



## Annex N Sacramento Area Sewer District

### N.1 Introduction

This Annex details the hazard mitigation planning elements specific to the Sacramento Area Sewer District (SASD), a new participating jurisdiction to the Sacramento County Local Hazard Mitigation Plan (LHMP) Update. This Annex is not intended to be a standalone document, but appends to and supplements the information contained in the Base Plan document. As such, all sections of the Base Plan, including the planning process and other procedural requirements apply to and were met by the Sacramento Area Sewer District. This Annex provides additional information specific to SASD, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this District.

### N.2 Planning Process

As described above, the District followed the planning process detailed in Section 3 of the Base Plan. In addition to providing representation on the Sacramento County Hazard Mitigation Planning Committee (HMPC), SASD formulated its own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table N-1. Additional details on plan participation and SASD representatives are included in Appendix A.

*Table N-1 SASD Planning Team*

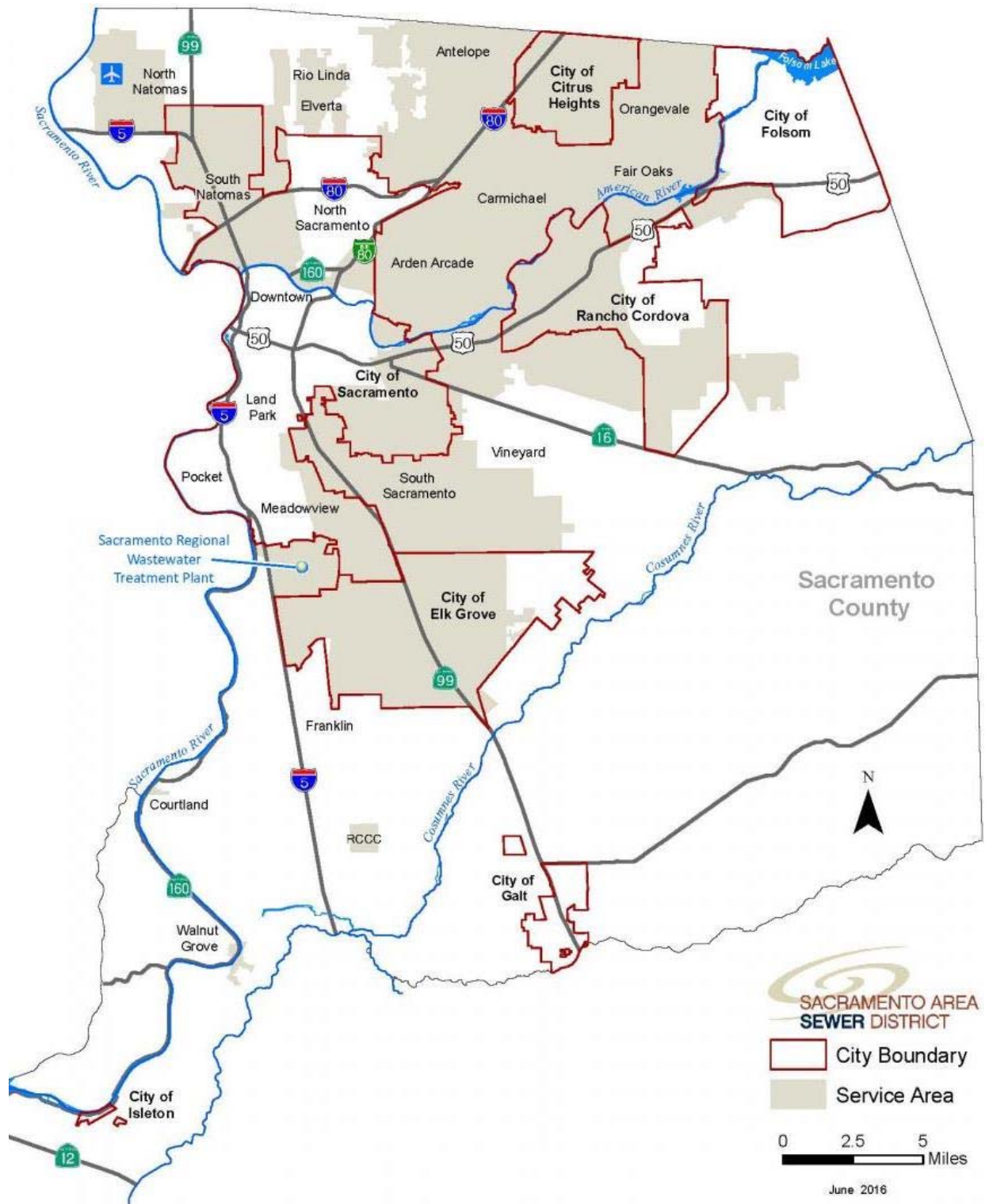
Name	Position/Title	How Participated
Matthew Doyle	Safety & Regulatory Compliance Manager	Gathered Information, Main point of contact, met with Engineering and M&O for data collection
John Hough	M&O Assistant Superintendent	Gathered Service Map, reviewed documents
Patrick Schroeder	Principle Engineer	Attended meeting, Reviewed documents
Raul Rodriguez	GIS Analyst III	GIS Mapping data
Steve Nebozuk	Civil Engineer	Attended HMPC meetings

Source: SASD

### N.3 Community Profile

The community profile for SASD is detailed in the following sections. Figure N-1 displays a map and the location of SASD boundaries within Sacramento County.

Figure N-1 Sacramento Area Sewer District Map



Source: SASD

### **N.3.1. District Overview, History, and Background**

The SASD is a sewer utility providing service to more than one million people in the Sacramento region, including the unincorporated areas of Sacramento County; the cities of Citrus Heights, Rancho Cordova, and Elk Grove; as well as portions of the cities of Folsom and Sacramento. The District serves residential, commercial and industrial customers.

SASD owns and operates thousands of miles of lower lateral and main line pipes and is responsible for the day-to-day operations and maintenance of these sewer pipes. Once collected in the system, sewage flows into the Regional San interceptor system, where it is conveyed to the Sacramento Regional Wastewater Treatment Plant near Elk Grove.

SASD was formed in 1978 and is governed by a 10-member Board of Directors representing the various city and county jurisdictions in the District's service area.

## **N.4 Hazard Identification**

SASD's planning team identified the hazards that affect the District and summarized their geographic extent, probability of future occurrences, potential magnitude/severity, and significance specific to SASD (see Table N-2).

**Table N-2 SASD—Hazard Identification**

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Agricultural Hazards	Limited	Likely	Critical	Low
Bird Strike	Limited	Unlikely	Negligible	Low
Climate Change				
Dam Failure	Significant	Unlikely	Catastrophic	High
Drought and Water Shortage	Extensive	Likely	Limited	Low
Earthquake	Limited	Occasional	Critical	Medium
Earthquake: Liquefaction				
Flood: 100/200/500-year	Significant	Occasional	Critical	High
Flood: Localized Stormwater Flooding	Limited	Highly Likely	Limited	Medium
Landslides	Limited	Unlikely	Negligible	Low
Levee Failure	Significant	Likely	Critical	High
River/Stream/Creek Bank Erosion	Limited	Highly Likely	Limited	Medium
Severe Weather: Extreme Temperatures – Cold/Freeze	Extensive	Likely	Limited	Low
Severe Weather: Extreme Temperatures – Heat	Extensive	Highly Likely	Negligible	Low
Severe Weather: Fog	Extensive	Highly Likely	Limited	Low
Severe Weather: Heavy Rains and Storms (Thunderstorms, Hail, and Lightning)	Extensive	Highly Likely	Limited	Low
Severe Weather: Wind and Tornadoes	Limited	Likely	Limited	Medium
Subsidence	Significant	Highly Likely	Limited	Low
Volcano	Limited	Unlikely	Limited	Low
Wildfire:(Burn Area/Smoke)	Limited	Likely	Limited	Medium
<b>Geographic Extent</b> <b>Limited:</b> Less than 10% of planning area <b>Significant:</b> 10-50% of planning area <b>Extensive:</b> 50-100% of planning area		<b>Magnitude/Severity</b> <b>Catastrophic—</b> More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths <b>Critical—</b> 25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability <b>Limited—</b> 10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability <b>Negligible—</b> Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid		
<b>Probability of Future Occurrences</b> <b>Highly Likely:</b> Near 100% chance of occurrence in next year, or happens every year. <b>Likely:</b> Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less. <b>Occasional:</b> Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years. <b>Unlikely:</b> Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.		<b>Significance</b> <b>Low:</b> minimal potential impact <b>Medium:</b> moderate potential impact <b>High:</b> widespread potential impact		

## N.5 Hazard Profile and Vulnerability Assessment

The intent of this section is to profile SASD’s hazards and assess the District’s vulnerability separate from that of the Planning Area as a whole, which has already been assessed in Sections 4.2 and 4.3 Hazard Profiles and Vulnerability Assessment in the main plan. The hazard profiles in the main plan discuss overall impacts to the Planning Area and describes the hazard problem description, hazard extent, magnitude/severity, previous occurrences of hazard events and the likelihood of future occurrences. Hazard profile information specific to SASD is included in this Annex. This vulnerability assessment analyzes the property, population, critical facilities, and other assets at risk to hazards ranked of medium or high significance specific to the District. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the main plan.

### N.5.1. Hazard Profiles

Each hazard vulnerability assessment in Section N.5.3, includes a description as to how the hazard affects the SASD and information on past occurrences. The intent of these section is to provide jurisdictional specific information on hazards and further describe how the hazards and risks differ across the Planning Area.

### N.5.2. Vulnerability Assessment

This section identifies SASD’s assets at risk, including values at risk, critical facilities and infrastructure, economic assets, natural resources, historic and cultural resources, and growth and development trends.

#### *Assets at Risk and Critical Facilities*

This section considers the District’s assets at risk, with a focus on key District assets such as critical facilities, infrastructure, and other District assets and their values. With respect to District assets, the majority of these assets are considered critical facilities as defined for this plan:

*Any facility (a structure, infrastructure, equipment or service), that is adversely affected during a hazardous event may result in interruption of services and operations for the District at any time before, during and after the hazard event. A critical facility is classified by the following categories: (1) Essential Services Facilities, (2) At-risk Populations Facilities, and (3) Hazardous Materials Facilities.*

Table N-3 lists particular critical facilities and other District assets identified by the SASD’s planning team as important to protect in the event of a disaster. SASD’s physical assets, valued at over \$990 million, consist of the buildings and infrastructure to support the SASD operations.

*Table N-3 SASD’s Critical Facilities, Infrastructure, and Other District Assets*

Name of Asset	Facility Type	Address	Replacement Value	Hazard Info
SACY	Essential	10060 Goethe Rd Sacramento	\$60,600,000	Minimal flood, airplane crash, fire

Name of Asset	Facility Type	Address	Replacement Value	Hazard Info
NACY	Essential	5026 Don Julio Sacramento	\$26,800,000	Minimal flood, fire
Main Lines	Essential	3,000 miles of pipelines	\$2,930,400,000	Minimal earthquake
Lower Laterals	Essential	1,400 miles of pipelines	\$1,704,300,000	Minimal earthquake
Manholes	Essential	60,880 manholes	\$1,704,300,000	Minimal earthquake
Pump Stations	Essential	105 pump stations	\$97,200,000	Minimal fire, flood, earthquake

Source: SASD

### *Natural Resources*

The District Planning Team noted Sacramento River, American River, creek habitats, and vernal pools are natural resources located in District boundaries.

### *Historic and Cultural Resources*

The District Planning Team noted the City of Locke as a historic resource.

### *Growth and Development Trends*

Population growth will accelerate over the next 5 years. Annual growth in the 2011 to 2016 period averages 1.5 percent per year.

## **N.5.3. Vulnerability to Specific Hazards**

This section provides the vulnerability assessment, including any quantifiable loss estimates, for those hazards identified above in Table N-2 as high or medium significance hazards. Impacts of past events and vulnerability of the SASD to specific hazards are further discussed below (see Section 4.1 Hazard Identification in the Base Plan for more detailed information about these hazards and their impacts on the Sacramento County Planning Area). Methodologies for calculating loss estimates are the similar to those described in Section 4.3 of the Base Plan and are based on data provided by the District as described further below. In general, the most vulnerable structures are those located within the floodplain or within levee and dam inundation areas. Buildings that contain electronic or electrically operated equipment are also vulnerable to flood inundation.

An estimate of the vulnerability of the SASD to each identified priority hazard, in addition to the estimate of probability of future occurrence, is provided in each of the hazard-specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

### *Dam Failure*

**Likelihood of Future Occurrence**—Unlikely

**Vulnerability**—High

### Hazard Profile and Problem Description

Dam failures can result from a number of natural or manmade causes such as earthquakes, erosion of the face or foundation, improper siding, rapidly rising flood waters, structural/design flaws, and deliberate human actions. Folsom Dam is the major dam which affects the SASD and the populations in the inundation areas. Folsom Dam is owned by the US Bureau of Reclamation. The flood waters from a dam failure would likely affect the SASD’s service area. Flood waters could inundate sewer pump stations, regional collector pipes, underground structures, and equipment, resulting in the inability to access or operate SASD’s facilities within the flooded areas. A severe flood could jeopardize the operation of the regional sewer treatment plant. Access to the regional sewer treatment plant, affected pipe systems and pump station facilities to assess and restore operation could be limited until such time that the flood waters receded.

The ability to warn downstream communities in the event of a flood event caused by a dam failure is generally dependent on conditions such as the frequency of inspections for the dam’s structural integrity, the flood wave arrival time (the time it takes for the flood wave to reach its maximum distance of inundation), or the ability to notify persons downstream and their ability to evacuate or take preventative actions to minimize damage to utilities or infrastructure. The existence and frequency of updating and exercising an evacuation plan that is site-specific assists in warning and evacuation functions.

A dam failure will cause loss of life, damage to property, and other ensuing hazards, as well as the displacement of persons residing in the inundation path. Damage to sewer collection, conveyance and treatment facilities would likely impact communities outside the immediate hazard areas by disrupting sewer collection and treatment services.

### Past Occurrences

The District Planning Team noted no past occurrences of dam failure to affect SASD.

## Vulnerability to Dam Failure

### Assets/Critical Facilities at Risk

According to the Sacramento County General Plan Background report, there are four major and two minor dams which, if they fail, may impact the people and resources of this District. The major dams are comprised of Shasta on the Sacramento River, Oroville on the Feather River, Comanche on the Mokelumne River, and Folsom on the American River. The minor dams include Nimbus and Rancho Seco. SASD has no records indicating that previous dam failures have impacted its assets.

### Scenario for Evaluating Values at Risk

Sacramento County provided inundation as a GIS layer for the Folsom Dam system, as part of the following breaks:

- Folsom Right Wing
- Folsom Mormon
- Folsom Dike 4
- Folsom Dike 5
- Folsom Dike 6
- Folsom Dike 7
- Folsom Dike 8
- Folsom Dam

### *Description of Folsom Dam Facilities*

The Folsom Dam and Reservoir Project is located on the American River, about 20 miles upstream of the City of Sacramento, California. It was designed and built by the Corps of Engineers during the period 1948 to 1956, and is now owned and operated by the U.S. Bureau of Reclamation. The reservoir has a storage capacity of 1 million acre-ft at gross pool. The project includes about 4.5 miles of man-made water retaining structure that has a crest elevation of 480.5 ft above sea level.

### *Purpose of Study*

As described in Section 4.3.6 of the based plan, the Bureau of Reclamation performed a study in an attempt to determine the magnitude of flooding that would result from various breach scenarios of structures located around the reservoir. The structures are Folsom Dam itself, its right wing dam, dikes 4, 5, 6, 7, 8, and Mormon Island. The results of hydrodynamic simulations are used to generate potential inundation maps that can aid in the development of emergency actions plans.

### Assets at Risk

SASD has identified the following assets in Table N-4 as being potentially affected if the Folsom Dam were to have a catastrophic failure.



*Table N-4 SASD Assets and Values at Risk in the Folsom Dam Inundation Zone*

Facility #	Facility Name	Asset Value(1)
S43	Rio Linda	\$560,000
S53	Rio Linda Woods	\$560,000
S125	Northborough	\$1,200,000
S018	Westgate	\$560,000
S139	Gateway	Just used as a flow through
S067	Landis	\$560,000
S084	Rivergate	\$560,000
S051	Larchmont Butterfield	\$560,000
S006	American River Dr.	\$560,000
S050	Goethe Rd	\$560,000
S079	College Town	\$680,000
S036	Alder Creek	\$560,000
S129	Fruitridge Center	\$4,700,000
S022	Antelope Village Unit #1	\$560,000
S112	Parkway Greens	\$560,000
S009	Rivergreen Ranch	\$560,000
S002	Antelope North Area	\$2,100,000
S054	Antelope Vista	\$560,000
S080	Sunview	\$560,000
S091	Mountain Ave	\$560,000
S046	Woodgate #1	\$560,000
S026	Northgate #5	\$560,000
S110	Westborough Village #2	\$560,000
S034	Mills Park	\$560,000
S101	Bazely	\$560,000
S100	Lemay	\$560,000
S039	Routier Rd	\$810,000
S107	Mather	\$560,000
S099	Elder Creek	\$801,000
S032	Rosemont	\$2,000,000
S059	Arden Gold	\$1,900,000
S111	Laguna-Stonelake	\$1,200,000
S048	Whyte Ave	\$7,500,000
S004	Country Club Cove	\$560,000
S011	Bridge	\$850,000
S001	Northbrook	\$560,000

Facility #	Facility Name	Asset Value(1)
S082	Butterfield	Retired
S041	Willow Creek	\$560,000
S090	West La Loma Pump Station	\$810,000
S077	Capitola Pump Station	\$560,000
S005	Arden and Fulton Pump Station	\$560,000
S028	River Gardens Pump Station	\$560,000
S124	College Oak Drive Pump Station	\$810,000
S007	Tributary Point Unit #1 Pump Station	\$560,000
S128	Bear Hollow Pump Station	\$560,000
S070	Sunrise White Rock Pump Station	\$810,000
S003	Cottage and Kincaid Pump Station	\$560,000
S098	Fruitridge Industrial Pump Station	\$560,000
S035	Cordova Towne	\$560,000
S049	Del Rio	\$810,000
S021	Lakeside/Laguna West	\$1,700,000
S127	Arcadian Village Unit #2	\$560,000
S013	Hoffman Park	\$980,000
S040	Silver Oak Estates	\$560,000
S014	Park Road	\$4,700,000
S008	Hagginbottom	\$2,000,000
S010	Parkway Chlorine	Retired
S143	Florin Mall	\$750,000
S117	54 <sup>th</sup> And Dudley	\$560,000
S148	Hadleigh Dr	\$560,000
S055	Northeast	\$560,000
S113	Metro Air Park	\$560,000
S149	Garfield	\$560,000
S071	Zinfandel Dr	\$1,700,000
S150	Center Parkway	\$810,000
S073	Sailor Bar	\$2,400,000
S066	Bannister	\$1,200,000

Source: SASD Finance Office, SASD Engineering, SASD Policy and Planning

(1) Asset value includes facility, site structures, site equipment, mobile equipment, miscellaneous items that may have soft cost components, some associated adjacent pipeline components. Values taken from SASD 2010 Comprehensive Annual Financial

### Critical Facilities at Risk

The SASD critical facility inventory was compared with the Folsom Dam failure inundation layer using GIS. Facility locations that were within the hazard area were selected and sorted by critical facility

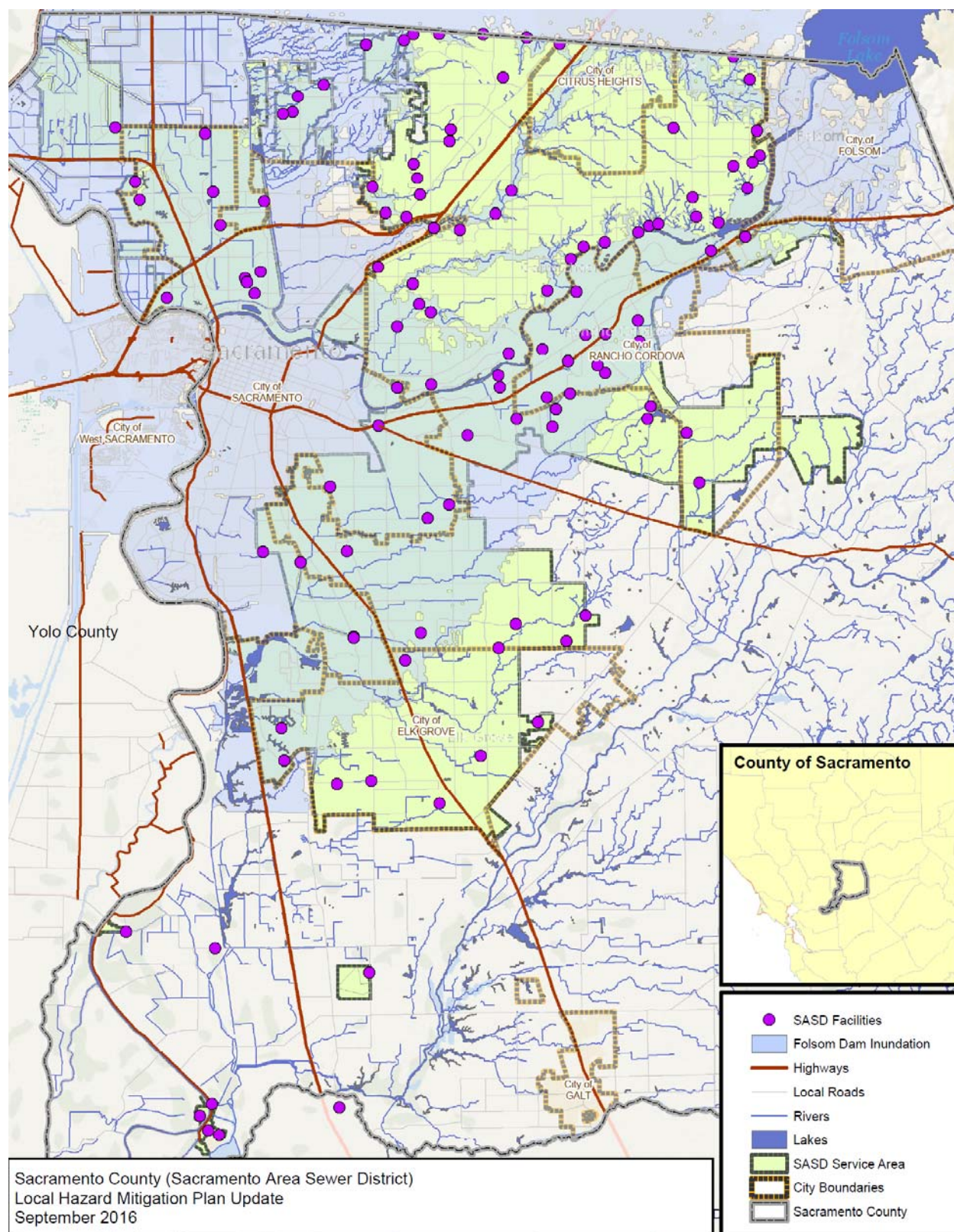
definition category; the summary results of this analysis are show in Table N-5. A detailed critical facility table is included in the Base Plan as Appendix E. The dam failure hazard column on the right-hand side of Appendix E denotes whether a particular facility is considered to be vulnerable to dam failures.

*Table N-5 SASD Critical Facilities at Risk in the Folsom Dam Inundation Zone*

Critical Facility Definition	Count
Essential Services Facilities	67
High Potential Loss Facility	0
Transportation & Lifeline	0
<b>Total</b>	<b>67</b>

Source: SASD GIS

Figure N-2 SASD Critical Facilities in the Folsom Dam Inundation Area



Source: SASD

### Natural Resources at Risk

The District Planning Team noted that the American River, Folsom Reservoir, Consumnes River, Sacramento River, and numerous creeks are natural resources in the District at risk from dam failure.

### Historic and Cultural Resources at Risk

The District Planning Team noted no historic or cultural resources at risk in the District from dam failure.

### Future Development

Any future development that falls in the Folsom Dam Inundation Area identified in Figure N-2.

### *Earthquake*

**Likelihood of Future Occurrence**—Occasional

**Vulnerability**—Medium

### Hazard Profile and Problem Description

SASD facilities are in a low risk area with no history of damage due to earthquakes.

### Past Occurrences

There are no past occurrences affecting District SASD facilities.

### Vulnerability to Earthquake

#### Assets/Critical Facilities at Risk

SASD assets at risk are pump stations, force mains, main lines, manholes, lower laterals, North Area Corp Yard, and the South Area Corp Yard.

### Future Development

There is no additional risk to future development than what currently exists.

### *Flood: 100/200/500-year*

**Likelihood of Future Occurrence**—Occasional

**Vulnerability**—High

### Hazard Profile and Problem Description

Major surface waters in the vicinity of the SASD service area include the American River, Nimbus Reservoir, Folsom Reservoir, Lake Natoma, the Sacramento River, and the Consumnes River. In the SASD service area, the potential for flood damage would occur in the floodplains of the American River,

Sacramento River, Cosumnes River, Mokelumne River, Laguna Creek, Morrison Creek, Dry Creek and Strawberry Creek.

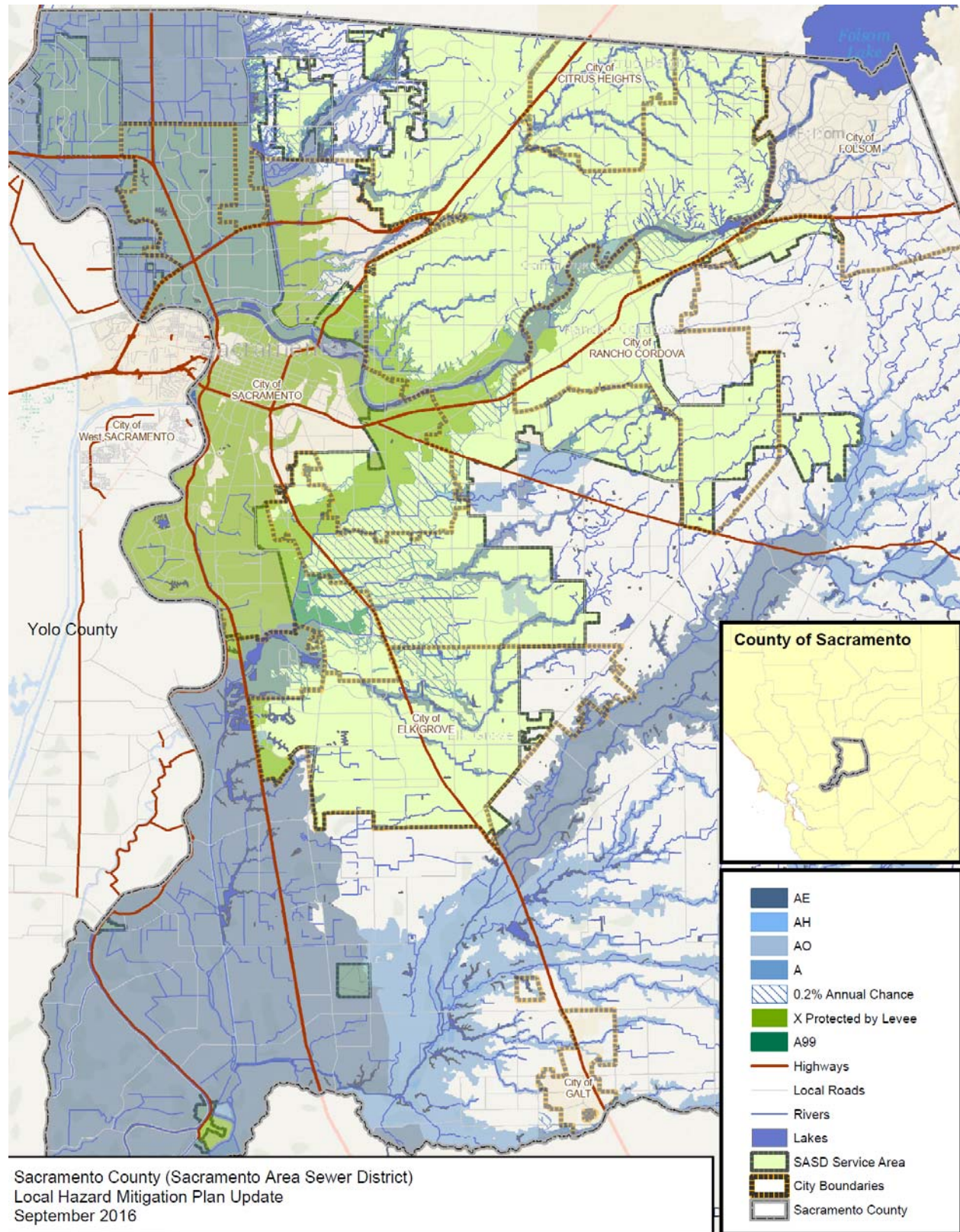
### **Past Occurrences**

The District Planning Team noted no past occurrences of flooding in SASD.

### **Vulnerability to Flood**

Figure N-3 shows the SASD service area overlaid on the DFIRM.

Figure N-3 Sacramento Area Sewer District Service Area and DFIRM



Source: SASD

## Assets a Risk

SASD has identified the following assets as being potentially affected from a 100-year flood event, as shown in Table N-6.

*Table N-6 SASD Assets at Risk in the 100-year Floodplain*

Facility type	Facility Name	Asset Value(1)
Sub	S001 Northbrook Pump Station	\$3000 @ 1' of water \$560,000 total replacement
Sub	S006 American River Drive Pump Station	\$100,000 at 1' water \$560,000 Total replacement cost
WW/DW	S008 Hagginbottom Pump Station	\$200,000 at 1' water \$2 Million Total Replacement Cost
Sub	S012 RCCC Pump Station	\$10,000 at 1' of water \$1.5 Million Total Replacement Cost
Sub	S018 Westgate Pump Station	\$1,000 @ 1' water \$560,000 Total Replacement Cost
Sub	S025 Center Parkway Pump Station	\$10,000 at 1' water \$810,000 Total Replacement cost
Sub	S026 Northgate #5 Pump Station	\$3,000 at 1' water \$560,000 total replacement cost
WW/DW	S028 River Gardens Pump Station	\$10,000 @ 1' water \$560,000 Total Replacement Cos
WW/DW	S032 Rosemont Pump Station	\$500,000 flood total \$2 Million total Replacement Cost
Sub	S041 Willow Creek Pump Station	\$4,000 at 1' of water \$560,000 Total Replacement Cost
Sub	S046 Woodgate #1 Pump Station	\$5,000 at 1' of water \$560,000 Total Replacement Cost
Canned WW/DW	S049 Del Rio Pump Station	\$1,000 at 1' of water \$810,000 Total Replacement Cost
Canned WW/DW	S051 Larchmont Butterfield No.3 Pump Station	\$3,000 at 1' water \$560,000 total Replacement Cost
Sub	S053 Rio Linda Woods Pump Station	\$4,000 at 1' of water \$560,000 total replacement cost
Sub	S055 Northeast Pump Station	\$100,000 total Flood replacement \$750,000 Total replacement cost
Sub	S064 Walnut Grove Pump Station	\$20,000 @ 1' Water \$1.5 Million total Replacement Cost
Sub	S065 Clampett Tract Pump Station	\$20,000 at 1' water \$1.5 Million total Replacement Cost
Sub	S080 Sunview Pump Station	\$6,000 at 1' of water \$560,000 Total Replacement Cost
Sub	S084 Rivergate Pump Station	\$5,000 at 1' of water \$560,000 Total Replacement Cost



Facility type	Facility Name	Asset Value(1)
Sub	S090 West La Loma Pump Station	\$100,000 at total flood damage \$ 810,000 Total Replacement Cost
Sub	S110 Westborough Village No.2 Pump Station	\$5,000 at 1' of water \$560,000 Total Replacement Cost
Sub	S113 Metro Air Park Pump Station	\$10,000 at 1' of water \$560,000 Total Replacement Cost
Sub	S125 Northborough Pump Station	\$10,000 at 1' of water \$1.2 Million Total Replacement Cost
Multiple Grinder	S133 Locke Pump Station	No damage at 1' of water \$200,000 total flood damage \$980,000 Total Replacement Cos
Sub	S140 Hovnanian Drive Pump Station	\$10,000 at 1' of water \$560,000 Total Replacement Cost
Sub	S144 Wilson Road Pump Station	\$500,000 flood total \$1.5 Million total Replacement Cost
Sub	S145 Lambert Road Pump Station	\$500,000 flood total \$1.5 Million total Replacement Cost
Sub	S146 Walnut Grove Pump Station	\$500,000 flood total \$1.5 Million total Replacement Cost
Sub	S147 Cameron Road Pump Station	\$500,000 flood total \$1.5 Million total Replacement Cost
Sub	S150 Center Parkway Pump Station	\$10,000 at 1' water \$810,000 Total Replacement cost

Source: SASD Finance Office, SASD Engineering, SASD Policy and Planning

(1) Asset value includes facility, site structures, site equipment, mobile equipment, miscellaneous items that may have soft cost components, some associated adjacent pipeline components. Values taken from SASD 2010 Comprehensive Annual Financial Report, and SASD engineering project reports. Some values have been escalated based on 3% to 5% inflation.

### Critical Facilities at Risk

The SASD critical facility inventory was overlaid on the Sacramento County DFIRM flood hazard layer using GIS. Facility locations that were within the hazard area were selected and sorted by critical facility definition category; the summary results of this analysis are show in Table N-7. A detailed critical facility table is included in the Base Plan as Appendix E; the flood hazard column on the right-hand side of that table denotes whether a particular facility is considered to be vulnerable to that hazard.

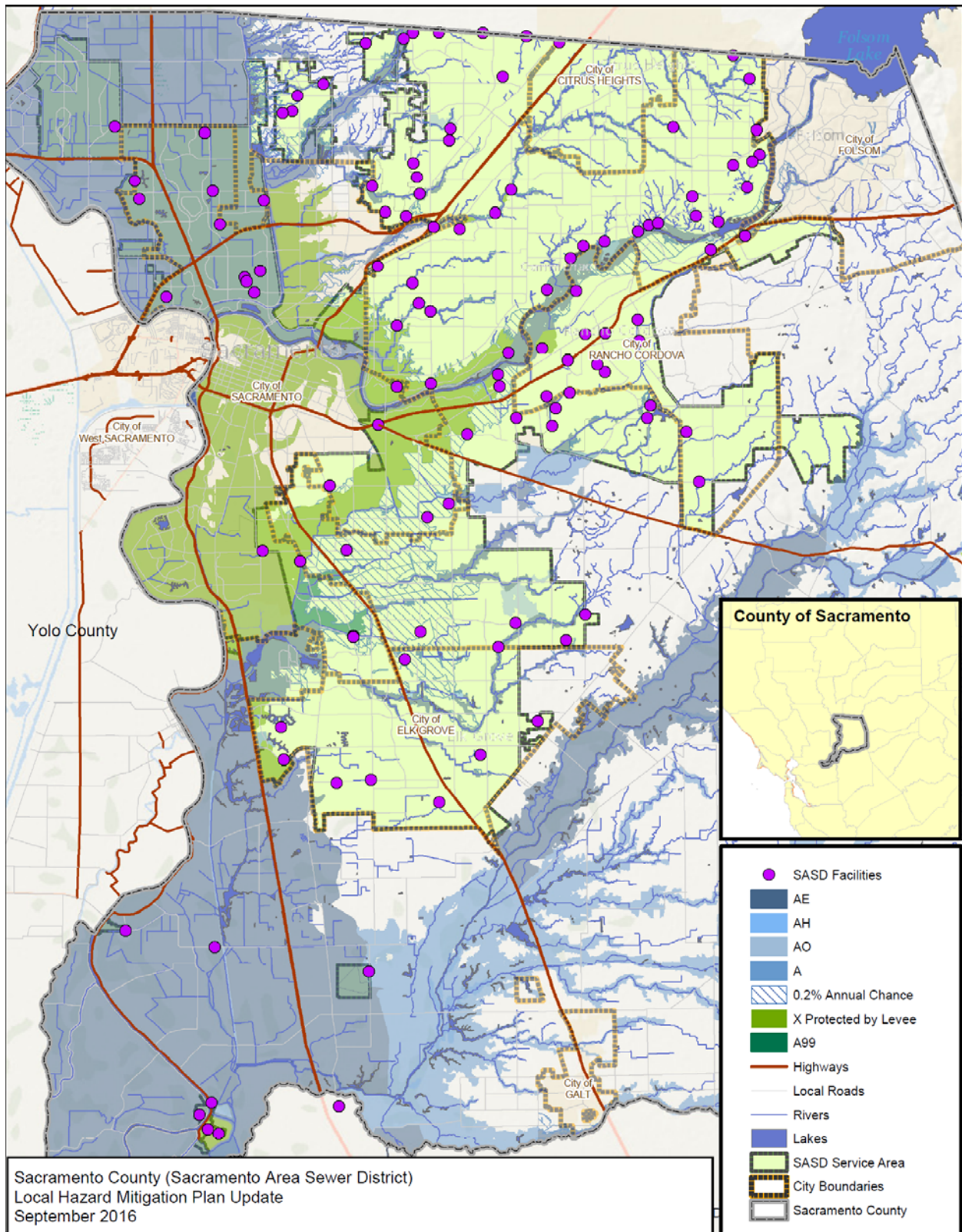
*Table N-7 SASD Critical Facilities at Risk in the Floodplain*

Flood	Critical Facility Category	Count
1%	Essential Services Facilities	25
1%	High Potential Loss Facility	0
1%	Transportation & Lifeline	0
	<b>Total 1%</b>	<b>25</b>
0.2%	Essential Services Facilities	6

Flood	Critical Facility Category	Count
0.2%	High Potential Loss Facility	0
0.2%	Transportation & Lifeline	0
	<b>Total 0.2%</b>	<b>6</b>

Source: SASD GIS

Figure N-4 SASD Critical Facilities in the Floodplain



Source: SASD

### Natural Resources at Risk

The District Planning Team noted no natural resources at risk to flooding.

### Historic and Cultural Resources at Risk

The District Planning Team noted no historic or cultural resources at risk to flooding.

### Future Development

City and County jurisdictions determine what future development SASD will need. Facilities to be constructed in the floodplain identified in Figure N-4 may need to be replaced in case of a flood.

### *Flood: Localized Stormwater Flooding*

**Likelihood of Future Occurrence**–Highly Likely

**Vulnerability**–Medium

### Hazard Profile and Problem Description

Localized flooding will have little effect to operations, however access to District assets may be temporarily limited.

### Past Occurrences

Past occurrences of localized stormwater flooding are rare.

### Vulnerability to Localized Flood

#### Assets/Critical Facilities at Risk

SASD assets at risk are pump stations and manholes.

### Future Development

There is no additional risk to future development than what currently exists.

### *Levee Failure*

**Likelihood of Future Occurrence**–Likely

**Vulnerability**–High

### Hazard Profile and Problem Description

**Note:** This section includes a discussion of levees that are not owned or maintained by SASD.

Flooding caused by levee failure can occur as the result of partial or complete collapse of an impoundment, and often results from prolonged rainfall and flooding. The primary danger associated with dam or levee

failure is the high velocity flooding of properties downstream of the breach. Section 4.2.17 Levee Failure describes the levee inventory in the Sacramento County Planning Area.

Flooding caused by levee failure would vary in the District depending on which structure fails and the nature and extent of the failure and associated flooding. Flooding may present a threat to life and property depending on buildings or facilities flooded. Damage may include buildings, their contents and loss of critical services to the community. Large flood events can affect lifeline utilities (e.g., water, sewerage, and power), transportation, jobs, tourism, the environment, agricultural industry, and the local and regional economies.

Levee Flood Protection Zones estimate the maximum area that may be inundated if a project levee fails when water surface elevation is at the top of a project levee. Zones depicted on Figure 4.50 of the Base Plan do not necessarily depict areas likely to be protected from flow events for which project levees were designed. Figure 4.50 of the Base Plan illustrates the depths of flooding should a levee that protects that area fail.

### Past Occurrences

SASD does not have a documented history of impacts, damages or costs associated with previous levee failure in the Sacramento region.

### Vulnerability to Levee Failure

Unincorporated Sacramento County and its incorporated jurisdictions have mapped flood hazard areas. This includes areas protected by levees. GIS was used to determine the possible impacts of flooding in areas protected by levee within the County, and how the risk varies across the Planning Area. The following methodology was followed in determining improved parcel counts and values at risk to levee failure. However, this analysis was performed based on the most current 2015 DFIRMs which still reflect some levees as providing 100-year level of protection. According to the County, all levees have since been decertified as not providing a 100-year level of protection, so this analysis is based solely on the information presented in the DFIRMs. Further it is important to note that many levee improvement projects are ongoing throughout the Planning Area, some of which will be providing certification of area levees to both a 100-year and 200-year levels depending on applicable requirements. Thus, this analysis reflects a moment in time and while it does provide information on areas developed behind levees, the X Protected by Levee flood zone will continue to change as these projects are completed and new certifications obtained.

### Assets at Risk

ASD assumes that the assets at risk in the X Protected by Levee Zone are the same assets at risk in the 100-year floodplain. Please see Table N-6.

### Critical Facilities at Risk

The SASD critical facility inventory was overlaid on the Sacramento County DFIRM - X Protected by Levee hazard layer using GIS. Facility locations that were within the hazard area were selected and sorted by critical facility definition category; the summary results of this analysis are show in Table N-8. A

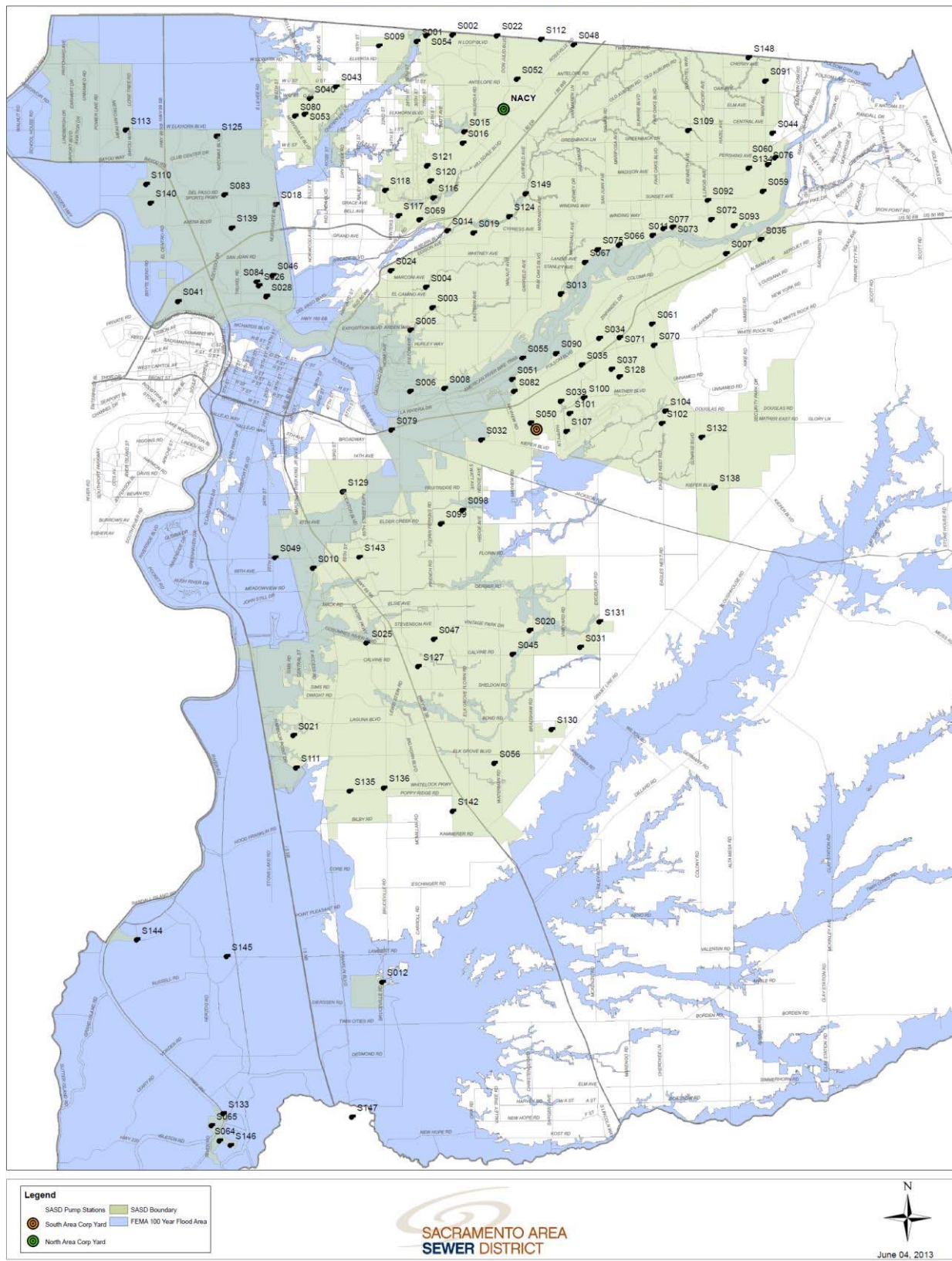
detailed critical facility table is included in the Base Plan as Appendix E; the levee failure hazard column on the right-hand side of that table denotes whether a particular facility is considered to be vulnerable to that hazard.

*Table N-8 SASD Critical Facilities at Risk in the X Protected by Levee Zone*

Critical Facility Definition	Count
Essential Services Facilities	108
High Potential Loss Facility	0
Transportation & Lifeline	0
<b>Total</b>	<b>108</b>

Source: SASD GIS

Figure N-5 SASD Critical Facilities in the X Protected by Levee



Source: SASD

### Natural Resources at Risk

The District Planning Team noted no natural resources at risk to levee failure.

### Historic and Cultural Resources at Risk

The District Planning Team noted no historic or cultural resources at risk to levee failure.

### Future Development

City jurisdiction determines what future development SASD will need. Facilities to be constructed in the floodplain identified in Figure N-5 may need to be replaced in case of a levee failure.

### *River/Stream/Creek Bank Erosion*

**Likelihood of Future Occurrence**–Highly Likely

**Vulnerability**–Medium

### Hazard Profile and Problem Description

Heavy rains and storm runoff is collected and conveyed in local creeks and channels. The District has approximately 700 creek crossings that could be impacted by this hazard.

### Past Occurrences

SASD has had a few occurrences in which erosion has damaged assets.

### Vulnerability to Erosion

### Assets/Critical Facilities at Risk

SASD assets at risk are force mains, main lines, manholes, and lower laterals.

### Future Development

There is no additional risk to future development than what currently exists.

### *Severe Weather: Wind and Tornadoes*

**Likelihood of Future Occurrence**–Likely

**Vulnerability**–Medium

### Hazard Profile and Problem Description

High winds cause power and communication outages that can affect multiple pump stations at once.



### Past Occurrences

SASD has had occasional power outages during periods of high wind.

### Vulnerability to Severe Weather: Wind and Tornadoes

#### Assets/Critical Facilities at Risk

SASD assets at risk are pump stations.

#### Future Development

There is no additional risk to future development than what currently exists.

### *Wildfire*

**Likelihood of Future Occurrence**–Likely

**Vulnerability**–Medium

### Hazard Profile and Problem Description

SASD has identified areas and District assets at risk to wildfire. Please reference Figure N-6 for details. The fire threat is based on the combined influence of the built environment, fuels, and topography

### Past Occurrences

The District Planning Team noted no past wildfire occurrences.

### Vulnerability to Wildfire

#### Assets a Risk

SASD has identified the following assets in Table N-9 as being potentially affected from a wildfire event.

#### Critical Facilities at Risk

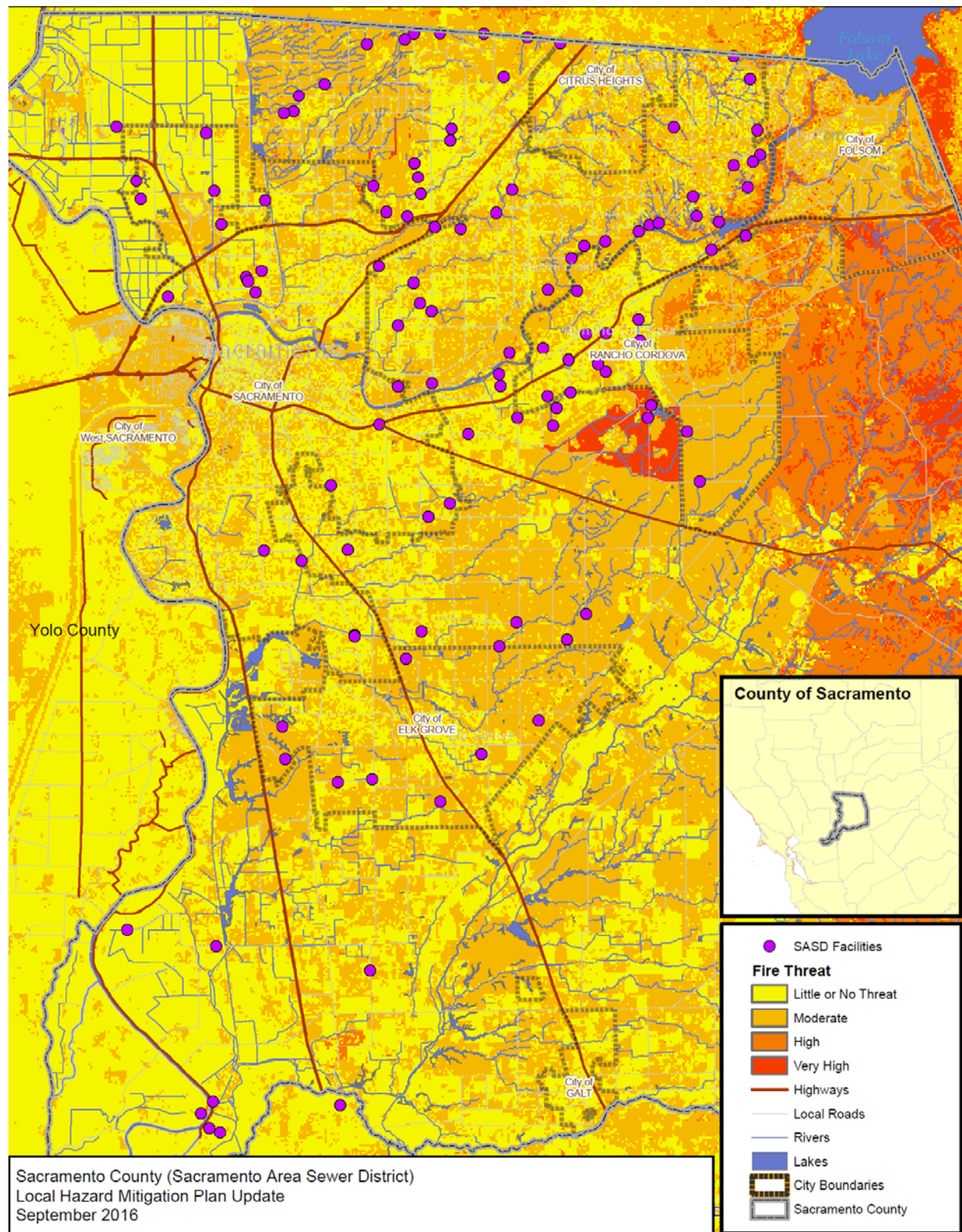
The SASD critical facility inventory was overlaid on the Sacramento County wildfire hazard layer using GIS. Facility locations that were within the hazard area were selected and sorted by critical facility definition category and key asset type; the summary results of this analysis are show in Table N-9. A detailed critical facility table is included in the Base Plan as Appendix E; the wildfire hazard column on the right-hand side of that table denotes whether a particular facility is considered to be vulnerable to that hazard.

*Table N-9 SASD Critical Facilities in the Wildfire Threat Zone*

Critical Facility Category	Fire Threat	Count
Historical Sites with multiple structures	Little or Moderate	0
Cultural Sites	Little or Moderate	0
Natural Resources (Bufferlands)	Little or Moderate	0
Essential Services Facilities	Little or No Threat	38
Essential Services Facilities	Moderate	56
Essential Services Facilities	High	7
Essential Services Facilities	Very High	9
High Potential Loss Facility	Little or No Threat	0
High Potential Loss Facility	Moderate	2
High Potential Loss Facility	High	0
High Potential Loss Facility	Very High	0

Source: SASD

Figure N-6 SASD Fire Threat and Critical Facilities



Source: SASD

## Natural Resources at Risk

The District Planning Team noted no natural resources at risk in the District.

## Historic and Cultural Resources

The District Planning Team noted no historic or cultural resources at risk in the District.

## Future Development

City jurisdiction determines what future development SASD will need. Facilities to be constructed in the fire threat zones identified in Figure N-6 may need to be replaced in case of a wildfire.

# N.6 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation education, outreach, and partnerships, and other mitigation efforts.

## N.6.1. Regulatory Mitigation Capabilities

Table N-10 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the SASD.

*Table N-10 SASD's Regulatory Mitigation Capabilities*

Plans	Y/N Year	Does the plan/program address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	N/A	
Capital Improvements Plan	N/A	
Economic Development Plan	N/A	
Local Emergency Operations Plan	N/A	
Continuity of Operations Plan	Y May 2015	Plan addresses hazards and provides a likelihood of occurrence.
Transportation Plan	N/A	
Stormwater Management Plan/Program	N/A	
Engineering Studies for Streams	N/A	
Community Wildfire Protection Plan	N/A	

Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)		
<b>Building Code, Permitting, and Inspections</b>	Y/N	Are codes adequately enforced?
Building Code	N/A	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score	N/A	Score:
Fire department ISO rating:	N/A	Rating:
Site plan review requirements	N/A	
<b>Land Use Planning and Ordinances</b>	Y/N	Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	N/A	
Subdivision ordinance	N/A	
Floodplain ordinance	N/A	
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N/A	
Flood insurance rate maps	N/A	
Elevation Certificates	N/A	
Acquisition of land for open space and public recreation uses	N/A	
Erosion or sediment control program	N/A	
Other	N/A	
<b>How can these capabilities be expanded and improved to reduce risk?</b>		

Source: SASD

### ***Sacramento Area Sewer District Continuity of Operations Plan (May 2015)***

SASD prepared a Continuity of Operations Plan (COOP) to ensure continuity of essential SASD functions in the event of a major emergency or disaster affecting the community that the SASD serves. This plan was prepared using an all-hazards approach. The plan provides the decision-making framework and key information to be used by SASD personnel to implement business continuity operations, to restore essential functions within defined Recovery Time Objectives (RTO), and to sustain operations for up to 30 days following an event. This COOP incorporates best practices from the federal, state, and local levels and shall remain a living document with regular updates to ensure currency and relevance.

This plan supports SASD’s vision, mission, and values and applies to SASD and its personnel. The COOP applies to potential hazards identified by SASD staff and uses an all-hazards continuity of operations strategy. This plan discusses the COOP’s relationship to other SASD emergency response plans and the SASD Incident Command System, the different personnel types that are involved in a COOP implementation and the four phases that comprise continuity of operations:

- Phase 0: Normal Operations (Tan)
- Phase I: Alert (Yellow)
- Phase II: Activation (Orange)
- Phase III: Response (Red)
- Phase IV: Recovery (Green)

The COOP is used to restore essential SASD functions and support critical services as quickly as possible and to sustain these services for up to 30 days following an event.

## N.6.2. Administrative/Technical Mitigation Capabilities

Table N-11 identifies the department(s) responsible for activities related to mitigation and loss prevention for SASD.

*Table N-11 SASD's Administrative and Technical Mitigation Capabilities*

Administration	Y/N	Describe capability Is coordination effective?
Planning Commission	N	
Mitigation Planning Committee	N	
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Y	Pump Station Maintenance
Mutual aid agreements	Y	CalWARN
Other		
Staff	Y/N FT/PT	Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?
Chief Building Official	FT	Yes
Floodplain Administrator	PT	Part time duty of various positions Facilities/GIS/Safety
Emergency Manager	PT	Part time duty of Safety
Community Planner	N	
Civil Engineer	FT	Part Time duties of current Engineering Dept staff
GIS Coordinator	FT	Full time GIS staff on site trained on Hazards
Other	FT	PIO and Communication specialists
Technical		
Warning systems/services (Reverse 911, outdoor warning signals)	Y	Reverse 911 and employee hotline
Hazard data and information	Y	Identified in COOP
Grant writing	Y	Policy & Planning Department
Hazus analysis	Y	COOP identified hazard analysis
Other		

How can these capabilities be expanded and improved to reduce risk?

Source: SASD

### N.6.3. Fiscal Mitigation Capabilities

Table N-12 identifies financial tools or resources that the SASD could potentially use to help fund mitigation activities.

*Table N-12 SASD's Fiscal Mitigation Capabilities*

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Y	
Authority to levy taxes for specific purposes	N	
Fees for water, sewer, gas, or electric services	Y	
Impact fees for new development	Y	
Storm water utility fee	N	
Incur debt through general obligation bonds and/or special tax bonds	Y	
Incur debt through private activities	N	
Community Development Block Grant	N	
Other federal funding programs	N	
State funding programs	N	
Other	N	
How can these capabilities be expanded and improved to reduce risk?		

Source: SASD

### N.6.4. Mitigation Education, Outreach, and Partnerships

Table N-13 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information.

*Table N-13 SASD’s Mitigation Education, Outreach, and Partnerships*

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	N/A	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	N/A	
Natural disaster or safety related school programs	N/A	
StormReady certification	N/A	
Firewise Communities certification	N/A	
Public-private partnership initiatives addressing disaster-related issues	N/A	
Other	N/A	
<b>How can these capabilities be expanded and improved to reduce risk?</b>		

### N.6.5. Other Mitigation Efforts

Purchased redundant backup generators at our critical facilities.

## N.7 Mitigation Strategy

### N.7.1. Mitigation Goals and Objectives

SASD adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

### N.7.2. Mitigation Actions

The planning team for SASD identified and prioritized the following mitigation actions based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, potential funding, estimated cost, and timeline are also included.

#### *Action 1. MOU for Dedicated Cell Phone Tower and Cell Phone Pack*

**Hazards Addressed:** Multi-hazard – Improve disaster prevention and minimization of impacts

**Goals Addressed:** 1, 2, 3



**Issue/Background:** Ensure communication capabilities in an emergency

**Other Alternatives:** Use of existing radios

**Existing Planning Mechanisms through which Action will be Implemented:**

**Responsible Office:** IT, Safety & Regulatory Compliance Sections

**Priority (H, M, L):** Medium

**Cost Estimate:** 10,000 per year

**Potential Funding:** Internal, Federal Grant

**Benefits (avoided Losses):** Communication within DOC

**Schedule:** Review capabilities, review vendors and possible MOU for emergency communication tower and bank of dedicated cell phones.