *Urban Levee Design Criteria* in future requirements for State funding eligibility.

Cities and counties can use the [Urban Level of Flood Protection Criteria](#) to make findings related to an Urban Level of Flood Protection or develop their own criteria as long as it is consistent with DWR's criteria.

1.4 Document Organization

This *Guidance* is organized into the following sections and appendices.

Section 1. Introduction

Provides the background of why this *Guidance* was prepared; includes a description of the 2007 California flood legislation; discusses the local land use planning obligations required of cities and counties; and supplements the discussion with other related legislation, programs, activities, and initiatives that support and contribute to the collective efforts to improve long-term sustainable flood management practices statewide.

Section 2. Guidance Use and Context

Provides the framework for understanding this *Guidance* including DWR's approach, the recognition of the potential limitations of the *Guidance*, the importance of coordination with local flood management agencies, and discussion of potential changes in the availability of data and information in the future.

Section 3. General Plan Amendment Requirements, Recommendations, and Considerations

Presents flood risk management resource information to assist in amending general plans for compliance with [California Government Code §65302.9](#) and includes associated recommendations for compliance, while also explaining other approaches and considerations on how to implement the general plan amendment requirements.

Section 4. Related General Plan Amendment Information

Discusses the State law requirement that all general plan elements must be internally consistent with one another and provides other considerations when undertaking a general plan amendment process, including the need for compliance with the California Environmental Quality Act (CEQA).

Appendix A. Table A: Resources for Data and Analysis

Provides a wide collection of resources for consideration when amending general plans for compliance with [California Government Code §65302.9](#). Table A categorizes what resources and types of information are available, provides written descriptions of the resources for context, assesses the applicability for the associated geographic areas, makes recommendations on the potential use of the information in general plan amendments, and provides other related sources of information for technical assistance.

Appendix B. Acronyms and Definitions

Contains a list of terms for reference that are either included or relevant to this *Guidance*.

Appendix C. DWR Information/Data Request Procedure

Offers an email contact and procedure to acquire DWR information, data, and/or other technical assistance that is not readily accessible within this *Guidance* or through the Internet hyperlinks provided.

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SECTION 2 **Guidance Use and Context**

- 2.1 *Guidance for Advisory Purposes*
- 2.2 *Recognition of Potential Limitations*
- 2.3 *Coordination with Local Flood Agencies*
- 2.4 *Potential Changes in Available Information*

DWR prepared this *Guidance* as a technical assistance tool based on [California Government Code §65302.9](#) general plan requirements for cities and counties within the Sacramento-San Joaquin Valley, as defined in [California Government Code §65007\(h\)](#). Throughout this *Guidance*, DWR presents information regarding recommendations, resources, and other considerations to think about when amending local general plans for flood management purposes. In particular, DWR is able to make available technical flood risk data related to floodplain mapping products developed by DWR and FEMA as well as provisions tied to the incorporation of relevant CVFPP information and approaches, technical data, and models and tools.

Refer to the [Urban Level of Flood Protection Criteria](#) for further discussion on the Sacramento-San Joaquin Valley definition.

2.1 Guidance for Advisory Purposes

DWR provides this *Guidance* for advisory purposes when implementing the legislative requirements to amend local general plans. This *Guidance* offers cities and counties technical assistance information, actions to consider when navigating the complexities of State law, and other practical guidance for applying the relevant flood risk management resource information (e.g., plans, projects/programs, and mapping) to general plan amendments.

It is important to emphasize that this *Guidance* is advisory and that the approaches suggested are intended as a starting point for adaptation and refinement by local agencies.

DWR's approach for the preparation of this *Guidance* is based on its intended use for assisting cities and counties with implementing requirements in State law. The *Guidance* was also prepared to be flexible and broad enough so that cities and counties can adapt the information to their local conditions. Other approach considerations included:

- Suggested applications of information generated from the multi-faceted DWR FloodSAFE efforts, including floodplain mapping products and other data and information to support the development of the [2012 CVFPP](#) and its subsequent updates.
- Review of State flood management programs and existing best management practices to establish general plan goals, policies, objectives, and feasible implementation measures for incorporation.
- Consultation with the [Governor's Office of Planning and Research \(OPR\)](#) to align the State law requirements with general plan preparation and the consideration of the general plan sample language offered in Section 3.

Given the variety of situations faced by cities and counties, a "one size fits all" approach to addressing the general plan amendment requirements is neither practical nor advisable.

While broad considerations have been incorporated, this *Guidance* may not cover every condition or need of each city or county in their planning efforts. For example, some jurisdictions already have extensive general plan policies addressing flood risks and many of these existing general plan provisions are based on the FEMA 100-year and 500-year levels of protection, which may or may not, depending on the circumstances, correspond to the 200-year level of protection as defined by the State legislation. As a second example, some jurisdictions may have minimal land areas subject to flooding risks and require only minor amendments to their local general plan goals, policies, objectives, and implementation measures to address the State law requirements; however, the scope of flooding risks in other jurisdictions may be significant and require major modifications to goals, policies, objectives, and implementation measures.

As a result of the varying local conditions, this *Guidance* is offered as advisory only and the approaches suggested are intended as a starting point to be further adapted and refined by local agencies, which already have existing, established general plan goals, policies,

objectives, and implementation measures and floodplain management planning strategies.

Further, this *Guidance* is not a regulatory document, nor does it establish any basis for State law compliance. Again, it was developed in an effort to provide value-added technical assistance to cities and counties as advisory information.

2.2 Recognition of Potential Limitations

DWR recognizes that each community subject to the general plan amendment requirements per [California Government Code §65302.9](#) has their own unique considerations for compliance, and as such, those communities should be aware that there may be potential limitations of this *Guidance* in fulfilling the needs of individual conditions. For example, as recognized in the [SPFC Descriptive Document](#), the SPFC facilities make up just a portion of the total flood management system in the Sacramento-San Joaquin Valley that the State has special interests in due to the assurances provided to the federal government. For communities to only focus on the SPFC facilities—and the locations by which these facilities provide flood protection—may not reveal all the necessary flood risk management information that cities and counties should consider when amending existing and developing new general plan policies for land use, community development, open space, and safety.

Similarly, the CVFPP provides the State's framework for sustainable flood management practices in the Central Valley, and more specifically, the State's interests for investments in flood management actions. The corresponding system analysis in the CVFPP is intended to reflect system planning strategies to support decisions regarding the State's investments, and is not directed at particular local planning strategies. DWR recommends that cities and counties incorporate information from the CVFPP, per State law, and also consider a broad perspective with other relevant programs and projects to achieve compatible policies and flood management actions when implementing general plan policy amendments to further strengthen the linkage between local land use planning decisions and flood management practices.

For those purposes, DWR also includes in this *Guidance*, for reference, applicable information and discussions of such program and project efforts like the [Statewide Flood Management Planning \(SFMP\)](#) program and its parent initiative [FloodSAFE](#) and the [California Water Plan](#).

Contributing DWR efforts, such as the Central Valley Floodplain Evaluation and Delineation (CVFED) Program and the [California Water Code §9610\(d\)](#) maps provide additional products that support the development of the [2012 CVFPP](#).



2.3 Coordination with Local Flood Agencies

California Government Code §65302.9(c). *To assist each city or county...(with compliance), the Central Valley Flood Protection Board, the Department of Water Resources, and local flood agencies shall collaborate with cities or counties by providing them with information and other technical assistance.*

The same technical assistance and information sharing directive required by [California Government Code §65302.9\(c\)](#) that is applicable to DWR and the [CVFPB](#), also applies to local flood agencies. Accordingly, DWR recommends that cities and counties contact their local flood agencies to collaborate with technical assistance and information sharing. These agencies are likely to have locally specific and refined data (often times developed based on State and/or federal data) and can help in interpreting the data, as well as providing additional information regarding local and regional interests that should be considered.

Local flood agencies within the Sacramento-San Joaquin Valley include, but are not limited to, the following:

- [Sacramento Area Flood Control Agency \(SAFCA\)](#) with member agencies including the City of Sacramento, Sacramento County, Sacramento County Water Agency, Sutter County, Sutter County Water Agency, RD 1000, and the American River Flood Control District
- [West Sacramento Area Flood Control Agency \(WSAFCA\)](#) with member agencies including the City of West Sacramento, RD 900, and RD 537
- [San Joaquin Area Flood Control Agency \(SJAFCA\)](#) with member agencies including the City of Stockton, San Joaquin County, and the San Joaquin County Flood Control and Water Conservation District
- [Three Rivers Levee Improvement Authority \(TRLIA\)](#) with member agencies including Yuba County and RD 784
- [Sutter Butte Flood Control Agency \(SBFCA\)](#) with member agencies including Butte County, Sutter County, City of Biggs, City of Gridley, City of Live Oak, City of Yuba City, Levee District 1, and Levee District 9
- [Placer County Flood Control & Water Conservation District \(PCFCWCD\)](#) with member agencies including Placer County, City of Roseville, City of Rocklin, City of Lincoln, City of Auburn, City of Colfax, and Town of Loomis
- [Yolo County Flood Control & Water Conservation District \(YCFCWCD\)](#) with member agencies including Yolo County, City of Woodland, City of Davis, City of Winters, Town of Capay, Town of Esparto, Town of Madison, and other small communities within the Capay Valley

DWR emphasizes the importance of coordination and consultation with local flood agencies to improve local and regional floodplain management efficiency and consistency.

Through FloodSAFE efforts, DWR has developed and continues to develop data and information to meet its legislative requirements. Local flood agencies have been engaged with DWR in aspects of FloodSAFE such as the [2012 CVFPP](#) implementation and are also leading or participating in the development of regional flood management plans through the [Regional Flood Management Planning \(RFMP\)](#) effort. The data and information produced is intended for use by local maintaining agencies (LMAs) as technical information sharing and to assist with regional flood management planning and implementation efforts. These LMAs include reclamation districts (RDs), levee improvement districts, and regional urban flood management agencies established with specific charges and responsibilities. Cities and counties are encouraged to contact State, local, and regional flood management agencies and coordinate.

2.4 Potential Changes in Available Information

DWR understands that cities and counties may have the greatest challenges in amending their general plans to address [California Government Code §65302.9](#) requirements the first time they do so, particularly given the initial statutory deadline of July 2, 2015, and less so with future updates. Throughout this *Guidance* hyperlinks to specific Internet-based information are provided, when possible, so that cities and counties may have access to a multitude of resources. It is also recognized that OPR has begun its 2014 update of the [General Plan Guidelines](#). Ongoing coordination between DWR and OPR is anticipated as the updated Guidelines are prepared. It is recommended that cities and counties statewide consider the updated [General Plan Guidelines](#) as a resource for flood management and safety issues.

Appendix C provides a data request procedure for accessing DWR resources and other flood hazard management information that is not readily accessible through this *Guidance* or the Internet hyperlinks provided herein. It should be noted that the information provided in this *Guidance* reflects the status of data and the availability of information as of fall 2014. DWR will continue to provide technical assistance to cities and counties in the future, but does not plan to update this *Guidance*.

The Governor's Office of Planning and Research (OPR) is preparing an update to the [General Plan Guidelines](#) that will provide an extensive overview of the required general plan elements including a new web-based interactive format. Outreach meetings and a voluntary public review period is anticipated to be conducted across the State as a part of OPR's update process.

DWR may also include compliance with [California Government Code §65302.9](#) as described in this *Guidance* in future requirements for State of California funding eligibility.

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SECTION 3 **General Plan Amendment Requirements, Recommendations, and Considerations**

- 3.1 *Flood Risk Management Resource Information*
- 3.2 *Incorporating CVFPP Data and Analysis into General Plans*
- 3.3 *Incorporating Locations of Flood Hazard Zones into General Plans*
- 3.4 *Amending General Plan Goals, Policies, and Objectives*
- 3.5 *Amending General Plan Implementation Measures*

[California Government Code §65302.9](#) includes specific requirements for each city and county within the Sacramento-San Joaquin Valley to amend its general plan. Presented and explained throughout this section are recommendations for code compliance, associated flood risk management resource information, and other considerations on how to implement the general plan amendment requirements. The following four major subsections are included and correspond to the [California Government Code §65302.9](#) requirements:

- Incorporating CVFPP Data and Analysis into General Plans (see Subsection 3.2)
- Incorporating Locations of Flood Hazard Zones into General Plans (see Subsection 3.3)
- Amending General Plan Goals, Policies, and Objectives (see Subsection 3.4)
- Amending General Plan Implementation Measures (see Subsection 3.5)

Jurisdictions should be aware that [California Government Code §65302.9](#) does not specify any review, approval, or enforcement authority by any State agency for the general plan amendment requirements, but instead relies on the due diligence of cities and counties to incorporate appropriate flood risk considerations into floodplain management and planning.

The general plan requirements are applicable to the Sacramento-San Joaquin Valley, as defined in [California Government Code §65007\(h\)](#). Refer to the [Urban Level of Flood Protection Criteria](#) for further discussion on the Sacramento-San Joaquin Valley.

[California Government Code §65302.9](#) is provided on the following page for reader context.

CALIFORNIA GOVERNMENT CODE §65302.9 SUMMARY OF REQUIREMENTS

<p><i>General Plan Amendment Compliance Schedule (Subsection 1.2, page 1-3)</i></p>	<p>(a) Within 24 months of July 2, 2013, each city and county within the Sacramento-San Joaquin Valley shall amend its general plan to contain all of the following:</p>
<p><i>Incorporate CVFPP Data and Analysis (Subsection 3.2, page 3-8)</i></p>	<p>(1) (A) The data and analysis contained in the Central Valley Flood Protection Plan pursuant to Section 9612 of the California Water Code, including, but not limited to, the locations of the facilities of the State Plan of Flood Control and the locations of the real property protected by those facilities.</p>
<p><i>Incorporate Locations of Flood Hazard Zones (Subsection 3.3, page 3-11)</i></p>	<p>(B) The locations of flood hazard zones, including, but not limited to, locations mapped by the Federal Emergency Management Agency Flood Insurance Rate Map or the Flood Hazard Boundary Map, locations that participate in the National Flood Insurance Program, locations of undetermined risk areas, and locations mapped by a local flood agency or flood district.</p>
<p><i>Amending General Plan Goals, Policies, and Objectives Based on CVFPP Data and Analysis (Subsection 3.4, page 3-12)</i></p>	<p>(2) Goals, policies, and objectives, based on the data and analysis identified pursuant to paragraph (1), for the protection of lives and property that will reduce the risk of flood damage.</p>
<p><i>Amending General Plan Implementation Measures Based on CVFPP Data and Analysis (Subsection 3.5, page 3-27)</i></p>	<p>(3) Feasible implementation measures designed to carry out the goals, policies, and objectives established pursuant to paragraph (2).</p>
<p><i>Incorporate Locations of Flood Hazard Zones (Subsection 3.3, page 3-11)</i></p>	<p>(b) An undetermined risk area shall be presumed to be at risk during flooding that has a 1-in-200 chance of occurring in any given year unless deemed otherwise by the State Plan of Flood Control, an official National Flood Insurance Program rate map issued by the Federal Emergency Management Agency, or a finding made by a city or county based on a determination of substantial evidence by a local flood agency.</p>
<p><i>DWR Information/Data Request Procedure (Appendix C, page C-1)</i></p>	<p>(c) To assist each city or county in complying with this section, the Central Valley Flood Protection Board, the Department of Water Resources, and local flood agencies shall collaborate with cities or counties by providing them with information and other technical assistance.</p>

3.1 Flood Risk Management Resource Information

Acquiring informational resources for flood risk management is essential for community planning needs, increasing overall public safety, and reducing flood damages for existing and planned development. As described in this *Guidance*, [California Government Code §65302.9](#) requires each city and county within the Sacramento-San Joaquin Valley to amend its general plan to include specific data and analysis contained in the CVFPP.

Pursuant to the requirement in [California Government Code §65302.9\(c\)](#) that DWR provide technical assistance to cities and counties, and in an effort to go beyond to include other sources of relevant flood management and safety information for local land use planning and decision making, DWR offers Appendix A, Table A: Resources for Data and Analysis. By integrating sound data, up-to-date information, and relevant resources on flood risks in city and county general plans, local planning decisions within flood prone areas can be better informed and aligned with an IWM approach and State and regional flood management policies and practices.

See also Appendix C (DWR Information/Data Request Procedure), which offers an email contact and procedure to acquire DWR information, data, and/or other technical assistance that are not readily accessible within this *Guidance* or through the Internet hyperlinks provided in Table A.

TABLE A RESOURCE INFORMATION

Table A provides information from the Central Valley Flood Protection Plan as the primary resource for data and analysis cited in [California Government Code §65302.9](#) that must be considered by cities and counties when amending their general plans for State law compliance. Table A also provides additional sources of information to encourage a holistic IWM framework for planning and implementation including DWR FloodSAFE California efforts such as the Statewide Flood Management Planning (SFMP) program, Central Valley Floodplain Delineation and Evaluation Program (CVFED), and Central Valley Hydrology Study (CVHS); and local and regional flood management agencies and districts, FEMA, and the USACE.

DWR's approach in preparing this *Guidance* was based on its intended use to be flexible enough for cities and counties to adapt information for local conditions.

Compliance with [California Government Code §65302.9](#) sets the stage for future Urban Level of Flood Protection (ULOP) compliance.



More specifically, Table A is organized by the following resources:

- A. Data from [2012 CVFPP](#) developed under the DWR [Central Valley Flood Management Planning \(CVFMP\) Program](#)
- B. Data complementing CVFPP from other [DWR FloodSAFE](#) programs and activities
- C. Data from FEMA programs and activities
- D. Additional clearinghouse databases for information

TABLE A READERS' GUIDE

The information in Table A includes Internet hyperlinks to agency websites and reports, categorizes what resources and types of information are available to cities and counties, provides written descriptions of resources for context, assesses the geographic applicability of the information, assesses the information's potential use in general plan amendments, recommends when coordination with technical experts is advised, and provides other relevant sources of information.

The type of information available and the level of detail in Table A will vary from community to community, depending on location.

Table A: Resources for Data and Analysis																
Data and Analysis		Geographic Applicability			Content Focus			Addressing California Government Code §65302.9 General Plan Amendment Requirements								
Source	Item/Description	Statewide	Sacramento and San Joaquin Hydrologic Regions (Whole, Partial)	Sacramento-San Joaquin Valley (Whole, Partial) (CGC 65007(h))	Areas Protected by the SFFC	Flood Management	Element(s) of IWM	General Context and Reference	Addressing California Government Code §65302.9 General Plan Amendment Requirements							
									Direct Use	Indirect Use	Other					
									Locations of Flood Management Facilities (SFFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics

Data and Analysis

The “Data and Analysis” category in Table A includes a “Source” and an “Item/Description” column for further clarification on the type of information available and context as to why this information is relevant. The source identifies the resource title that is typically hyperlinked to where the information can be found on the Internet. Sources range from actual documents, reports, and programs to activities and agencies.

Data and Analysis			
Source		Item/Description	
A. Data from 2012 CVFPP Developed under the DWR CVFMP Program			
A.1	CVFPB	CVFPP Board Resolution 2012-25:	The resolution provides additional guidance and amendments on the draft 2012 CVFPP by the CVFPB in adopting the 2012 CVFPP, the comprehensive framework for systemwide flood management and flood risk reduction in the Sacramento and San Joaquin River basins. See also: CVFMP Program, RFMP, BWFS, Conservation Strategy. See also endnote: [1]
A.2	CVFMP Program	2012 CVFPP with errata and attachments:	The CVFPP is a critical flood management and flood risk reduction document meant to provide a comprehensive and integrated framework for a SSIA for areas protected by the SPFC facilities. The CVFPP is on a 5-year update cycle and the major flood management planning efforts that resulted from the 2012 plan are ongoing to refine the SSIA and inform the 2017 CVFPP update, providing support for subsequent policy, program, and project implementation. Additional details on each attachment is provided later in this table. See also endnote: [1]
		CVFPP Consolidated Final Program EIR with appendices:	The CVFPP Program EIR was developed to inform DWR, which developed the CVFPP, and the CVFPB, which adopts the CVFPP, about potential program-level environmental effects and mitigation measures related to the components of the CVFPP. See also endnote: [1]

What exactly is available varies, from the information gathered and used in the CVFPP, its appendices, and Program EIR; to other DWR and FEMA program information, models, maps, GIS data, levee inspection data, 100- and 200-year inundation maps, example approaches, and more.

Geographic Applicability

The type of information available in Table A not only varies by source, but also by “Geographic Applicability.” For this reason, the table categorizes the type of information available and assesses its applicability for four pertinent geographies:

1. Statewide,
2. Sacramento and San Joaquin Hydrologic Regions (Whole, Partial), as used in the *California Water Plan* and other State planning documents
3. Sacramento-San Joaquin Valley (Whole, Partial) as outlined in [California Government Code §65007\(h\)](#), and
4. Areas Protected by the SPFC.

From left to right, the four geographies are presented from the largest span of area (Statewide) to the smallest (Areas Protected by the SPFC).

Geographic Applicability			
Statewide	Sacramento and San Joaquin Hydrologic Regions (Whole, Partial)	Sacramento-San Joaquin Valley (Whole, Partial) (CGC 65007(h))	Areas Protected by the SPFC

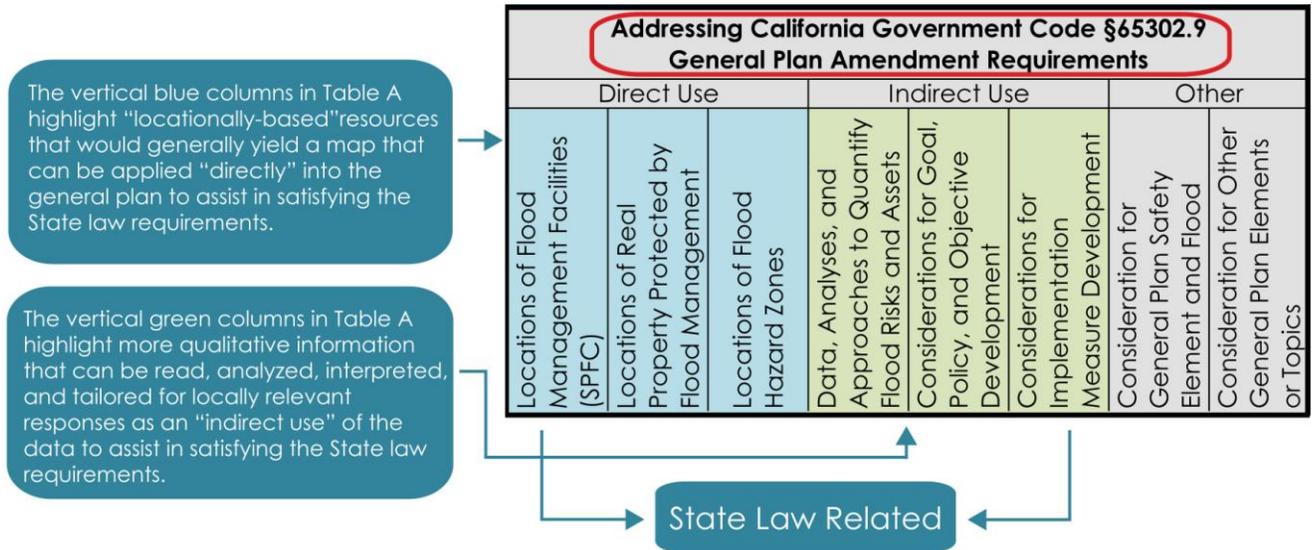
Content Focus		
Flood Management	Element(s) of IWM	General Context and Reference

Content Focus

The “Content Focus” category identifies the larger themes of each resource listed. Most sources fall into one or more of these three columns: Flood Management, Element(s) of IWM, and General Context and Reference.

Addressing California Government Code §65302.9 General Plan Amendment Requirements

The “Addressing [California Government Code §65302.9](#) General Plan Amendment Requirements” category is broken down into three main subcategories to provide specific detail as to how cities and counties can incorporate the information into their general plan amendments. Each subcategory is further broken down into columns with more detailed information as to where the information can be applied.



The vertical blue columns in Table A all fall under the “Direct Use” subcategory and highlight “locationally based” resources or resources which are geographic in nature that would generally yield a map that can be applied “directly” into the general plan to assist in satisfying the State law amendment requirement. These mapping products are recommended to be included typically within the general plan land use or safety element, depending on how local plans are organized. It is important to note that while a floodplain map can be placed in the general plan in its entirety, this is not practical in some cases and cities and counties should consider “clipping” or only inserting the locally applicable floodplain map area, as needed.

The vertical green columns in Table A that fall under the “Indirect Use” subcategory also assist to satisfy the general plan amendment requirements, but do so “indirectly.” The information sources tagged in these columns are more qualitative in nature and are not recommended to be applied on a one-to-one basis. Rather, these resources can be read, analyzed, and interpreted, with local cities and counties drawing their own conclusions for individual incorporation of the relevant material into the general plan. This information can inform the planning approaches used in response to the required general plan amendments for data and analysis or in consideration when formulating goals, policies, objectives, and implementation measures.

Information that falls in the “Other” subcategory includes resources that can be incorporated into the safety element, other general plan elements, or are other flood management related topics.

Endnotes

Endnotes identify other applicable information as well as resources that may require further coordination for application. Cities and counties are encouraged to reach out to local flood management agencies, DWR, and/or other technical experts to assist with highly technical pieces of data and information. Other relevant FloodSAFE activities or programs are also provided as an endnote that can either be useful for cities and counties to reference when amending their general plans or for other planning considerations and purposes.

Many of the programs and activities listed are further described in Table A as a resource, showing how interrelated these initiatives and efforts can be and how important it is for cities and counties to take a holistic IWM approach when developing their general plan amendments.

Data and Analysis			
Source	Item/Description		
A. Data from 2012 CVFPP Developed under the DWR CVFMP Program			
A.4	[2] <u>Conservation Framework</u>	An environmental guide for flood project planning in the 2012 CVFPP:	Describes how environmental stewardship is integrated into flood management activities, directs the reader to relevant environmental elements in the CVFPP, and gives additional detail on environmental planning elements, including regulatory compliance. See also endnotes: [1] and [2]

Endnotes:
 [1] Coordination with local flood management agencies and/or other technical experts is advised.
 [2] Central Valley Flood System Conservation Strategy

3.2 Incorporating CVFPP Data and Analysis into General Plans

RECOMMENDATIONS

The CVFPP data and analysis needed, as outlined by [California Government Code §65302.9\(a\)\(1\)\(A\)](#), includes locations of the facilities of the State Plan of Flood Control (SPFC) and the locations of the real property protected by those facilities. When amending their general plans, cities and counties should consider the data and analysis resources presented in Table A (Appendix A). As mentioned in Subsection 3.1, the blue vertical columns in Table A highlight “locationally based” resources or resources which are geographic in nature and would generally yield a map that is recommended to be applied “directly” into the general plan land use, safety, or another element, depending on the local community’s general plan organization.

California Government Code §65302.9(a)(1)(A). *The data and analysis contained in the Central Valley Flood Protection Plan pursuant to Section 9612 of the Water Code, including, but not limited to, the locations of the facilities of the State Plan of Flood Control and the locations of the real property protected by those facilities.*

This Subsection first provides recommendations specifically for [California Government Code §65302.9\(a\)\(1\)\(A\)](#), and then provides additional resources and actions that both cities and counties should consider when amending their general plans.

For example, in Table A the *SPFC Descriptive Document* (Row A.6. of Table A) is the primary source of information for determining “Locations of Flood Management Facilities of the SPFC” as required in [California Government Code §65302.9\(1\)\(A\)](#). This document includes a comprehensive list of projects and programs of SPFC facilities and SPFC-related mapping that cities and counties can reference to determine whether or not they have SPFC facilities located within their jurisdiction. The appendices within the *SPFC Descriptive Document* should also be referenced for additional mapping that cities and counties could consider incorporating into their general plans. Other resources for “Locations of Flood Management Facilities of the SPFC” for consideration are identified in the vertical blue column in Table A.

Data and Analysis		Addressing California Government Code §65302.9 General Plan Amendment Requirements							
		Direct Use			Indirect Use		Other		
Source	Item/Description	Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics
A. Data from 2012 CVFPP Developed under the DWR CVFMP Program									
A.6	(3a) SPFC Descriptive Document	Locations of SPFC Facilities and the procedures for including new or modified facilities into the SPFC:	The first compilation of SPFC defined by California Water Code §9110(f). It is important to note that SPFC is only a portion of the large flood management system in the Central Valley. The performance of SPFC also relies on the operation and performance of other facilities that are not part of the SPFC, as well as other nonstructural management actions such as emergency responses and floodplain management. See also endnote: [1]	X	X				X

SECTION 3 GENERAL PLAN AMENDMENT REQUIREMENTS, RECOMMENDATIONS, AND CONSIDERATIONS

As a second example of how to utilize Table A most effectively, cities and counties will want to reference the Levee Flood Protection Zone (LFPZ) maps (Row A.13 of Table A) as one of the primary sources for identifying the “Locations of Real Property Protected by Flood Management Facilities (SPFC)” as required in [California Government Code §65302.9\(1\)\(A\)](#). The LFPZ maps are available through DWR’s [Map Web Viewer](#) and include a separate LFPZ map for the Sacramento River and San Joaquin River. It is recommended that cities and counties “clip” the LFPZ map(s) to highlight the relevant local geographic area that is applicable. Then place the map into the appropriate general plan element, depending on the local community’s general plan organization. Other resources for “Locations of Real Property Protected by Flood Management Facilities (SPFC)” for consideration are identified in the vertical blue column in Table A.

It should be noted that while many maps can literally be placed in the general plan, this is not practical in some cases and cities and counties should consider “clipping” or only inserting the locally applicable floodplain map area, as needed.

Data and Analysis		Addressing California Government Code §65302.9 General Plan Amendment Requirements									
Source	Item/Description	Direct Use			Indirect Use			Other			
		Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics		
A. Data from 2012 CVFPP Developed under the DWR CVFMP Program											
2012 CVFPP Volume II Attachments											
A.13	(7) Plan Formulation Report	Plan Formulation Process:	Description of the process used to develop CVFPP goals, planning constraints and criteria, management actions, preliminary approaches, the SSIA, the considerations of legislative requirements for a systemwide approach, and the stakeholder and expert input throughout the process. See also endnote: [1]					X	X	X	X
	LFPZ:		DWR prepared LFPZ maps per California Water Code §9130. LFPZ maps represent floodplain areas receiving protection from SPFC facilities. The identified areas may also receive protection from facilities other than SPFC levees. The LFPZs estimate the maximum area that may be inundated if a project levee were to fail when water surface elevation is at the top of a project levee. It is important to note that lands not mapped within a LFPZ are not invulnerable to flood risk and some may also experience flooding from other sources. See also: CVFED Program. See also endnote: [1]		X	X	X			X	

OTHER CONSIDERATIONS

Much of the CVFPP data that is outlined in Table A was developed on a SPFC systemwide scale, and as such, cities and counties will need to build on the information for specific local areas, develop their own assumptions, and perform the analysis to meet their individual land use decision needs. For instance, [California Government Code §65302.9\(a\)\(1\)\(A\)](#) requires that cities and counties specifically identify locations of SPFC facilities and areas protected by those facilities in local general plans, while the use of the phrase “including, but not limited to” in the code section encourages those cities and counties outside of SPFC protected areas to utilize additional applicable locally relevant information to describe their own flood management facilities (e.g., floodwalls) and the areas protected by those facilities.

See Appendix C, DWR Information/Data Request Procedure, for how cities and counties can obtain technical data or other flood hazard management information from DWR.

[OPR's General Plan Guidelines](#) discuss the general plan requirements associated with flood management and offer communities ideas for types of data that can be considered when developing flood management related information for elements such as land use, conservation, and safety, as follows:

- Define the community's floodplain conditions comprehensively (i.e., FEMA, USACE, DWR, CVFPB, and local agency definitions).
- Map the extent and depth of historic flooding.
- Gather historical flooding data.
- Gather alluvial floodplain data.
- Inventory land and land uses within the floodplain(s).
- Identify existing and future problems and opportunities.
- Inventory flood management structures and areas managed for flood and their controlling agencies.
- Inventory pertinent regulations of federal, State, and local agencies.
- Inventory ongoing floodplain or watershed management and planning activities.
- Inventory past and planned management activities.
- Identify sources of funding for planning efforts for potential implementation activities.
- Use a cost/benefit analysis approach to determine best practice alternative floodplain management strategies.



These ideas are presented in this *Guidance* for cities and counties to consider when thinking about documenting flood management conditions, regulations, and strategies. In doing so, cities and counties should also consider local planning practices that align with the State's larger regional flood management effort, as it incorporates both sustainable planning and IWM.

3.3 Incorporating Locations of Flood Hazard Zones into General Plans

RECOMMENDATIONS

Cities and counties already consider FEMA flood hazard zones (i.e., special flood hazard areas [100-year flood] and moderate flood hazard areas [500-year flood]) for planning, safety, and risk reduction purposes in their general plans. However, [California Government Code §65302.9\(a\)\(1\)\(B\)](#) uses the term “flood hazard zones” (i.e., not solely in the FEMA context, but expanded for the general plan amendment requirements) to include, but not be limited to, locations mapped by the FEMA Flood Insurance Rate Maps (FIRMs), the Flood Hazard Boundary Map, locations that participate in the National Flood Insurance Program, locations of undetermined risk areas, and locations mapped by a local flood agency or flood district.

California Government Code §65302.9(a)(1)(B). *The locations of flood hazard zones, including, but not limited to, locations mapped by the Federal Emergency Management Agency Flood Insurance Rate Map or the Flood Hazard Boundary Map, locations that participate in the National Flood Insurance Program, locations of undetermined risk areas, and locations mapped by a local flood agency or flood district.*

As mentioned in Subsection 3.1, the blue vertical columns in Table A highlight “locationally based” resources or resources which are geographic in nature and would generally yield a map that is recommended to be “directly” placed into the general plan land use, safety, or another element, depending on the local community’s general plan organization. For example, by utilizing the vertical blue columns in Table A the reader can determine that many sources of information for determining “Locations of Flood Hazard Zones” can be found under Row C. or “Data from FEMA Programs and Activities.”

This Subsection first provides recommendations specifically for [California Government Code §65302.9\(a\)\(1\)\(B\)](#), and then provides additional resources and actions that both cities and counties should consider when amending their general plans.

Specific floodplain mapping sources, as outlined in [California Government Code §65302.9\(a\)\(1\)\(B\)](#), include FIRMs, FHBMs, which are listed in Row C.1 of Table A along with Digital Q3 Flood Data, DFIRMs, and designated floodway maps.

Data and Analysis			Addressing California Government Code §65302.9 General Plan Amendment Requirements								
			Direct Use			Indirect Use			Other		
Source	Item/Description		Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation	Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics
C. Data from FEMA Programs and Activities											
C.1 Specific Floodplain Mapping	FIRMs:	Represents flood hazard areas for floodplains of 1% (100-year) and 0.2% (500-year) chance of annual occurrence. These maps are only available via large paper copies and are used for insurance purposes as part of the NFIP. See also endnote: [1]			X	X					X
	Digital Q3 Flood Data:	Q3 Flood Data is a digital representation of certain features of FIRMs, intended for use with desktop mapping and GIS technology. These are interim data that will be replaced by Digital FIRMs once complete and are not used for regulatory purposes. See also endnote: [1]			X	X					X
	DFIRM:	Represent GIS-based mapping products of FIRMs and Q3 Flood Data developed as a part of FEMA Flood Map Modernization (Map Mod) program. See also endnote: [1]			X	X					X
	FHBM:	FHBM is an initial flood hazard identification generally used for Emergency Program communities, as defined by FEMA. It is the official map of a community issued by the Administrator, where the boundaries of the flood, mudslide (i.e., mudflow), and related erosion areas having special hazards have been designated. See also endnote: [1]			X	X					X
Specific Floodplain Mapping	Designated Floodway Maps:	A “Designated Floodway” generally refers to the channel of the stream and that portion of the adjoining floodplain reasonably required providing for the passage of a design flood. The CVFPB, under Water Code §8609 has the authority to designate floodways in the Central Valley. Specifically, Title 23, Article 5, §107 of the California Code of Regulations regulates uses in Designated Floodways. To determine Central Valley county areas that are located within a Board approved Designated Floodway area, use the maps provided. See also CVFPB and endnote: [1]	X		X	X					X

As a second example of how to utilize Table A most effectively, cities and counties will want to collaborate with local flood agencies and flood districts to obtain relevant mapping for inclusion in local general plans and reference the California Government Code for applicable definitions, such as undetermined risk area. These sources, along with others in Table A, offer cities and counties the ability to directly apply mapping previously prepared by outside resources into their appropriate general plan element(s). It is important to note that while Table A offers a number of State and national resources, cities and counties should incorporate local data and analysis, where appropriate and when feasible, to capture the full picture of the locations of “flood hazard zones” based on local conditions and beyond the FEMA context.

OTHER CONSIDERATIONS

DWR can provide assistance to cities and counties in obtaining floodplain mapping information (see Appendix C: DWR Information/Data Request Procedure).

While [California Government Code §65302.9\(a\)\(1\)\(B\)](#) requires that cities and counties specifically identify locations of flood hazard zones in local general plans, the use of the phrase “including, but not limited to” in the code section encourages cities and counties to utilize additional applicable flood resources and data to describe locations of flood hazard zones. State, federal, and local agencies with responsibility for flood management, including special districts and local offices of emergency services, are other good resources that can offer assistance and guidance. Local historical data on flooding, including locally prepared maps of areas subject to flooding, areas vulnerable to flooding after wildfires, and sites that have been repeatedly damaged by flooding, could all be pertinent in identifying areas with the potential for flooding.

3.4 Amending General Plan Goals, Policies, and Objectives

This Subsection first provides resource information and recommendations specifically for [California Government Code §65302.9\(a\)\(2\)](#), then provides additional resources and actions that both cities and counties should consider when amending their general plans.

[OPR's General Plan Guidelines](#) state that “solid policy is based on solid information,” meaning that the strength of a city’s or county’s directive in a general plan is very much tied to the data and information used. By using the best available and most relevant data described in Subsections 3.2 and 3.3 and included in Appendix A, Table A, in addition to regional and locally available data, cities and counties can strengthen the base of their flood risk management general plan goals, policies, and objectives. The OPR Guidelines provide clear direction on how general plan goals, policies, and objectives should be written.

Goal

A goal is meant to be an ideal future condition of the community related to the public health, safety and general welfare. It is a general expression of community values and, therefore, may be abstract in nature. Consequently, a goal is generally not quantifiable or time-dependent and should be expressed as “ends, not actions.”

Goals are general direction-setters.

Policy

A policy indicates a commitment of the local legislative body to a particular course of action that must be clear and unambiguous. Policies are based on and help implement general plan objectives and are carried out by implementation measures.

Policies are statements that guide decision-making.

Objective

An objective should be achievable and, when possible, measurable and time-specific (quantifiable). An objective may pertain to one particular aspect of a goal or it may be one of several successive steps toward goal achievement.

Objectives are an intermediate step toward attaining community goals that are a specified end, condition, or state.

RECOMMENDATIONS

The CVFPP is the primary resource for data and analysis cited in [California Government Code §65302.9](#) which must be considered by cities and counties when amending their general plans for the protection of lives and property, in an effort to reduce the risk of flood damage. Cities and counties should refer to the resources outlined in Table A (Appendix A) when beginning to prepare goals, policies, and objectives. As mentioned in Subsection 3.1, the green vertical columns in Table A highlight more qualitative information that can be read, analyzed, interpreted, and tailored for “indirect use” when preparing the required general plan amendments.

California Government Code §65302.9(a)(2). *Goals, policies, and objectives, based on the data and analysis identified pursuant to paragraph (1), for the protection of lives and property that will reduce the risk of flood damage.*

Because the California Government Code specifically cites the CVFPP as the source for data and analysis, Table A breaks down the CVFPP along with related appendices, pointing out which specific pieces would be helpful to reference for each applicable State law requirement. For example by utilizing the vertical green columns in Table A the reader can determine that one of the primary sources of information for “Considerations for Goal, Policy, and Objective Development” is the CVFPP under Row A. or “Data from 2012 CVFPP Developed under the DWR CVFMP Program.”

It is important to note that while the [2012 CVFPP](#) generally defines goals, policies, objectives, and implementation measures, they are not presented exactly as they would be if written for a general plan. For example, objectives in general plans tend to be more quantitative, with a timeframe to achieve results or a metric to gauge success. In the [2012 CVFPP](#) however, the objectives are more qualitative in nature but could be transformed and integrated by cities and counties as quantitative objectives if an appropriate metric was applied. Future [CVFPP updates](#) are anticipated to have quantified objectives with metrics.

Secondary sources for consideration include the Statewide Flood Management Planning (SFMP) program (Row B.1 of Table A), the Basin-Wide Feasibility Studies (BWFS) (Row B.10 of Table A), and the Regional Flood Management Planning (RFMP) Program (Row B.11 of Table A). The green column titled “Data, Analyses, and Approaches to Quantify Flood Risks and Assets Being Protected” in Table A also points out sources that cities and counties can reference.

Data and Analysis			Addressing California Government Code §65302.9 General Plan Amendment Requirements							
Source	Item/Description		Direct Use			Indirect Use		Other		
			Locations of Flood Management Facilities (SFPC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets Being Protected	Considerations for Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics
B. Data Complementing CVFPP from Other DWR FloodSAFE Programs and Activities										
B.1	<u>Statewide Flood Management Planning Program</u>	SFMP Program: Led by DWR through the FloodSAFE Initiative and the Division of Statewide Integrated Water Management. The program works in collaboration with local, State, and Federal agencies and tribal entities throughout California to make recommendations to guide flood management policies and investments in the coming decades by promoting a clear understanding of flood risks in California; garnering active support for partnerships at the local, State, and Federal levels; coordinating with other DWR planning efforts; identifying strategies and feasible next steps to better incorporate flood management into IWM; and promoting an IWM approach for flood management solutions.				X	X	X	X	X
B.10	<u>BWFS</u>	Under development, anticipated in 2017: The two studies are major planning efforts aimed at refining SSI implementation for flood risk management as identified in the 2012 CVFPP. The BWFS will evaluate physical actions to improve flood system performance, flexibility, and resiliency. Each study will progress independently through two phases. The first phase will focus on developing basin objectives and exploring different scales and configurations for system improvements. The second phase will evaluate and compare combinations of system and regional improvements on a systemwide scale, and support selection of a State preferred option in each basin. See also CVFMP Program, BWFS, and endnote: [1]	X	X	X	X	X	X	X	X
B.11	<u>RFMP Program</u>	<u>Regional Flood Atlases:</u> This effort will assist local entities in the Central Valley to develop long-term regional flood management plans that address local needs, articulate local and regional flood management priorities, and establish the common vision of regional partners. This information will help to understand current state of flood risks and inventory of existing flood management facilities regardless of their ownership. The information was developed by DWR to be improved and maintained by regional flood management entities established through the Regional Flood Management Planning Program. The atlases are not intended to serve as a comprehensive environmental setting section under CEQA or NEPA. See also endnote: [1] <u>Regional Flood Management Plans:</u> The six regional flood management plans (Feather River, Upper/Mid-Sacramento River, Lower Sacramento River and Delta North, Lower San Joaquin River and Delta South, Mid-San Joaquin River, and Upper San Joaquin River) are under development [anticipated release dates sometime in 2015].	X	X	X	X			X	
			X	X	X	X	X	X	X	X

In addition, Table A goes beyond what is specifically outlined in the California Government Code to provide a wider range of information and resources. Cities and counties are encouraged to take a broad approach when reviewing data and analysis for preparation of their general plan goals, policies, and objectives and to take advantage of all the resources that are available by building on the information to better suit their needs. While not all information provided in Table A is available for all geographic locations, often times the approach used could be adapted for analysis on a wider statewide scale or smaller more local scale.

2012 CVFPP GOALS

Drafted to capture the legislative objectives outlined in [SB 5 \(2007\)](#) and codified in [California Water Code §9616](#), the [2012 CVFPP](#) reflects the State’s plan for investment in flood management. The [2012 CVFPP](#) not only aims to help reduce the risk of flood damage and encourage the protection of lives and property from flooding, but also helps to advance the broad future State investment strategy of promoting sustainable flood management practices and an IWM approach.

The [2012 CVFPP](#) established a primary goal and four supporting goals, as follows:

- Primary goal:
 - Improve Flood Risk Management
- Supporting goals:
 - Improve Operations and Maintenance
 - Promote Ecosystem Functions
 - Improve Institutional Support
 - Promote Multi-Benefit Projects

While the CVFPP focuses on areas protected by SPFC facilities, the spirit of these goals could be used by any city or county when drafting goals for their community that:

- help promote public safety and an IWM approach;
- improve agency alignment and interaction; and
- leverage common tools, plans, and investment actions for broad benefits.

SAMPLE GENERAL PLAN GOALS

The following sample general plan goals are offered for consideration and reflect goals that cities and counties can reference when addressing flood risk goals for local conditions. The sample goals cover a range of community conditions which go beyond the traditional general plan goal of “protect people and property from flood risk” and align with the [2012 CVFPP](#) primary goal of improving flood risk management.

See the [2012 CVFPP](#), Section 1.6.2, Central Valley Flood Protection Goals, for the full context of the CVFPP primary goal and supporting goals.

It is recognized that the roles and responsibilities for implementing actions toward CVFPP goals may be different from one geographic area to another; therefore, it is important to recognize the connections between State guidance, legislative objectives, and the CVFPP goals when considering flood management in the context of integrated water management (IWM).

Each city and county should review their general plan in its entirety when making amendments, as [California Government Code §65302.9](#) did not define any one element or elements of the general plan to amend. Thereafter, cities and counties should amend the appropriate general plan element(s) based on local conditions and the associated relevant content.

These sample goals are considered to be compatible with statewide flood management practices:

1. Protect people and property from flood risk.
2. Implement appropriate land use planning practices to improve flood risk management and reduce the consequence of flooding.
3. Participate in efforts to secure adequate flood management funding and investments.
4. Coordinate with other local, regional, State, and federal agencies to improve flood risk management.
5. Promote public awareness activities that communicate the requirements and risks associated with owning land and living within a floodplain.

2012 CVFPP EXAMPLE GENERAL PLAN POLICY GUIDANCE

The [2012 CVFPP](#) is by nature a strategic plan that is meant to guide future State investments in promoting sustainable flood management. The CVFPP contains key considerations geared towards State interests for cities and counties to keep in mind when writing local flood management policies. For example, cities and counties may consider the broad themes of inter-agency collaboration and coordination and those practices that direct how the State will engage local, regional, and federal partners.

The following are examples of key considerations related to sustainable flood management practices which contributed to the development of the [2012 CVFPP](#) that should be considered by cities and counties when amending policies in their general plans.

- Support a one-in-200-year level of flood protection for urban and urbanizing areas, consistent with the Urban Level of Flood Protection Criteria.
- Support a one-in-100-year level of flood protection for small communities, corresponding to the national FEMA standard of flood protection.
- Support flood management improvements in rural areas that preserve rural-agricultural viability consistent with local land use planning.

California Government Code §65007(n). Urban Level of Flood Protection. *The level of protection that is necessary to withstand flooding that has a 1-in-200 chance of occurring in any given year using criteria consistent with, or developed by, the Department of Water Resources. "Urban Level of Flood Protection" shall not mean shallow flooding or flooding from local drainage that meets the criteria of the national Federal Emergency Management Agency standard of flood protection.*

- Support a sustainable flood management system that provides a high degree of public safety, promotes long-term economic stability, and supports compatible efforts to restore riverine and floodplain ecosystems.
- Reduce potential life loss and property damages in the event of flooding.
- Improve public safety, preparedness, and emergency response.
- Support adequate system maintenance and proactive residual risk management in actions that promote prudent floodplain management.
- Apply prudent land use practices in floodplains as the foundational element that is the most effective means to ensure public safety and reduce the consequences of flooding.
- Target the focus and implementation on system facility and operational improvements that could possibly extend the period of effectiveness of regional improvements under climate change conditions, and broadly benefit California residents and areas that are within immediate regions and beyond.
- Support responsible flood management investments in actions that are financially affordable on a long-term basis, including long-term operations and maintenance, and integrate multiple, complementary benefits in the context of integrated water management.
- Consistent with the State's regional focus over the past decades for water supply, assist regional entities in implementing regional flood management facility improvements and an integrated water management (IWM) approach to provide regional self-reliance and sustainability.
- Collaborate with cities, counties, local maintaining agencies, federal agencies, and interested parties in planning and implementing sustainable flood management actions with recognition of corresponding roles and responsibilities defined by applicable law and regulations to improve flood management planning and investments.



SAMPLE GENERAL PLAN POLICIES

The following sample general plan policies are offered for consideration and reflect policies that cities and counties can reference when addressing flood risk policies for local conditions.

The samples are organized by the associated sample goals presented above and generally reflect policies that cities and counties located throughout the Sacramento-San Joaquin Valley have incorporated into their general plans.

These sample policies are considered to be compatible with statewide flood management practices:

1. FLOOD RISK MANAGEMENT

Flood Risk Management is tied to sample **Goal 1. Protect people and property from flood risk.**

- Appropriately elevate and make developments more flood resistant within the 100-year or 200-year floodplains.
- Regulate development in urban and urbanizing areas per State law according to the presence of a 200-year floodplain.
- Support the rehabilitation of levees that can increase levee stability and improve site characteristics for potential adjacent development, recreation, and river access.
- Require adequate setbacks from flood management levees consistent with local, regional, State, and federal design and management standards.
- Limit the private development of levees to those cases where the construction meets national levee standards and the project is in conformance with the State's comprehensive plan for flood damage reduction.
- Require new development in dam inundation areas to consider risks from dam failure.
- Require new development in levee inundation areas to consider risk from levee failure.
- Require that roadway systems for areas protected by levees be designed to provide multiple escape routes for residents and access for emergency services in the event of a levee failure.
- Provide unobstructed access, whenever feasible, on City- or County-owned land to levees for maintenance and emergencies and require setbacks and easements for access to levees from private property.
- Require that new critical facilities (e.g., hospitals, emergency command centers, communication facilities, fire stations, and police stations) are located outside of 100- and 200-year floodplains, or where such location is not feasible; design the facilities to mitigate potential flood risk to ensure functional operation during a flood event.

- Support the efforts of levee owners and local, regional, State, and federal agencies to design and reconstruct levees that do not meet adopted State and/or federal flood protection standards to bring them into compliance.
- Support the efforts of regional, State, and federal agencies to study levee stability.
- Require that new flood management projects or developments within areas subject to 100- and 200-year frequency floods are done in a manner that will not cause floodwaters to be diverted onto adjacent property or increase flood hazards to properties located elsewhere unless secured through a flood easement or fee title buyout.
- Encourage flood management designs that respect the natural topography and vegetation of waterways while retaining dynamic flow and functional integrity.
- Encourage multi-purpose flood management projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the community's streams, creeks, and lakes.
- Preserve urban creeks and rivers to maintain existing floodplain capacity.
- Support the efforts of local, regional, State, and federal agencies to improve flood management facilities along the community's rivers while conserving the riparian habitat.
- Restore and maintain the natural functions of riparian corridors and water channels to reduce flooding, convey stormwater flows, and improve water quality.
- Encourage increased stormwater and flood management infrastructure capacity in order to accommodate changes in climate, precipitation, and extreme weather events.
- Maintain and update emergency response plans that address potential flooding in levee and dam inundation areas.
- Maintain, update, and make available to the public, as appropriate, community flood evacuation and rescue maps.

2. LAND USE PLANNING PRACTICES

- Regulate new and existing development within floodplains in accordance with State and federal requirements.

Land Use Planning Practices is tied to sample **Goal 2**. *Implement appropriate land use planning practices to improve flood risk management and reduce the consequence of flooding.*

- Encourage prudent use of land within floodplains and implement complementary flood management actions based on sound planning principles.
- Avoid land uses in urban and urbanizing areas within deep floodplains that may result in potential life loss and property damages in the event of flooding, regardless if the deep floodplains are protected by existing or planned flood management facilities.
- Discourage designating land uses in floodplains that promote urban development beyond planned urban and urbanizing areas.
- Require evaluation of potential flood hazards prior to approval of development projects to determine whether the proposed development is reasonably safe from flooding and consistent with the State of California Department of Water Resources' (DWR) *Urban Level of Flood Protection Criteria* for an urban level of flood protection standard (200-year) in urban and urbanizing areas or with the national Federal Emergency Management Agency (FEMA) standard of flood protection (100-year) in nonurbanized areas. The community will not approve new development or a subdivision or enter into a development agreement for any property within a flood hazard zone, unless the adequacy of flood protection specific to the area has been demonstrated.
- Require that new development and substantial improvements or upgrades in identified FEMA flood hazard zones (i.e., 100- and 500-year floodplains) be constructed in accordance with applicable city, State, and federal regulations including compliance with the minimum standards of FEMA's NFIP to avoid or minimize the risk of flood damage.
- Use the best available flood hazard information and mapping from regional, State, and federal agencies and use this information to inform land use and public facilities investment decisions.
- Prohibit new development in existing undeveloped areas (i.e., an area devoted to agriculture or open space that is not already designated for development) that are protected by SPFC facilities unless the development has been appropriately considered to not have a significant known flooding risk.
- Prohibit new development from using levees as a primary access point.

[California Water Code §8307](#) can require a city or county within the Sacramento-San Joaquin Valley to contribute its fair and reasonable share of the property damage caused by a flood to the extent that the city or county has increased the State's exposure to liability for property damage by unreasonably approving new development in a previously undeveloped area that is protected by a State flood control project.

See Appendix B, Acronyms and Definitions, for additional context for the terms "unreasonably approving" and "undeveloped area."

- Require new development in dam or levee inundation areas to consider risk from failure of these facilities and to include mitigations to bring this risk to a reasonable level.
- Require applicants to secure an encroachment permit from the Central Valley Flood Protection Board (CVFPB) for any project that falls within the jurisdiction regulated by the CVFPB (e.g., levees, regulated streams, and designated floodways).
- Review proposed development projects to encourage use of landscaping practices and plants that will reduce demand on water, retain runoff, decrease flooding, and recharge groundwater.
- Encourage the selection of plant material, soil preparation, and the installation of irrigation systems and site design that maximizes pervious surfaces and includes landscaping and other open space areas for reduced water demand and runoff and improved groundwater recharge.
- Encourage open space uses in floodplains.
- Preserve open space and agricultural areas that are subject to natural flooding and are not planned for urban growth.
- Prohibit permanent structures in a designated floodway where such structures could increase risks to human life or restrict the carrying capacity of the floodway.
- Encourage public and private landscaping in new and rehabilitated development projects to be designed to reduce water demand, detain runoff, decrease flooding, and recharge groundwater through activities such as the selection of plant material, soil preparation, and the installation of irrigation systems.

3. FUNDING AND INVESTMENTS

- Cooperate with local, regional, State, and federal agencies in securing funding to obtain the maximum level of flood protection that is practical, with a minimum goal of achieving at least 200-year flood protection for urban and urbanizing areas.
- Collaborate with State and local flood management agencies to provide relocation assistance or other cost-effective strategies for reducing flood risk to existing economically disadvantaged communities located in nonurbanized areas as required by [California Water Code §9622](#).

Funding and Investments is tied to sample **Goal 3**. *Participate in efforts to secure adequate flood management funding and investments.*

- Collaborate with State and local flood management agencies and other interested parties to develop funding mechanisms to finance the local share of flood management responsibilities (e.g., design, construction, and capital costs for repairs and improvements to flood management levees) as required by [California Water Code §9623](#).
- Establish long-term sustainable funding for and the appropriate procedures to properly maintain dams, canals, and levees.
- Support the efforts of levee maintenance districts to secure State and federal funding for levee geotechnical studies and implementation of associated facility improvements, as well as for ongoing maintenance.
- Adopt the community's local hazard mitigation plan as part of the general plan safety element to qualify for the greatest share of State-eligible, post-disaster costs under the California Disaster Assistance Act.

4. COORDINATING EFFORTS

Coordinating Efforts is tied to sample **Goal 4**. *Coordinate with other local, regional, State, and federal agencies to improve flood risk management.*

- Work with federal, State, and local agencies to improve flood management and drainage.
- Establish cooperative working relationships among local, regional, State, and federal agencies with responsibility for flood management to minimize flood hazards and improve safety, such as participation with the California Silver Jackets Team lead by the State of California Department of Water Resources (DWR) and the United States Army Corps of Engineers (USACE).
- Work with responsible parties to ensure flood management facilities and structures (e.g., pump stations, levees, canals, channels, and dams) in the community are properly maintained and/or improved.
- Work with local, regional, State, and federal agencies to ensure new and existing levees are adequate in providing flood management.
- Work with responsible parties in incorporating improvements in flood control canals and channels, when feasible and when major upgrades and/or reconstruction may be required, that provide opportunities for stormwater detention and groundwater recharge.



- Work with local, regional, State, and federal agencies to maintain an adequate flood management information base, prepare risk assessments, and identify strategies to mitigate flooding impacts.
- Partner with relevant organizations and agencies (e.g., Federal Emergency Management Agency [FEMA] and State of California Department of Water Resources' [DWR]) when updating floodplain mapping, flood management plans, local hazard mitigation plans, and other emergency response plans to consider the impacts of urbanization and climate change on long-term flood safety and flood event probabilities.
- Participate in the State of California Department of Water Resources (DWR) supported Regional Flood Management Planning (RFMP) effort.

5. PUBLIC OUTREACH AND COMMUNICATION

- Inform the public about the specific risks of living in flood prone areas, and provide community residents instructional information on how to take steps to reduce their exposure to flood damages.
- Develop and implement a public outreach campaign to notify landowners and tenants of their flood status, options for flood insurance, evacuation plans, flood management programs, locally responsible flood agencies, and other related information.
- Require developments within the inundation area of a levee to include a notice to future buyers within the property deed regarding the potential flood risk and that the property can be subject to flooding if the levee were to fail or be overwhelmed.
- Participate in local, regional, and State watershed awareness and water quality educational programs for community organizations, the public, and other appropriate groups.

Public Outreach and Communication is tied to sample **Goal 5**. *Promote public awareness activities that communicate the requirements and risks associated with owning land and living within a floodplain.*

Cities and counties are encouraged to annually participate in [California Flood Preparedness Week](#) public events and interagency activities that are jointly supported by USACE, FEMA, National Oceanic and Atmospheric Administration, DWR, Cal OES, and Sacramento County.
Be Aware, Be Prepared, and Take Action!

2012 CVFPP OBJECTIVES

The [2012 CVFPP](#) provides a vision for future State investment in improving flood management in the Central Valley. This vision is advanced through a number of objectives that reflect an IWM approach to the State's flood management challenges, and as a result, can be broadly applied. Cities and counties are encouraged to work with neighboring areas to develop regional collaboration and sustainable flood management solutions that better leverage resources.

See page 1-27 of the [2012 CVFPP](#) for additional context of these objectives.

[California Water Code §9616](#), enacted by [SB 5 \(2007\)](#), provides a list of objectives for guiding the development of the [2012 CVFPP](#). These qualitative objectives should be considered by cities and counties and refined for local conditions when developing quantified general plan objectives.

- (1) Reduce the risk to human life, health, and safety from flooding, including protection of public safety infrastructure.
- (2) Expand the capacity of the flood protection system in the Sacramento-San Joaquin Valley to either reduce floodflows or convey floodwaters away from urban areas.
- (3) Link the flood protection system with the water supply system.
- (4) Reduce flood risks in currently nonurbanized areas.
- (5) Increase the engagement of local agencies willing to participate in improving flood protection, ensuring a better connection between state flood protection decisions and local land use decisions.
- (6) Improve flood protection for urban areas to the urban level of flood protection.
- (7) Promote natural dynamic hydrologic and geomorphic processes.
- (8) Reduce damage from flooding.
- (9) Increase and improve the quantity, diversity, and connectivity of riparian, wetland, flood plain, and shaded riverine aquatic habitats, including the agricultural and ecological values of these lands.
- (10) Minimize the flood management system operation and maintenance requirements.
- (11) Promote the recovery and stability of native species populations and overall biotic community diversity.
- (12) Identify opportunities and incentives for expanding or increasing use of floodway corridors.
- (13) Provide a feasible, comprehensive, and long-term financing plan for implementing the plan.
- (14) Identify opportunities for reservoir reoperation in conjunction with groundwater flood storage.

SAMPLE GENERAL PLAN OBJECTIVES

The following sample general plan objectives are offered for consideration, are quantitative in nature (i.e., a timeframe to achieve results or a metric to gauge success), and include objectives that cities and counties can reference when addressing flood risk objectives for local conditions. The samples generally reflect objectives that cities and counties located throughout the Sacramento-San Joaquin Valley have incorporated into their general plans.

These sample objectives are considered to be compatible with statewide flood management practices:

- Work with local, regional, State, and federal agencies to achieve by 2025 at least a 200-year level of flood protection for urban and urbanizing areas.
- Participate in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP) Community Rating System (CRS) and continue floodplain management practices in accordance with federal guidelines to annually maintain the community's eligibility for flood insurance and qualification for disaster assistance.
- Encourage all landowners within the 100- or 200-year floodplain and/or within the inundation area of a levee to annually purchase and maintain flood insurance.
- Annually maintain and implement the community's Federal Emergency Management Agency (FEMA)-approved local hazard mitigation plan in order to apply for and/or receive project grants under FEMA's hazard mitigation assistance programs (e.g., Hazard Mitigation Grant Program, Pre-Disaster Mitigation, Flood Mitigation Assistance, or Severe Repetitive Loss).
- Annually maintain and implement the community's floodplain management ordinance to reflect State law flood management requirements.
- Prepare public awareness campaigns bi-annually with local and regional flood management partners to inform the general public and potentially affected property owners of flood hazards, potential dam failure inundation, and evacuation plans.
- Annually notify landowners and tenants of the risks associated with living in a levee and/or dam inundation area.

Generally, the amendment requirements may affect the land use, housing, conservation, open space, and safety elements of a general plan.

OTHER CONSIDERATIONS

Other related documents, such as the [California's Flood Future: Recommendations for Managing the State's Flood Risk](#), dated November 2013, and the [California Water Plan Update 2013](#) also contain consistent and complementary flood management references that can be considered as a whole when making general plan amendments for addressing flood risk.

For example, the [California's Flood Future](#) report provides a look at statewide exposure to flood risk and identifies and addresses the barriers to improved flood management. More specifically, Recommendation 4 encourages land use planning practices that reduce the consequences of flooding with the goal of reducing risk to people, property, and economies in floodplains. Associated strategies include the following and may translate to local city and county conditions for development of goals, policies, and objectives:

- Working with organizations that represent flood management and land use professionals to develop planning principles that will help decision makers determine if property is at risk for flooding to increase wise land use planning.
- Facilitating regular coordination at all levels among land use planners, resource managers, floodplain managers, and emergency response managers to reduce impacts of flooding and improve public safety.
- Linking funding for flood management improvements to implement best management practices for floodplain management including the support of fiscal incentives to help improve land use planning to reduce risks to people and property, as well as to maintain and restore natural functions of floodplains.

Additionally, the [California Water Plan Update 2013](#) includes strategies for flood management (Chapter 4), land use planning and management (Chapter 24), watershed management (Chapter 27), and economic incentives (Chapter 28), as follows:

- Flood management approaches speak to a flood resource management strategy that is subdivided into four approaches (i.e., nonstructural, restoration of natural floodplain functions, structural, and flood emergency management).
- Land use and planning management strategies support planning for more compact and sustainable communities, both urban and rural, which will assist in reducing reliance on the State's water supply and result in more efficient use of



California's water resources. Important considerations of water issues and land use planning include not only the effects of the physical environment, but also the economic and social impacts of land use planning and development.

- Community-based watershed management has evolved as an effective approach to natural resource management and is practiced in hundreds of watersheds through the State and carried out with the active support, assistance, and participation of several State agencies and programs.
- Economic incentives include financial assistance, water pricing, and water market policies intended to influence water management.

3.5 Amending General Plan Implementation Measures

[OPR's General Plan Guidelines](#) provide clear direction on how implementation measures are written in general plans. By using the best available and most relevant data described in Subsections 3.2 and 3.3 and included in Appendix A, Table A, in addition to regional and locally available data, cities and counties can strengthen and make more feasible the base of their flood risk management general plan implementation measures.

Implementation Measure

An implementation measure is an action, procedure, program, or technique that carries out general plan policy.

RECOMMENDATIONS

As mentioned in Subsection 3.1, the green vertical columns in Table A highlight more qualitative information that can be read, analyzed, interpreted, and tailored for "indirect use" when preparing the required amendments for the general plan implementation measures. For example, by utilizing the vertical green columns in Table A the reader can determine that one of the primary sources of information for "Considerations for Implementation Measure Development" is the CVFPP and in Table A under Row A. "Data from 2012 CVFPP Developed under the DWR CVFMP Program" information can be found for consideration when drafting implementation measures.

This Subsection first provides resource information and recommendations specifically for [California Government Code §65302.9\(a\)\(3\)](#), then provides additional resources and actions that both cities and counties should consider when amending their general plans.

Each policy must have at least one corresponding **implementation measure**.

California Government Code §65302.9(a)(3). *Feasible implementation measures designed to carry out the goals, policies, and objectives established pursuant to paragraph (2).*

Data and Analysis			Addressing California Government Code §65302.9 General Plan Amendment Requirements										
Source	Item/Description		Direct Use			Indirect Use		Other					
			Locations of Flood Management Facilities (SFPC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics			
B. Data Complementing CVFPP from Other DWR FloodSAFE Programs and Activities													
B.1	Statewide Flood Management Planning Program	SFMP Program:	Led by DWR through the FloodSAFE Initiative and the Division of Statewide Integrated Water Management. The program works in collaboration with local, State, and Federal agencies and tribal entities throughout California to make recommendations to guide flood management policies and investments in the coming decades by promoting a clear understanding of flood risks in California; garnering active support for partnerships at the local, State, and Federal levels; coordinating with other DWR planning efforts; identifying strategies and feasible next steps to better incorporate flood management into IWM; and promoting an IWM approach for flood management solutions.						X	X	X	X	X
B.2	California's Flood Future: Recommendations for Managing the State's Flood Risk	Attachment A: References	There are three major components of the DWR SFMP program. One of the components is the California's Flood Future Report in conjunction with USACE to develop California's Flood Future: Recommendations for Managing the State's Flood Risk. This report provides the first look at statewide exposure to flood risk and identifies and addresses the barriers to improved flood management. It also includes information intended to inform decisions about policies and financial investments to improve public safety, foster environmental stewardship, and support economic stability. The other components include flood management planning in support of the California Water Plan Update 2013 and implementing California's Flood Future Report Recommendations.								X		

Table A also provides secondary sources for consideration including the SFMP Program (Row B.1 of Table A) and the *California's Flood Future: Recommendations for Managing the State's Flood Risk* report (Row B.2 of Table A).

2012 CVFPP EXAMPLE GENERAL PLAN IMPLEMENTATION MEASURE GUIDANCE

The following provides example general plan implementation measure guidance from the [2012 CVFPP](#) that should be considered by cities and counties when developing feasible implementation measures for their local general plans.

Coordinate Regionally

Cities and counties are encouraged to develop implementation measures in coordination with regional partners to promote sustainable planning and improve IWM on a regional scale. The RFMP process is an example that cities and counties may reference on how the State would like to operate regionally. Cities and counties are encouraged to visit their respective region's [RFMP website](#) for regionally identified actions to improve flood management.

Coordinate Nationally

Implementation measures should be similar or consistent with federal strategies for IWM.

DWR launched the [Regional Flood Management Planning \(RFMP\)](#) effort to assist local agencies to develop long-term regional flood management plans that address local needs, articulate local and regional flood management priorities, and establish the common vision of regional partners.

Improve SPFC Facilities

The State has specific roles and responsibilities for SPFC facilities that focus on strategies to improve the performance of these facilities such as identifying, recommending, and implementing structural and nonstructural projects and actions that benefit lands currently receiving protection from facilities of the SPFC. Cities and counties should coordinate with DWR, as applicable, to identify measures to improve performance of relevant SPFC facilities in their area.

Provide Systemwide Benefits

Cities and counties are encouraged to combine local and regional improvements with other systemwide improvements to identify and align with the sustainable flood management practices included in the 2012 CVFPP State Systemwide Investment Approach (SSIA) and formulate standards, criteria, and guidelines to facilitate implementation of structural and nonstructural actions for protecting urban areas and other lands of the Sacramento and San Joaquin river basins and the Delta.

Promote Integrated Water Management

Cities and counties should consider flood resource management actions within a broad and highly integrated water management (IWM) and land use planning approach. The State continues to implement flood risk reduction measures within the broad context of a sustainable IWM multi-benefit vision that improves public safety, protects and enhances environmental and cultural resources, and supports economic growth by reducing flood risks.

Promote Multi-Benefit Projects

Cities and counties should promote multi-benefit projects that integrate systemwide flood management improvements and recognize the importance of environmental stewardship, water supply, recreational enhancements, and other objectives to better leverage support and funding.

Consider Climate Change

Projects should be developed in a manner that anticipates the extremes that are predicted to worsen due to climate change. Pursuing measures that can better accommodate future changing hydrology and benefit implementation of adaptation strategies for climate change are supported.

Streamline and Consolidate Permitting

To expedite permitting of critical maintenance activities and flood system improvement projects, cities and counties should consider advanced mitigation and programmatic mitigations on a regional level or an aggregated manner to avoid compensatory mitigations.

Maintain Coordination and Consistency

Cities and counties should encourage a flood management system that operates in a coordinated fashion and is consistent with other local policy requirements, standards, and ordinances.

SAMPLE GENERAL PLAN IMPLEMENTATION MEASURES

The following sample general plan implementation measures are offered for consideration and are actions, procedures, programs, or techniques that carry out general plan policy. These samples reflect implementation measures that cities and counties can reference when addressing flood risk implementation measures for local conditions. The samples generally reflect implementation measures that cities and counties located throughout the Sacramento-San Joaquin Valley have incorporated into their general plans.

These sample implementation measures are considered to be compatible with statewide flood management practices:

- Amend the zoning ordinance pursuant to [California Government Code §65860.1](#) to provide consistency with amendments made to the General Plan pursuant to [California Government Code §65302.9](#) for flood risk management.
- Study the feasibility of designating land within floodplains as open space for future bypass systems or expansions to reduce the consequences of flooding and related hazards and work with State and federal agencies to include such bypasses and expansions, where appropriate, in future planning efforts.
- Review the municipal code and amend as necessary to require habitable structures in the 100-year and 200-year floodplains to be designed and constructed as to not significantly contribute to cumulative drainage or flooding impacts that could pose a hazard to surrounding landowners and/or the public.
- Review the municipal code and amend as necessary to require the location of new critical facilities (e.g., hospitals, emergency command centers, communication facilities, fire stations, and police stations) outside of 100- and 200-year floodplains. Where such location is not feasible, include exceptions through

Cities and counties should see the [2012 CVFPP PEIR](#) for additional details regarding the types of implementation measures that should be considered (refer to Appendix A for source information).

appropriate mitigation methods to minimize the potential flood damage to the facility.

- Annually review local agency, the United States Army Corps of Engineers (USACE), and the Central Valley Flood Protection Board (CVFPB) plan recommendations for flood management and drainage best management practices and make improvements, as necessary. These actions are independent of and in addition to the development review process.
- Review the municipal code and amend as necessary to require a minimum setback consistent with Title 23 or the United States Army Corps of Engineers (USACE) standards for maintenance corridors or a minimum of 50 feet whenever possible for all permanent improvements adjacent to a flood management structure.
- Work with applicable parties to prepare a hydrological study of uplands that identifies the different watersheds that drain into the community, establishes flood-related objectives and priorities on a study area basis, and translates those into a coordinated series of flood-preventive measures for each watershed.
- Review annually and update, as necessary, appropriate general plan elements to reflect current floodplain mapping data available from local, regional, State, and federal agencies to ensure the best available flood risk mapping information is contained in the general plan.
- Develop a detailed maintenance and funding plan for levees under the community's control and establish working groups with outside agencies that own and maintain levees in the community to ensure that levee safety is maintained.
- Prepare and provide informational media educating the public about community safety issues and programs for management and response to flooding hazards. A diversity of formats may be used including publications, posters, videos, PowerPoint presentations, and postings on the community's website.

OTHER CONSIDERATIONS

DWR's California Model Floodplain Management Ordinance for Non-coastal Communities

In 2010, Sacramento County adopted a [Floodplain Management Ordinance](#) that is similar to DWR's model ordinance.

In needing to amend the zoning ordinance for general plan consistency as required by [California Government Code §65860.1](#), local communities could include an implementation measure to adopt an updated version of DWR's 2006 [California Model Floodplain Management Ordinance for Noncoastal Communities](#) or choose to modify an existing local floodplain management ordinance accordingly. The purpose of the DWR model ordinance is to promote the public health, safety, and general welfare of a community and to minimize public and private losses due to flood conditions in specific areas, which is similar to the goals and objectives for reducing flood risk in general plans.

In addition cities and counties are encouraged to consider implementation of the following flood management actions, as applicable, when amending their general plan implementation measures.

Conveyance Management Actions

Improve flood management system flexibility and resiliency by improving conveyance facilities (e.g., levees and channels) to more reliably convey flood flows throughout the system with actions such as:

- sediment removal and repair,
- reconstruction, and
- other structural improvements, such as levee setbacks or floodplain restoration.

Storage Management Actions

Improve capability of existing storage facilities (e.g., reservoirs) to minimize the volume of flood flows entering the system during times when the system is stressed from a storm with actions such as:

- changing and coordinating reservoir operations in conjunction with the flows, and
- more effectively using weather forecasting information.

Other Management Actions

Improve system function and safety with other management actions such as:

- implementing a vegetation management strategy,
- purchasing floodplain easements,
- integrating conservation strategies,
- refining flood emergency response,
- improving flood system operations and maintenance, and
- implementing flood risk reduction projects in coordination and partnership with local and federal agencies.

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SECTION 4 **Related General Plan Amendment Information**

- 4.1 *General Plan Internal Consistency*
- 4.2 *General Plan Amendments and CEQA*

4.1 General Plan Internal Consistency

General plans are comprehensive policy documents that guide future growth and development and set forth the direction a city or county will take in managing its future resources based upon a shared vision for the community. Internal consistency is a fundamental requirement of general plans ([California Government Code §65300.5](#)) where conflicts between all general plan elements, whether mandatory or optional, should be acknowledged and resolved to be consistent with one another. With internal consistency, the general plan can effectively serve as a clear guide to future development and can limit the exposure the jurisdiction has to litigation.

The Governor's Office of Planning and Research's (OPR) [General Plan Guidelines](#) describe the concept of internal consistency to hold that no policy conflicts can exist, either textual or diagrammatic, between the components of an otherwise complete and adequate general plan. General plan content must be balanced and reconciled within the plan based on the five dimensions of the internal consistency requirement:

1. Equal status among elements
2. Consistency between elements–
3. Consistency within elements
4. Area plan consistency
5. Text and diagram consistency

OPR is the comprehensive State planning agency for long-range planning and research. Additional guidance on general plans and managing internal document consistency is provided by OPR.

As cities and counties amend specific elements of a local general plan an internal consistency analysis of the entire plan, as a whole, must be completed. If potential inconsistencies are identified, further amendments may be required to ensure general plan internal consistency is maintained. Many communities attempt to address and resolve any conflicts by concurrently amending the zoning ordinance and other applicable ordinances, such as the floodplain management ordinance, along with all relevant elements of the general plan.

4.2 General Plan Amendments and CEQA

The general plan amendments described in this Guidance are subject to environmental review per CEQA.

According to the [California Environmental Quality Act \(CEQA\) Guidelines](#) (California Code of Regulations §15206), adoption of a general plan is considered a project of statewide, regional, or area wide significance under CEQA and environmental documentation is needed as a result. When a general plan amendment is being processed, potential environmental effects of the proposed general plan goals, policies, objectives, and implementation measures must be evaluated. The environmental documentation prepared for implementation of the general plan element amendments may vary due to the nature of the update process and/or the number of elements requiring amendments.

The CEQA Guidelines encourage using the certified general plan environmental impact report (EIR), when appropriate, to address potential impacts or rule out effects if otherwise consistent with the general plan. This streamlined approach to environmental review is referred to as “tiering” (California Code of Regulations §15152). An EIR, MND, or ND using the tiering principle must refer to the prior EIR, state where a copy of that document may be examined, and state that tiering is being used; however, tiering cannot be employed when the project is inconsistent with the general plan or zoning (California Code of Regulations §15152(e)).

Cities or counties also create “self-mitigating” general plans that, to the greatest extent possible, include policies and implementation measures as part of the general plan that mitigate or otherwise reduce potential impacts identified in the general plan EIR to a less than significant level.

Overall, tiering and having a self-mitigating general plan can result in cost savings to local governments, because it reduces the preparation and processing time as part of the environmental review process.



Table A provides information from the Central Valley Flood Protection Plan as the primary resource for data and analysis cited in [California Government Code §65302.9](#) that must be considered by cities and counties for State law compliance when amending their general plans. Table A also provides additional information, relevant data, and program activities from related local, regional, additional State, and federal agencies to encourage a broad IWM approach.

Table A was prepared by DWR pursuant to the requirement to provide technical assistance to cities and counties and in an effort to go beyond to include other sources of relevant flood management and safety information for local land use planning and decision making. DWR does not plan on being the clearinghouse for all flood management data and information found in Table A due to the fact that DWR does not have control over much of the information, as it was created by other local, regional, State, and federal agencies. DWR will, however, continue to provide DWR-generated information/data in a transparent and effective manner. Refer to Appendix C for more information on how to acquire data and other flood hazard management information that is not readily accessible in Table A or through the Internet hyperlinks provided herein.

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Table A: Resources for Data and Analysis

Data and Analysis		Geographic Applicability				Content Focus			Addressing California Government Code §65302.9 General Plan Amendment Requirements							
Source	Item/Description	Statewide	Sacramento and San Joaquin Hydrologic Regions (Whole, Partial)	Sacramento-San Joaquin Valley (Whole, Partial) (CGC 65007(h))	Areas Protected by the SPFC	Flood Management	Element(s) of IWM	General Context and Reference	Direct Use			Indirect Use			Other	
									Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics
A. Data from 2012 CVFPP Developed under the DWR CVFMP Program																
A.1	CVFPB	CVFPP Board Resolution 2012-25	The resolution provides additional guidance and amendments on the draft 2012 CVFPP by the CVFPB in adopting the 2012 CVFPP, the comprehensive framework for systemwide flood management and flood risk reduction in the Sacramento and San Joaquin River basins. See also: CVFMP Program, RFMP, BWFS, Conservation Strategy. See also endnote: [1]			X	X	X	X	X	X				X	X
A.2	CVFMP Program	2012 CVFPP with errata and attachments	The CVFPP is a critical flood management and flood risk reduction document meant to provide a comprehensive and integrated framework for a SSIA for areas protected by the SPFC facilities. The CVFPP is on a 5-year update cycle and the major flood management planning efforts that resulted from the 2012 plan are ongoing to refine the SSIA and inform the 2017 CVFPP update, providing support for subsequent policy, program, and project implementation. Additional details on each attachment is provided later in this table. See also endnote: [1]			X	X	X	X	X	X	X	X	X	X	X
		CVFPP Consolidated Final Program EIR with appendices	The CVFPP Program EIR was developed to inform DWR, which developed the CVFPP, and the CVFPB, which adopts the CVFPP, about potential program-level environmental effects and mitigation measures related to the components of the CVFPP. See also endnote: [1]			X	X	X	X				X	X	X	X
2012 CVFPP Volume I Attachments																
A.3	(1) Legislative Reference	California Water Code section pertaining to the development and required content of the 2012 CVFPP:	Includes a brief summary of how DWR has responded to each legislated provision as part of the 2012 CVFPP development.			X	X	X	X	X				X	X	
A.4	(2) Conservation Framework	An environmental guide for flood project planning in the 2012 CVFPP:	Describes how environmental stewardship is integrated into flood management activities, directs the reader to relevant environmental elements in the CVFPP, and gives additional detail on environmental planning elements, including regulatory compliance. See also endnotes: [1] and [2]			X	X	X	X	X				X	X	X
A.5	(3) Documents Incorporated by Reference	Summaries of CVFPP related documents:	The 2012 CVFPP incorporates information by reference from several documents that are either linked with CVFPP through legislative requirements or related management policies that adoption of the CVFPP will trigger. This includes SPFC Descriptive Document (DWR, 2010a), Flood Control System Status Report (DWR, 2011b), ULOP Criteria (DWR, 2012c), and ULDC (DWR, 2012d). See also endnote: [1]			X	X	X	X						X	

Table A: Resources for Data and Analysis

Table A: Resources for Data and Analysis																	
Data and Analysis				Geographic Applicability				Content Focus			Addressing California Government Code §65302.9 General Plan Amendment Requirements						
Source	Item/Description			Statewide	Sacramento and San Joaquin Hydrologic Regions (Whole, Partial)	Sacramento-San Joaquin Valley (Whole, Partial) (CGC 65007(h))	Areas Protected by the SPFC	Flood Management	Element(s) of IWM	General Context and Reference	Direct Use			Indirect Use		Other	
											Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood
A.6	(3a) SPFC Descriptive Document	Locations of SPFC Facilities and the procedures for including new or modified facilities into the SPFC:	The first compilation of SPFC defined by California Water Code §9110(f). It is important to note that SPFC is only a portion of the large flood management system in the Central Valley. The performance of SPFC also relies on the operation and performance of other facilities that are not part of the SPFC, as well as other nonstructural management actions such as emergency responses and floodplain management. See also endnote: [1]			X	X	X				X				X	
A.7	(3b) Flood Control System Status Report	System-level status evaluation, factors for evaluation, and status of levees, channels, and flood structures:	The evaluation incorporated the available information from the Levee Evaluation Program, routine inspections from USACE and DWR, and additional analyses for channel capacities. See also endnotes: [1] and [3]			X	X	X		X							X
A.8	(3c) ULOP Criteria	Procedural criteria for making a finding:	DWR developed per the requirements of California Government Code §65007(n). The law did not specify any enforcement authority for the ULOP, but instead relies on the due diligence of cities and counties to incorporate flood risk considerations into floodplain management and planning. However, the law tasked DWR with developing criteria that cities and counties could use to make findings related to an ULOP. The law also provides that cities and counties may develop their own criteria as long as it is consistent with the criteria developed by DWR. In this context, DWR developed the criteria to satisfy the legislative requirements without interfering with local land use authority, while providing reasonable details and flexibility, and promoting prudent floodplain management in concert with other State law provisions related to smart growth and climate change adaptation strategies. See also: ULOP Criteria Work Groups, ULDC. See also endnote: [1]		X	X	X	X	X	X				X			X
A.9	(3d) ULDC	Criteria:	Provides for design, evaluation, operation, and maintenance of levees and floodwalls in urban and urbanizing areas. It supersedes Version 4 of the Interim Levee Design Criteria for Urban and Urbanizing Areas in the Sacramento-San Joaquin Valley (2010). It contains numerous revisions and refinements from Version 4, as well as improvements based upon comments received on the Draft ULDC (2011). See also: ULDC Work Groups, ULOP Criteria. See also endnote: [1]		X	X	X	X	X	X				X			X

Table A: Resources for Data and Analysis

Data and Analysis		Geographic Applicability				Content Focus			Addressing California Government Code §65302.9 General Plan Amendment Requirements								
Source	Item/Description	Statewide	Sacramento and San Joaquin Hydrologic Regions (Whole, Partial)	Sacramento-San Joaquin Valley (Whole, Partial) (CGC 65007(h))	Areas Protected by the SPFC	Flood Management	Element(s) of IWM	General Context and Reference	Direct Use			Indirect Use			Other		
									Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics	
A.10	(4) Glossary	Glossary:	Defines and clarifies key terms used in the 2012 CVFPP. Definitions of some of the terms used in the 2012 CVFPP referenced the government codes directly or other preexisting sources, while others were developed collaboratively with stakeholders. It also defines terms used in the context of the 2012 CVFPP that may have different meanings in other disciplines.						X								
A.11	(5) Engagement Record	Engagement Record:	Catalogues and describes the approaches and accomplishments of communication and engagement activities to support and complement technical planning processes implemented through the CVFMP Program. While the document's central focus is on the CVFMP Program's activities to complete the draft 2012 CVFPP and its key related documents, it further describes communication and engagement efforts provided to other related FloodSAFE programs and studies.						X								
A.12	(6) Contributing Authors and Work Group Members List	Contributing Authors and Work Group Members List:	Provides a list of all authors who contributed to the 2012 CVFPP, including appendices. It also lists the Work Group Members List.						X								
2012 CVFPP Volume II Attachments																	
A.13	(7) Plan Formulation Report	Plan Formulation Process:	Description of the process used to develop CVFPP goals, planning constraints and criteria, management actions, preliminary approaches, the SSIA, the considerations of legislative requirements for a systemwide approach, and the stakeholder and expert input throughout the process. See also endnote: [1]											X	X	X	X
		LFPZ:	DWR prepared LFPZ maps per California Water Code §9130. LFPZ maps represent floodplain areas receiving protection from SPFC facilities. The identified areas may also receive protection from facilities other than SPFC levees. The LFPZs estimate the maximum area that may be inundated if a project levee were to fail when water surface elevation is at the top of a project levee. It is important to note that lands not mapped within a LFPZ are not invulnerable to flood risk and some may also experience flooding from other sources. See also: CVFED Program. See also endnote: [1]								X	X	X				X
A.14	(7A) Local and Regional Project Summaries	Potential Projects:	This includes the wide range of local flood planning activities and projects that are not large enough in scale to directly include in the SSIA, but may be considered in later regional planning efforts. These projects were obtained through stakeholder input with limited validation. See also endnote: [1]							X	X	X			X	X	

Table A: Resources for Data and Analysis

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									Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood
2012 CVFPP Volume III Attachments															
A.15	<u>(8) Technical Analysis Summary Report</u>	Summary of technical analyses:	As part of the development of the CVFPP, a series of technical analyses were conducted to evaluate hydrologic, hydraulic, geotechnical, economic, ecosystem, and related conditions within the flood management system and to support formulation of system improvements. These analyses were conducted in the Sacramento River Basin, San Joaquin River Basin, and Sacramento-San Joaquin Delta. This summary report provides an overview of the technical analysis, approach, tools, and data that supported the development of the 2012 CVFPP. See also endnote: [1]	X	X	X	X	X				X			X
A.16	<u>(8A) Hydrology</u>	10-, 50-, 100-, 200-, and 500-year Flood Hydrology with 5 storm centerings:	Hydrology developed by USACE for the Sacramento-San Joaquin Basins Comprehensive Study (2002) with limited updates. See also endnote: [1]	X	X	X	X					X			
A.17	<u>(8B) Reservoir Analysis</u>	USACE HEC-5 reservoir models:	Reservoir operation model developed originally for the Sacramento and San Joaquin River Basins Comprehensive Study (USACE, 2002) with updates to reflect current operations. See also endnote: [1]	X	X	X	X					X			
		USACE HEC-ResSim model for Folsom Lake:	HEC-ResSim model for Folsom Lake was used to simulate modified releases from Folsom Dam under the Joint Federal Project led by USACE. See also endnote: [1]	X	X	X	X					X			
		Reservoir analysis approach:	The reservoir analysis performed to establish reservoir operation under given scenarios and to provide reservoir releases as input to riverine hydraulic models. See also endnote: [1]	X	X	X	X					X			
A.18	<u>(8C) Riverine Channel Evaluations</u>	USACE UNET models for the Sacramento and San Joaquin rivers:	Riverine channel hydraulic model originally developed for the Sacramento and San Joaquin River Basins Comprehensive Study (USACE, 2012) with updates to reflect the current channel conditions and operations. See also endnote: [1]	X	X	X	X					X			
		Riverine channel evaluation approach:	Reservoir analysis results from HEC-5 and HEC-ResSim models (Attachment 8B) provided input to the CVFPP UNET models. Outputs from the CVFPP UNET models were used as inputs to the estuary hydraulic models (Attachment 8D), flood damage evaluation models to estimate economic damages (Attachment 8F), and life risk analysis (Attachment 8G). See also endnote: [1]	X	X	X	X					X			

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A.19	(8D) Estuary Channel Evaluations	RMA Delta Model for the Sacramento-San Joaquin Delta estuary:	A hydraulic model used to evaluate channel stages, as well as out-of-system volume leaving Delta channels and entering islands through levee breaches/ overtopping. See also endnote: [1]		X	X	X	X					X			
		Estuary channel evaluation approach:	Riverine channel hydraulic modeling results from UNET (Attachment 8C) provided the upstream boundary conditions for the RMA Delta Model. Levee elevation assumptions in the RMA Delta Model were modified to simulate each CVFPP approach. Outputs from the RMA Delta Model were used as input to flood damage evaluation models to estimate economic damages for some Delta islands (Attachments 8E and 8F). See also endnote: [1]	X	X	X	X	X					X			
A.20	(8E) Levee Performance Curves	Levee Performance Curves:	Levee performance curves provide geotechnical relationships between river stage and the probability that a levee segment will breach (water from the water side of the levee flows in an uncontrolled manner to the landside of the levee) at that stage. The levee performance curves were developed by an expert panel that included USACE, DWR, ULE/NULE contractors, and other industry experts. See also: Levee Evaluation Program (including Urban Levee Evaluation Program and Non-Urban Levee Evaluation Program). See also endnote: [1]		X	X	X	X					X			
2012 CVFPP Volume IV Attachments																
A.21	(8F) Flood Damage Analysis	USACE HEC-FDA model:	The HEC-FDA model provides the risk-based analysis of the potential economic consequences of flood inundation in EAD. EAD estimates were performed for structure and content damages, crop damages, and business income and production losses. The model was originally developed by USACE for Sacramento-San Joaquin River Basins Comprehensive Study (USACE, 2012) with updates. See also endnote: [1]		X	X	X	X					X			
		Flood damage analysis approach:	To describe the hydrologic, hydraulic, and geotechnical performance and uncertainties of the system, the flood damage analysis used levee performance curves (Attachment 8E), stage-frequency curves from riverine and estuary hydraulic models (Attachments 8C and 8D), and flood depth information from prior floodplain hydraulic analysis. To describe the economic consequences of flood inundation, the analysis used information from a 2010 reconnaissance-level structural inventory, 2010 spatial cropping patterns, contents-structure ratios and depth-damage functions. See also endnote: [1]	X	X	X	X	X					X			

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A.22	(8G) Life Risk Analysis	Life safety model based on USACE HEC-FDA models:	The risk-based analysis of the potential public safety consequences of flood inundation, and the attachment includes estimates of expected annual life risk similar to the flood damage analysis (Attachment 8F). See also endnote: [1]		X	X	X	X						X			
		Life risk analysis approach:	The life safety analysis used USACE HEC-FDA models developed for the economic damages analysis to generate annual expected life risk. For population exposure and inundation consequences, the analysis used 2000 U.S. Census population data, the best available information at the time the analysis was conducted, and mortality-depth curves from work done by S.N. Jonkman in New Orleans after Hurricane Katrina. Just as EAD is used to assess the potential economic benefits of a plan, life risk analysis is used to assess the potential life safety benefits (reduction in injuries and loss of life). See also endnote: [1]	X	X	X	X	X						X			
A.23	(8H) Regional Economic Analysis for the SSIA	IMPLAN input-output regional economic model:	Annual regional economic impacts due to implementation of the SSIA help to describe the economic benefits associated with proposed flood management improvements. See also endnote: [1]		X	X	X	X	X					X			
		Regional economic analysis approach:	The regional economic analysis estimates the effects of the proposed flood management improvements on regional economic activity, specifically employment and industry output. Annual employment and industry output effects of SSIA project construction and avoided business losses from flooding are also estimated. Cost estimates of each alternative were used as input for the construction-related aspects of the analysis, and avoided business losses from the flood damage analysis (Attachment 8F) were used as input to the industry/business-related aspects of the analysis. See also endnote: [1]	X	X	X	X	X	X					X			

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A.24	(8I) Framework for Benefit Assessment	Potential benefit categories:	Summary of quantitative and qualitative benefit assessments. See also endnote: [1]	X	X	X	X	X	X	X				X			
A.25	(8J) Cost Estimates	Cost estimate approach:	The basis for development of pre-appraisal-level capital cost estimates for different approaches, including cost assumptions and conceptual level engineering associated with different aspects of the cost estimates. See also endnote: [1]		X	X	X	X	X	X				X			
A.26	(8K) Climate Change Analysis	Climate change impacts on flood management:	The uncertainties and areas of impact from climate change on hydrology and flood management practices. See also endnote: [1]	X	X	X	X	X	X	X				X			
		Bottom-up vulnerability assessment approach and prudent decision making process:	The Threshold Analysis Approach is a bottom-up approach focusing on vulnerability and associated prudent investments, aimed at broadening the chance of adaptation regardless of which climate change scenarios may be realized (rather than focusing on maximizing benefits under selected scenarios). The thresholds or vulnerabilities can be assessed at system, regional, and community levels. See also endnote: [1]	X	X	X	X	X	X					X			X
A.27	(8L) Groundwater Recharge Opportunities Analysis	Recharge opportunities in Sacramento-San Joaquin flood system:	High-level review of groundwater recharge opportunities in the flood system for possible integration and water supply benefits. See also endnote: [1]		X	X	X		X	X				X			X
2012 CVFPP Volume V Attachments																	
A.28	(9) Supporting Documentation for Conservation Framework	Summary of efforts contributing to Conservation Framework:	Supporting technical analyses and research efforts were conducted to evaluate conditions within the flood management system and to support formulation of conservation improvements. These efforts were conducted in the Sacramento River Basin, San Joaquin River Basin, and Sacramento-San Joaquin Delta. This Supporting Technical Documentation for Conservation Framework provides an overview of the technical analyses and research efforts supporting the formulation and evaluation of the Conservation Framework that, in turn, supports formulation of the SSIA presented in the 2012 CVFPP. See also endnotes: [1] and [2]		X	X	X		X	X				X			X
A.29	(9A) Regional Advance Mitigation Planning	Concept and framework for future regional advance mitigation planning efforts:	DWR has embraced a strategic, forward-looking, and regional approach to mitigation. There is reasonable expectation that DWR can provide solutions that address conservation priorities in ways that are coordinated and take into account agricultural communities and land uses. See also: Regional Advance Mitigation Planning. See also endnote: [1]		X	X	X	X	X	X				X		X	

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A.30	(9B) Status and Trends of the Riparian and Riverine Ecosystems of the Systemwide Planning Area	The current status and historical trends of riparian and riverine ecosystems:	Description of ecological history and relevance of riparian and riverine ecosystems in the Sacramento and San Joaquin valleys, assesses the status and trends hydrologic and geomorphic processes, and summarizes data gaps. See also endnotes: [1] and [2]		X	X	X					X				
A.31	(9C) Fish Passage Assessment	Identified physical barriers to anadromous fish passage:	Recommended actions include identifying barriers, evaluating the extent to which each barrier impedes migration, and modifying barriers to allow unimpeded migration. These actions will improve habitat connectivity and promote the recovery of anadromous fish populations in the Sacramento-San Joaquin River Flood Management System. See also endnotes: [1] and [4]		X	X	X					X				
A.32	(9D) Improving Vegetation Data	High quality vegetation data acquisition:	Summary of the importance of high quality vegetation data for improving flood management and ecosystem conditions in the Central Valley. Summarizes other related mapping efforts and DWR's approach, progress, and future steps for improving the quality of vegetation data. See also endnotes: [1] and [2]		X	X	X					X				
A.33	(9E) Existing Conservation Objectives from Other Plans	Summary of existing plans:	Regional planning is most effective when coordinated with similar programs and plans to the maximum extent possible. Coordination among the Conservation Strategy and similar, related conservation and collaborative planning efforts is essential to determine if the Conservation Strategy can contribute to the shared conservation objectives of other plans or programs while meeting its own conservation objectives. See also endnotes: [1] and [2]		X	X	X					X	X			X
A.34	(9F) FROA	Locations and floodplain restoration opportunities:	The FROA identifies areas with greater and/or more extensive potential opportunities for ecological restoration of floodplains. It does so by considering physical suitability and opportunities and constraints related to existing land cover and land uses, locations and physical condition of levees, locations of other major infrastructure, conservation status of land, and locations that stakeholders are interested in restoring. See also endnotes: [1] and [2]		X	X	X	X	X			X		X		
A.35	(9G) Regional Permitting Options	Concept and framework for potential regional permitting options:	This attachment provides background information regarding programmatic permitting options and their requirements, which are an important consideration for the Conservation Framework and development of the Conservation Strategy. See also endnotes: [1] and [2]		X	X	X	X				X		X		

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B. Data Complementing CVFPP from Other DWR FloodSAFE Programs and Activities																			
B.1	Statewide Flood Management Planning Program	SFMP Program:	Led by DWR through the FloodSAFE Initiative and the Division of Statewide Integrated Water Management. The program works in collaboration with local, State, and Federal agencies and tribal entities throughout California to make recommendations to guide flood management policies and investments in the coming decades by promoting a clear understanding of flood risks in California; garnering active support for partnerships at the local, State, and Federal levels; coordinating with other DWR planning efforts; identifying strategies and feasible next steps to better incorporate flood management into IWM; and promoting an IWM approach for flood management solutions.				X	X	X	X	X	X				X	X	X	X
B.2	California's Flood Future: Recommendations for Managing the State's Flood Risk	Attachment A: References	There are three major components of the DWR SFMP program. One of the components is the California's Flood Future Report in conjunction with USACE to develop California's Flood Future: Recommendations for Managing the State's Flood Risk. This report provides the first look at statewide exposure to flood risk and identifies and addresses the barriers to improved flood management. It also includes information intended to inform decisions about policies and financial investments to improve public safety, foster environmental stewardship, and support economic stability. The other components include flood management planning in support of the California Water Plan Update 2013 and implementing California's Flood Future Report Recommendations.				X	X	X	X	X	X					X		
		Attachment B: Glossary of Terms	Glossary used for the report.				X	X	X	X									
		Attachment C: History of Flooding in California	Historic flood information and flood events in California.				X	X	X	X	X				X			X	X
		Attachment D: Summary of Exposure and Infrastructure Inventory by County (Mapbook)	Map-based information on current exposure and infrastructure inventory, by county.				X	X	X	X		X	X		X			X	X

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B.2 cont.	California's Flood Future: Recommendations for Managing the State's Flood Risk	Attachment E: Existing Conditions of Flood Management in California (Information Gathering Findings)	Flood management information from local, State, and Federal agencies to develop a better understanding of the existing conditions of flood management in the State of California.	X	X	X	X	X		X				X				
		Attachment F: Flood Hazard Exposure Analysis	Document defines and characterizes flood hazard exposure, summarizing the statewide results of the exposure analysis performed, and describes ways to improve understanding of flood risk management statewide. See also endnote: [1]	X	X	X	X	X		X	X		X				X	
		Attachment G: Risk Information Inventory	Document defines and characterizes risk (including four case studies), summarizes statewide flood risk information (including data gaps; that is, the lack of raw information for a specific area, type of data, or use), and describes ways to improve understanding of flood risk management statewide. See also endnote: [1]	X	X	X	X	X		X	X		X					X
		Attachment H: Practicing Flood Management Using an Integrated Water Management Approach	Document includes a description of traditional flood management, demonstrates how agencies at all levels are evolving to an IWM approach, provides an overview of an IWM approaches that includes benefits and challenges to implementation, and findings and recommended actions for successfully implementing this approach.	X	X	X	X	X	X	X				X		X		X
		Attachment H: Appendices A through F			X	X	X	X	X	X				X		X		X
		Attachment I: Finance Strategies	Document provides an understanding of the current state of flood management financing and the challenges that lie ahead as California develops recommendations to address flood management.	X	X	X	X	X	X	X					X			

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B.2 cont.	California's Flood Future: Recommendations for Managing the State's Flood Risk	Attachment J: Recommendations to Improve Flood Management in California	Document summarizes the process and results by which the recommendations in the Flood Future Report were developed.	X	X	X	X	X	X	X					X	X	X
B.3	CVHS	Hydrology data:	Regulated and unregulated time series and frequency curve at selective locations throughout the Sacramento-San Joaquin flood management system, which are intended to be the new standard for flood hydrology. See also endnote: [1]		X	X	X	X						X			
		CVHS HEC-RAS Models:	Regulated and unregulated models. See also endnote: [1]		X	X	X	X						X			
B.4	CVFED Program	California Water Code §9610(d) maps:	Informational 200-year floodplain maps for urban areas protected by the SPFC. Includes: City of Chico, Yuba City and City of Marysville, Sacramento Metropolitan Area (Sacramento and West Sacramento), Cities of Woodland and Davis, City of Merced, and Stockton Metropolitan Area (Stockton and Lathrop). The maps developed pursuant to California Water Code §9610(d) do not affect FEMA's NFIP implementation or the target level of flood protection for USACE's federal studies. These California Water Code §9610(d) maps reflect current conditions as of 2013 and were made using CVHS Hydrology. In some areas, these maps may not reflect all sources of flooding (e.g., local creeks or streams). Cities and counties should evaluate local conditions to determine if the maps are sufficient for local planning purposes. See also endnote: [1]		X	X	X	X						X			X
		Topographic LiDAR Data for Mapped Areas:	Airborne LiDAR data was acquired from 2008 to 2010 for use with the CVFED program. This data was supplemented with DRMS LiDAR that was acquired in 2007 – 2008. The horizontal accuracy of the CVFED LiDAR is 3.5 feet at the 95% confidence interval. The vertical accuracy is 0.6 feet at the 95% confidence interval. All data was referenced to the UTM Zone 10 North projection with horizontal and vertical units in U.S. Survey Feet. See also endnote: [1]		X	X	X							X			

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B.4 cont.	Hydraulic Models:	Both 1-D and 2-D hydraulic models were developed for the CVFED program. HEC-RAS was used to model 1-D hydraulics. FLO-2D, TUFLOW, and TUFLOW FV were used to model 2-D hydraulics. The hydrology in these models was used to test and debug the models. Future modeling efforts should use the hydrology developed by CVHS. All CVFED hydraulic models will eventually be available via DWR's Library of Models. See also endnote: [1]	X	X	X	X						X				
B.5	<u>Levee Evaluation Program</u>	<u>Geomorphologic Assessments:</u>	Geomorphology looks at the processes that shape and alter the surface features of the land. For the levee evaluation program, experts are preparing a comprehensive surficial geologic map of the project areas based on analyses of vintage aerial photos, vintage topographic maps, historical and modern soil maps, "Landsat" (satellite) imagery, and field reconnaissance observations. Results of this effort will help program specialists assess available data on site-specific conditions, leading to a better understanding of the geomorphic processes (e.g., erosion, deposition) responsible for the materials directly beneath the levees. Ultimately, the information gathered during these evaluations will be used to assess the current conditions affecting the levees and in critical decisions to identify boring locations and drilling depth and techniques. See also endnote: [1]	X	X	X						X				
		<u>LiDAR Topographic Surveys:</u>	In the spring of 2007, low-level helicopter flights were conducted over levees from Oroville to Lathrop. These flights performed aerial topographic surveys using LiDAR technology, which electronically gathers surface data to help determine the topography and configuration of the flood control levees. The flights covered more than 300 miles of urban levees, as well as 150 miles of other non-project-related levees. Airborne surveys are generally non-invasive, and various types of data can be collected more rapidly compared to ground-based methods (e.g., drilling or boring). The data collected is primarily used to obtain topographical information (via a digital terrain model), which assists in the evaluation of the geotechnical and erosion characteristics of the surveyed levees. This information may also be used in the future for vegetation and design purposes. See also endnote: [1]	X	X	X						X				

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B.5 cont.	<u>Levee Evaluation Program</u>	<u>Geotechnical Evaluations:</u>	Geotechnical evaluation of levees and levee foundations is done by methods of drilling, boring, and pushing cone probes to collect samples and evaluate subsurface soil conditions. Ongoing subsurface explorations being conducted as part of the levee evaluation program are based on levee-specific investigation plans that typically call for collecting samples at 1,000-ft intervals along the levees. Additional landside explorations are also being performed to better define existing subsurface conditions. Collected samples are analyzed in laboratories to help characterize subsurface soil conditions and identify potential problems or weaknesses in the flood control structures. Reports in progress by DWR including Geotechnical Overview Reports and Geotechnical Evaluation Reports. Reports completed include Geotechnical Data Reports and Geotechnical Assessment Reports. See also endnote: [1]		X	X	X	X									
		<u>HEM:</u>	Helicopter-borne technology, used to survey subsurface conditions of the levees, is called geophysical EM surveys. This method is capable of gathering a large amount of information from beneath the earth's surface in a relatively short period of time. These surveys were conducted in Sept. 2007 along more than 300 miles of urban levees and 150 miles of other non-project-related levees. From Oroville to Lathrop, the flights are taking place over levees on the Feather River, Bear River, American River, Sutter Bypass, Yolo Bypass, Sacramento River, Stanislaus River, San Joaquin River, and their tributaries. Because homes, businesses, and other sensitive land uses are in close proximity to parts of the levee system, DWR coordinated with community leaders, residents, law enforcement and the media to ensure that local communities are aware of the purpose and timing of the flyovers. See also endnote: [1]		X	X	X										

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B.5 cont.	<u>Levee Evaluation Program</u>	<u>Bathymetry Surveys:</u>	Bathymetric surveys were conducted in Dec. 2007 and Jan. 2008 along sections of levees on portions of the Sacramento, American, San Joaquin, and Calaveras Rivers. Bathymetry are underwater explorations conducted on a shallow draft, jet-drive boat, equipped with special multibeam sonar. This survey method provides detailed topographic data of the riverbed and riverbanks that form the base of the levee systems. The data collected in the bathymetry surveys will supplement the above-water topographic data collected during the LiDAR surveys conducted last year. Together, these data are being used to assist in the geotechnical evaluation of the levees. See also endnote: [1]		X	X	X	X										
		<u>Remedial Alternative and Cost Estimates Report:</u>	<data not found>															
B.6	Additional Floodplain Information	<u>DWR Awareness Floodplain Maps:</u>	Displays 100-year flood hazard areas using approximate assessment procedures where floodplains are shown simply as flood prone areas without specific depths. The intent of this mapping is to identify all pertinent flood hazard areas that are not mapped under the FEMA's NFIP and to provide the community and residents an additional tool in understanding potential flood hazards currently not mapped as a regulated floodplain. See also CVFED Program and endnote: [1]	X	X	X	X	X					X					X
		<u>BAM 100-, 200-, and 500- year floodplain mapping:</u>	BAMs include 100-, 200-, and 500-year floodplains located within the Sacramento-San Joaquin Valley watershed and all California counties. These maps were developed based on the best available information as required by Senate Bill 5 (Water Code §9610) and were not meant to be updated. See also CVFED Program and endnote: [1]	X	X	X	X						X	X				X
		<u>Alluvial Fan Floodplains:</u>	Alluvial fan floodplains can be found throughout California, but they are not prominent in the Central Valley. While they are most prevalent in San Bernardino, Riverside, Los Angeles, Ventura, Santa Barbara, San Luis Obispo, Kern, Imperial, Orange, and San Diego counties, certain areas in the Central Valley could have potential applicability. Assembly Bill 2141 directed DWR to seek federal funding for the establishment of a stakeholder-driven AFTF to develop a Model Ordinance and planning tools to mitigate flood hazards associated with alluvial fan flooding. The AFTF is charged with reviewing the state of knowledge of alluvial fans; examining the flood risks; and developing local planning tools, including a "Model Ordinance" and a set of "Design Guidelines for Development on Alluvial Fans" aimed at reducing losses to human, built and natural resources resulting from the natural hazard of flooding on alluvial fans. The associated maps will be available when completed by DWR. See also CVFED Program and endnote: [1]	X	X	X	X						X	X				

Table A: Resources for Data and Analysis

Data and Analysis				Geographic Applicability				Content Focus			Addressing California Government Code §65302.9 General Plan Amendment Requirements							
Source	Item/Description			Statewide	Sacramento and San Joaquin Hydrologic Regions (Whole, Partial)	Sacramento-San Joaquin Valley (Whole, Partial) (CGC 65007 (h))	Areas Protected by the SPFC	Flood Management	Element(s) of IWM	General Context and Reference	Direct Use			Indirect Use			Other	
											Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics
B.7	Flood Maintenance	<u>Rural Levee Repair Guidelines:</u>	In March 2014 DWR released Rural Levee Repair Guidelines in support of the design and implementation of certain repairs that apply to rural levees. Consistent with the flood management policy in the CVFPP, these guidelines have a focus on the regular operations and maintenance needs of local maintaining agencies. These guidelines do not apply to new levee construction, for achieving specific levels of flood protection, or for repairs to levees in urban or urbanizing areas.		X	X	X	X	X					X	X	X		
B.8	<u>Cal OES Dam Safety Program</u>	Dam Inundation Maps:	Inundation maps are available for most large dams. Government Code §8589.5 requires dam owners to submit copies of inundation maps to Cal OES where the Dam Inundation Program Coordinator can provide information and copies of the maps to the appropriate public safety agency of any city and/or county likely to be affected. Most local agencies overlay these inundation maps onto their parcel map systems. See also endnote: [1]	X	X	X	X	X					X	X			X	
B.9	<u>My Flood Risk</u>	Flood Risk Notification:	Website that offers ways for users to increase flood risk awareness and learn practical, easy ways to protect life and property from costly flood damages. There are videos, fact sheets, and links to other resources. See also endnote: [1]	X	X	X	X	X	X				X					
B.10	<u>BWFS</u>	Under development, anticipated in 2017:	The two studies are major planning efforts aimed at refining SSIA implementation for flood risk management as identified in the 2012 CVFPP. The BWFS will evaluate physical actions to improve flood system performance, flexibility, and resiliency. Each study will progress independently through two phases. The first phase will focus on developing basin objectives and exploring different scales and configurations for system improvements. The second phase will evaluate and compare combinations of system and regional improvements on a systemwide scale, and support selection of a State preferred option in each basin. See also CVFMP Program, BWFS, and endnote: [1]		X	X	X	X	X	X	X	X	X	X	X	X	X	X
B.11	<u>RFMP Program</u>	<u>Regional Flood Atlases:</u>	This effort will assist local entities in the Central Valley to develop long-term regional flood management plans that address local needs, articulate local and regional flood management priorities, and establish the common vision of regional partners. This information will help to understand current state of flood risks and inventory of existing flood management facilities regardless of their ownership. The information was developed by DWR to be improved and maintained by regional flood management entities established through the Regional Flood Management Planning Program. The atlases are not intended to serve as a comprehensive environmental setting section under CEQA or NEPA. See also endnote: [1]		X	X	X	X				X	X	X	X		X	
		<u>Regional Flood Management Plans:</u>	The six regional flood management plans (Feather River, Upper/Mid-Sacramento River, Lower Sacramento River and Delta North, Lower San Joaquin River and Delta South, Mid-San Joaquin River, and Upper San Joaquin River) are under development [anticipated release dates sometime in 2015].		X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table A: Resources for Data and Analysis

Data and Analysis		Geographic Applicability					Content Focus			Addressing California Government Code §65302.9 General Plan Amendment Requirements								
Source	Item/Description	Statewide	Sacramento and San Joaquin Hydrologic Regions (Whole, Partial)	Sacramento-San Joaquin Valley (Whole, Partial) (CGC 65007(h))	Areas Protected by the SPFC	Flood Management	Element(s) of IWM	General Context and Reference	Direct Use			Indirect Use			Other			
									Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics		
C. Data from FEMA Programs and Activities																		
C.1	Specific Floodplain Mapping	<u>FIRMs:</u>	Represents flood hazard areas for floodplains of 1% (100-year) and 0.2% (500-year) chance of annual occurrence. These maps are only available via large paper copies and are used for insurance purposes as part of the NFIP. See also endnote: [1]				X	X	X	X	X			X	X			X
		<u>Digital Q3 Flood Data:</u>	Q3 Flood Data is a digital representation of certain features of FIRMs, intended for use with desktop mapping and GIS technology. These are interim data that will be replaced by Digital FIRMs once complete and are not used for regulatory purposes. See also endnote: [1]				X	X	X	X	X			X	X			X
		<u>DFIRM:</u>	Represent GIS-based mapping products of FIRMs and Q3 Flood Data developed as a part of FEMA Flood Map Modernization (Map Mod) program. See also endnote: [1]				X	X	X	X	X			X	X			X
		<u>FHBM:</u>	FHBM is an initial flood hazard identification generally used for Emergency Program communities, as defined by FEMA. It is the official map of a community issued by the Administrator, where the boundaries of the flood, mudslide (i.e., mudflow), and related erosion areas having special hazards have been designated. See also endnote: [1]				X	X	X	X	X			X	X			X
	Specific Floodplain Mapping	<u>Designated Floodway Maps:</u>	A "Designated Floodway" generally refers to the channel of the stream and that portion of the adjoining floodplain reasonably required providing for the passage of a design flood. The CVFPB, under Water Code §8609 has the authority to designate floodways in the Central Valley. Specifically, Title 23, Article 5, §107 of the California Code of Regulations regulates uses in Designated Floodways. To determine Central Valley county areas that are located within a Board approved Designated Floodway area, use the maps provided. See also CVFPB and endnote: [1]				X	X	X	X	X		X	X			X	
C.2	<u>Mapping Information Platform</u>	<u>Risk MAP:</u>	Contains a wealth of information and data for mapping including mapping and engineering tools, web services, resources for homeowners, and other resources.				X	X	X	X	X	X		X			X	
C.3	<u>Flood Hazard Mapping</u>	FIRMs (see above) and risk assessments:	Identifies flood hazards, assesses flood risks, and partners with States and communities to provide accurate flood hazard and risk data to guide them to mitigation actions. Flood Hazard Mapping is an important part of the NFIP, as it is the basis of the NFIP regulations and flood insurance requirements. FEMA maintains and updates data through FIRMs and risk assessments. FEMA uses the best available technical data to create the flood hazard maps that outline your community's different flood risk areas.				X	X	X	X	X	X		X	X			X

Table A: Resources for Data and Analysis

Data and Analysis		Geographic Applicability					Content Focus			Addressing California Government Code §65302.9 General Plan Amendment Requirements										
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									Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics				
D. Additional Clearinghouse Databases for Information																				
D.1	DWR	<u>Map Web Viewer:</u>	This is a flood risk web-based map viewer tool by DWR where one can view the LFPZ maps for an area by entering a property's address or APN. These maps should not be confused with FEMA FIRM maps as they do not show the same type of flood hazard and were prepared for different purposes. BAM are also available to view. See also endnote: [1]					X	X	X	X	X								
D.2	DWR	<u>California Data Exchange Center:</u>	An extensive hydrologic data collection network designed to provide local agencies with access to flood control system information including data for flood system inspection reporting and local maintaining agency annual reports. See also endnote: [1]					X	X	X	X	X								
D.3	DWR	Library of Models and Library of Topography are under development [anticipated release date is TBD];	A web-based library is being developed for preservation and use of flood and water management models and to make engineering and scientific models, software, and software documentation developed or used under the FloodSAFE California Initiative available to partnering agencies and model developers. Pilot Project is being developed in Phase 1 of this project. It will be a compository of information. Regardless of what the data is or where it came from, it coalesces the information in one spot. See also endnote: [1]					X	X	X	X	X		X						
D.4	DWR	<u>California Levee Database:</u>	The CLD assembles critically needed levee information on ownership, location, and risk assessment factors for all the levees in California. It was created for the purpose of better understanding and managing levees in California. It is an efficient tool for assessing levee reliability risk factors using a GIS-enabled geospatial database. Currently, the CLD has location information for more than 10,000 miles of levees and flood controls structures throughout California. Major features of the CLD include levee centerlines, boundaries, and feature locations. These features are continuously refined and populated for all identified levees in California. Additionally, web-base levee profile viewer, levee information viewer, and technical resources viewer will be developed and released to the public in the near future. See also endnote: [1]					X	X	X	X	X		X	X	X				

Table A: Resources for Data and Analysis

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									Locations of Flood Management Facilities (SPFC)	Locations of Real Property Protected by Flood Management	Locations of Flood Hazard Zones	Data, Analyses, and Approaches to Quantify Flood Risks and Assets	Considerations for Goal, Policy, and Objective Development	Considerations for Implementation Measure Development	Consideration for General Plan Safety Element and Flood	Consideration for Other General Plan Elements or Topics	
D.5	Cal OES	<u>MyPlan:</u>	My Plan is a statewide GIS based mapping tool. It includes FEMA (flood), DWR (flood), California Geological Survey (earthquake), and Department of Forestry (fire) data for hazard mitigation planning. It acts as a clearinghouse of information and while not owned or controlled by DWR, they contribute information to it. It does not generate new data or information, but provides a tool that helps to provide context. See also endnote: [1]	X	X	X	X	X				X	X			X	X
D.6	USACE	<u>National Levee Database:</u>	The NLD is a nationwide database with ongoing efforts to add levee data from federal agencies, states, and tribes. It houses information about flood risk communication, NFIP levee system evaluation, levee system inspections, floodplain management, and risk assessments. The NLD contains the majority of levees located within the USACE Levee Program, reports on levees in the NLD, has various federal database resources integrated into the NLD (e.g., National Weather Service), and includes a feedback link to provide comments and a contact us tab for assistance or questions.	X	X	X	X	X				X	X	X			

Endnotes:

- [1] Coordination with local flood management agencies and/or other technical experts is advised.
- [2] [Central Valley Flood System Conservation Strategy](#)
- [3] [Levee Evaluation Program \(including Urban Levee Evaluation Program and Non-Urban Levee Evaluation Program\) and Flood Project Integrity and Inspection](#)
- [4] [Fish Passage Improvement Program](#)

B.1 Acronyms

The following acronyms are provided for reference to terms stated in this *Guidance*.

AB	Assembly Bill
APN	Assessor Parcel Number
AFTF	Alluvial Fan Task Force
BAM	Best Available Maps
BWFS	Basin-Wide Feasibility Studies
CCVFCA	California Central Valley Flood Control Association
CEQA	California Environmental Quality Act
CLD	California Levee Database
CSAC	California State Association of Counties
CVFED	Central Valley Floodplain Evaluation and Delineation
CVFMP	Central Valley Flood Management Planning
CVFPB	Central Valley Flood Protection Board
CVFPP	Central Valley Flood Protection Plan
CVHS	Central Valley Hydrology Study
DFIRM	Digital Flood Insurance Rate Maps
DRMS	Delta Risk Management Strategy
DWR	California Department of Water Resources
EIR	Environmental Impact Review
EM	Electromagnetic
HEC-FDA	Hydrologic Engineering Center Flood Damage Reduction Analysis
FEMA	Federal Emergency Management Agency
FHBM	Flood Hazard Boundary Map
FIRM	Flood Insurance Rate Maps
FROA	Floodplain Restoration Opportunity
GIS	Geographic Information Systems
H&H	Hydrology and Hydraulics
HEC	Hydrologic Engineering Center

HEM	Helicopter-Mounted Electromagnetic
IWM	Integrated Water Management
LFPZ	Levee Flood Protection Zones
LHMP	Local Hazard Mitigation Plan
LiDAR	Light Detection and Ranging
LMA	Local Maintaining Agencies
MND	Mitigated Negative Declaration
ND	Negative Declaration
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NLD	National Levee Database
NULE	Non-Urban Levee Evaluation
OES	Governor's Office of Emergency Services
O&M	Operations and Maintenance
OPR	Governor's Office of Planning and Research
PEIR	Program Environmental Impact Report
HEC-RAS	Hydrologic Engineering Center River Analysis System
RD	Reclamation District
HEC-ResSim	Hydrologic Engineering Center Reservoir System Simulation
RCRC	Rural County Representatives of California
RFMP	Regional Flood Management Planning
SAFCA	Sacramento Area Flood Control Agency
SB	Senate Bill
SBFCA	Sutter Butte Flood Control Agency
SFMP	Statewide Flood Management Planning
SJAFCA	San Joaquin Area Flood Control Agency
SPFC	State Plan of Flood Control
SSIA	State Systemwide Investment Approach
TRLIA	Three Rivers Levee Improvement Authority
ULDC	Urban Levee Design Criteria
ULE	Urban Levee Evaluation
ULOP	Urban Level of Flood Protection
USACE	U.S. Army Corps of Engineers
UTM	Universal Transverse Mercator
WSAFCA	West Sacramento Area Flood Control Agency

B.2 Definitions

The following selected definitions are provided for reference to terms that are either included or relevant to this *Guidance*. For additional terms and definitions related to flood management, local land use planning, and State legislation, refer to the following DWR documents: [2010 Handbook](#), [2012 Central Valley Flood Protection Plan](#), and the [2013 Urban Level of Flood Protection Criteria](#).

100-year Flood Event. The flood having a 1% chance of being equaled or exceeded in any given year. A structure located within a special flood hazard area shown on a National Flood Insurance Program map has a 26% chance of suffering flood damage during the term of a 30-year mortgage. (FEMA).

200-year Floodplain. An area that has a 1 in 200 chance of flooding in any given year, based on hydrological modeling and other engineering criteria accepted by the Department of Water Resources. ([California Government Code §65300.2\(a\)](#)).

200-year Flood Event. A flood event with a 1 in 200 (0.5%) chance of occurring in any given year. (DWR).

500-year Floodplain. An area that has a 1 in 500 (0.2%) chance of flooding in any given year. (FEMA).

Adequate Progress. Means all of the following:

1. The total project scope, schedule, and cost of the completed flood protection system have been developed to meet the appropriate standard of protection.
2. (A) Revenues that are sufficient to fund each year of the project schedule developed in paragraph (1) have been identified and, in any given year and consistent with that schedule, at least 90% of the revenues scheduled to be received by that year have been appropriated and are currently being expended. (B) Notwithstanding subparagraph (A), for any year in which State funding is not appropriated consistent with an agreement between a State agency and a local flood management agency, the Central Valley Flood Protection Board may find that the local flood management agency is making adequate progress in working toward the completion of the flood protection system.
3. Critical features of the flood protection system are under

construction, and each critical feature is progressing as indicated by the actual expenditure of the construction budget funds.

4. The city or county has not been responsible for a significant delay in the completion of the system.
5. The local flood management agency shall provide the Department of Water Resources and the Central Valley Flood Protection Board with the information specified in this subdivision sufficient to determine substantial completion of the required flood protection. The local flood management agency shall annually report to the Central Valley Flood Protection Board on the efforts in working toward completion of the flood protection system. ([California Government Code §65007\(a\)](#)).

Developed Area. An area of a community that is:

- a. A primarily urbanized, built-up area that is a minimum of 20 contiguous acres, has basic urban infrastructure, including roads, utilities, communications, and public facilities, to sustain industrial, residential, and commercial activities, and (1) Within which 75% or more of the parcels, tracts, or lots contain commercial, industrial, or residential structures or uses; or (2) Is a single parcel, tract, or lot in which 75% of the area contains existing commercial or industrial structures or uses; or (3) Is a subdivision developed at a density of at least two residential structures per acre within which 75% or more of the lots contain existing residential structures at the time the designation is adopted.
- b. Undeveloped parcels, tracts, or lots, the combination of which is less than 20 acres and contiguous on at least 3 sides to areas meeting the criteria of paragraph (a) at the time the designation is adopted.
- c. A subdivision that is a minimum of 20 contiguous acres that has obtained all necessary government approvals, provided that the actual start of construction of structures has occurred on at least 10% of the lots or remaining lots of a subdivision or 10% of the maximum building coverage or remaining building coverage allowed for a single lot subdivision at the time the designation is adopted and construction of structures is underway. Residential subdivisions must meet the density criteria in paragraph [\(a\)\(3\) CFR Title 44, §59.1](#).

Development Project. Any project undertaken for the purpose of development. "Development project" includes a project involving the issuance of a permit for construction or reconstruction but not a permit to operate. "Development project" does not include any ministerial projects proposed to be carried out or approved by public agencies. ([California Government Code §65928](#)).

Flood Hazard Zone. An area subject to flooding that is delineated as either a special flood hazard area or an area of moderate flood hazard on an official Flood Insurance Rate Map (FIRM) issued by the Federal Emergency Management Agency (FEMA). The identification of flood hazard zones does not imply that areas outside the flood hazard zones, or uses permitted within flood hazard zones, will be free from flooding or flood damage. ([California Government Code §65007\(d\)](#)).

Flood Insurance Rate Map. An official map of a community, on which the Administrator has delineated both the special flood hazard areas and the risk premium zones applicable to the community. ([CFR Title 44, §59.1](#)).

Flood Management Facility. A structural facility that reduces potential flooding by excluding, removing, or accommodating accumulated stormwaters from the land. These structural facilities may protect a specific geographic area under consideration from a particular source (or sources) of flooding, but not necessarily from other sources of flooding. These structural facilities may be comprised of, but not limited to, levees, floodwalls, and their appurtenant structures. (DWR).

Levee Flood Protection Zones (LFPZ). An area that is protected, as determined by the Central Valley Flood Protection Board or the Department of Water Resources, by a levee that is part of the facilities of the State Plan of Flood Control, as defined under [§5096.805](#) of the Public Resources Code. ([California Government Code §65300.2\(b\)](#)).

Levees and Floodwalls. May protect a specific geographic area being considered from a particular source (or sources) of flooding, but not necessarily from other sources of flooding. ([2012 Urban Levee Design Criteria, DWR](#)).

Level of (Flood) Protection. The return period of the highest water surface elevation for which a property, project, or subdivision will withstand flooding, or a levee or floodwall will protect against flooding, using criteria and safety margins consistent with, or developed by, DWR for achieving an Urban Level of Flood Protection. (DWR).

Moderate Flood Hazard Area. A flood hazard area, as identified on the Flood Insurance Rate Map (FIRM), labeled Zone B or Zone X (shaded), are the areas between the limits of the base flood and the 0.2% annual chance or a 500-year flood. (FEMA).

National Federal Emergency Management Agency Standard of Flood Protection. The level of flood protection that is necessary to withstand flooding that has a 1-in-100 chance of occurring in any given year using criteria developed by the Federal Emergency Management Agency for application in the National Flood Insurance Program. ([California Government Code §65007\(e\)](#)).

Non-project Levee. Any levee that is not part of the State Plan of Flood Control ([California Water Code 9602\(c\)](#)) mostly, but also includes those State-federal flood protection facilities outside of the Sacramento-San Joaquin watershed. (DWR).

Nonurbanized Area. A developed area or an area outside a developed area in which there are fewer than 10,000 residents that is not an urbanizing area. ([California Government Code §65007\(f\)](#)).

Project Levee. Any levee that is part of the facilities of the State Plan of Flood Control. ([California Government Code §65007\(g\)](#)).

Sacramento-San Joaquin Valley. Any lands in the bed or along or near the banks of the Sacramento River or San Joaquin River, or any of their tributaries or connected therewith, or upon any land adjacent thereto, or within any of the overflow basins thereof, or upon any land susceptible to overflow there from. The Sacramento-San Joaquin Valley does not include lands lying within the Tulare Lake basin, including the Kings River. ([California Government Code §65007\(h\)](#)).

Special Flood Hazard Area. The area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/AH, Zone AR/A, Zone V, Zone VE, Zone VO, and Zones V1-V30. (FEMA).

State Plan of Flood Control. The State and federal flood control works, lands, programs, plans, conditions, and mode of maintenance and operations of the Sacramento River Flood Control Project described in [§8350](#) of the California Water Code, and of flood control projects in the Sacramento River and San Joaquin River watersheds authorized pursuant to Article 2 (commencing with §12648) of Chapter 2 of Part 6

For further context, see Tulare Lake basin definition in this Guidance.

of Division 6 of the California Water Code for which the CVFPB or DWR has provided the assurances of nonfederal cooperation to the United States, which shall be updated by DWR and compiled into a single document entitled “The State Plan of Flood Control.” ([Public Resources Code §5096.805\(j\)](#)).

Tulare Lake Basin. The Tulare Lake Hydrologic Region as defined in the California Water Plan Update 2009, prepared by the Department of Water Resources pursuant to Chapter 1 (commencing with §10004) of Part 1.5 of Division 6 of the California Water Code. ([California Government Code §65007\(j\)](#)).

Undetermined Risk Area. An urban or urbanizing area within a moderate flood hazard zone, as delineated on an official Flood Insurance Rate Map (FIRM) issued by the Federal Emergency Management Agency (FEMA), which has not been determined to have an urban level of protection. ([California Government Code §65007\(k\)](#)).

Undeveloped Area. An area devoted to “agricultural use,” as defined in [California Government Code §51201](#), or “open space land,” as defined in [California Government Code §65560](#), that, as of January 1, 2008, is not already designated for development in a general or specific plan or by a local zoning ordinance. ([California Water Code §8307](#)).

Unreasonably Approving. Means approving a new development project without appropriately considering significant risks of flooding made known to the approving agency as of the time of approval and without taking reasonable and feasible action to mitigate the potential property damage to the new development resulting from a flood. ([California Water Code §8307](#)).

Urban Area. A developed area in which there are 10,000 residents or more. ([California Government Code §65007\(l\)](#)).

Urban Level of Flood Protection. The level of protection that is necessary to withstand flooding that has a 1-in-200 chance of occurring in any given year using criteria consistent with, or developed by, the Department of Water Resources. “Urban Level of Flood Protection” shall not mean shallow flooding or flooding from local drainage that meets the criteria of the national Federal Emergency Management Agency standard of flood protection. ([California Government Code §65007\(n\)](#)).

Urbanizing Area. A developed area or an area outside a developed area that is planned or anticipated to have 10,000 residents or more within the next 10 years. ([California Government Code §65007\(m\)](#)).

Withstand Flooding. All structures must be capable of withstanding direct and prolonged contact with floodwaters without sustaining significant damage. The term “prolonged contact” means at least 72 hours, and the term “significant damage” means any damage requiring more than cosmetic repair. “Cosmetic repair” includes cleaning, sanitizing, and resurfacing (e.g., sanding, repair of joints, repainting) of the material. The cost of cosmetic repair should also be less than the cost of replacement of affected materials and systems. In addition to these requirements, individual materials that are considered flood damage-resistant must not cause degradation of adjacent materials or the systems of which the material is a part. (FEMA).

APPENDIX C DWR INFORMATION/DATA REQUEST PROCEDURE

DWR is committed to providing information and other technical assistance ([California Government Code §65302.9\(c\)](#)), to the extent funding and staff are available, to cities and counties as they work through their general plan amendment processes.

DWR will respond to each data request as quickly as possible based on resource availability.

To acquire technical data, such as hydrology and hydraulics (H&H), topography (including LiDAR), and levee reliability data, or other flood hazard management information that is not readily accessible through this *Guidance* or the Internet hyperlinks provided herein, a request can be made to DWR as follows:

1. Email FloodSAFE California

FloodSAFE@water.ca.gov

2. Include Email Subject Line

General Plan Amendments for Addressing Flood Risk, DWR Information/Data Request

3. Provide a Detailed Description of the Request

List each data request in a concise statement or bulleted format in the body of the email. All requests should clearly state why the data are being requested, its intended use, and when the request needed.

To expedite the request process, please be specific and clearly state what data is being requested, why, and when.

4. Incorporate Contact Information

Make sure to provide a signatory with the necessary contact information (i.e., name, title, affiliation, email, and phone number) so that DWR can respond appropriately to the request.

Please direct any questions and other technical assistance needs regarding this *Guidance* or the [2010 Handbook](#) to localfloodriskhandbook@water.ca.gov.

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Back Cover Photo: aerial view of the Sacramento River, agricultural land in West Sacramento,
and the Northeast Village neighborhood of West Sacramento (November 2009)
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