Annex B City of Elk Grove

B.1 Introduction

This Annex details the hazard mitigation planning elements specific to the City of Elk Grove, a previously participating jurisdiction to the 2016 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 City. This Annex provides additional information specific to Elk Grove, with a focus on providing additional details on the risk assessment and mitigation strategy for this community.

B.2 Planning Process

As described above, Elk Grove followed the planning process detailed in Chapter 3 of the Base Plan. In addition to providing representation on the Sacramento County Hazard Mitigation Planning Committee (HMPC), the City formulated their 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 B-1. Additional details on Plan participation and City representatives are included in Appendix A.

Table B-1 City of Elk Grove – Planning Team

Name	Position/Title	How Participated
Rachael Brown	Economic Development Program Manager	Provided review and information on the economy section and the pandemic section.
Shane Diller	Assistant Director of Development Services	Provide review and input on building permits and municipal codes/policies and earthquake vulnerability and future development.
Sean Gallagher	Maintenance and Operations Manager	Provide review and input on assets at risk and mitigation efforts
Jamie Hudson	Real Time Information Center Supervisor	Provided review and input on emergency operations, vulnerability assessments, mitigations, extreme heat, wildfires, policies/procedures.
Christopher Jordan	Director of Strategic Planning and Innovation	Provided review and input on the General Plan, growth and development trends, and municipal codes/policies. Provided review and input on Climate Change and Drought.
Amittoj Thandi	Engineering Services Support Manager	Provided review and input on identifying hazards, vulnerability assessments, mitigations, critical facilities, development in a hazard area, flood, localized stormwater flooding, levees failures, heavy rains and storms, plans, municipal codes/policies. Attended meetings.

Name	Position/Title	How Participated
Carrie Whitlock	Strategic Planning and Innovation Program Manager	Facilitated LHMP update. Provided review and input on population trends, special populations, climate change, and pandemic sections.
Matt DeMarco Cosumnes Community Service District	Battalion Chief of Administration, CSD Fire	Provided review and input on the wildfire section.

Coordination with other community planning efforts is paramount to the successful implementation of this LHMP Update. This section provides information on how the City integrated the previously approved 2016 Plan into existing planning mechanisms and programs. Specifically, the City incorporated into or implemented the 2016 LHMP through other plans and programs shown in Table B-2.

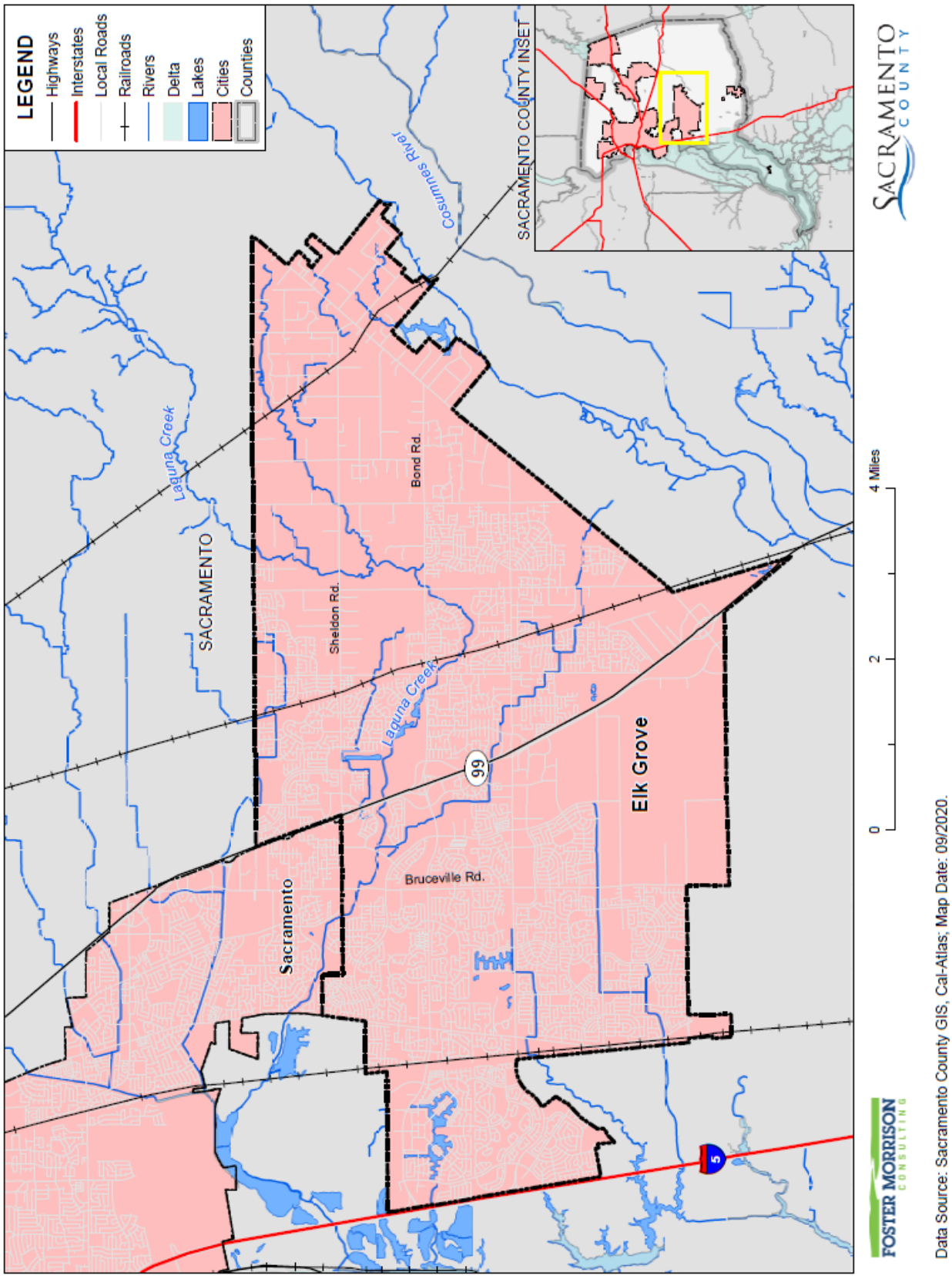
Table B-2 2016 LHMP Incorporation

Planning Mechanism 2016 LHMP Was Incorporated/Implemented In.	Details: How was it incorporated?
General Plan	The General Plan was adopted in February 2019. The Safety Element was updated along with the General Plan update and incorporated as part of the document. A Vulnerability Assessment was also completed in October 2017 as part of the General Plan update.
Community Mobility Resilience Plan	The Community Mobility Resilience Plan was adopted in February 2021. The document outlines how the city will be impacted by several climate change related scenarios, including increased heat, increased precipitation and flooding, and fiscal concerns as a result of vehicle related changes, and proposes strategies to address these impacts. The flooding section, in particular, used the 2016 LHMP in the analysis of impacts.
Capital Improvement Program	Projects to mitigate flood risk and other hazards are programmed in the CIP annually. Constructed several projects during the previous 5-year period.
Emergency Operations Plan (EOP)	The Emergency Operations Plan was implemented in September 2018. It established an Emergency Management Organization and assigns functions and tasks consistent with the County of Sacramento, California's Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS). It provides for the integration and coordination of planning efforts of multiple jurisdictions within the City of Elk Grove.
Storm Drainage Master Plan	The Storm Drainage Master Plan was adopted in 2011. A minor update was completed in 2019 to provide a summary of projects completed since 2011, provide details on remaining projects and information regarding new regulatory requirements.

B.3 Community Profile

The community profile for the City of Elk Grove is detailed in the following sections. Figure B-1 displays a City map and the location of Elk Grove within Sacramento County.

Figure B-1 City of Elk Grove



B.3.1. Geography and Climate

Elk Grove contains 42 square miles of land and sits at 46 ft. above mean sea level. The City is located within the Great Valley geomorphic province, which is primarily described as a relatively flat alluvial plain, about 50 miles wide and 400 miles long, with thick sequences of sedimentary deposits of Jurassic through Holocene age.

Shielded by the Sierra Nevada Mountains to the east, the California Coast ranges to the west, and the Siskiyou Mountains to the north, the City enjoys a mild climate for most of the year. In the summer, however, "northerns" blow from the Siskiyou Mountains, bearing pollens and heat. This is mitigated by the City's extremely low humidity and the cool delta breezes. The winters are rainy. Rain generally falls only between November and March, with the rainy season tapering off almost completely by the end of April. Average yearly precipitation is 17" to 18", with almost no rain during the summer months, to an average rainfall of 3.7" in January. It rains, on average, 58 days of the year and there are 266 sunny days. In February of 1992, Sacramento had 16 consecutive days of rain (6.41"). A record 7.24" of rain fell on April 20, 1880.The average temperature throughout the year is 61°F, with the daily average ranging from 46°F in December and January to 76°F in July. Average daily high temperatures range from 53°F in December and January to 92°F in July (with many days of over 100°F highs). Daily low temperatures range from 38 to 58°F. The average year has 73 days with a high over 90°F, with the highest temperature on record being 114°F on July 17, 1925, and 18 days when the low drops below 32°F, with the coldest day on record being December 11, 1932, at 17°F.

On average, 96 days in the year have fog, mostly in the morning (tule fog), primarily in December and January. The fog can get extremely dense, lowering visibility to less than 100 feet and making driving conditions hazardous.

B.3.2. History

A portion of the City lies within the former territory of six Plains Miwok tribelets along the Cosumnes River drainage and two, possibly three tribelets along the Sacramento River. James A. Bennyhoff's research[1] revealed that the Plains Miwok were recognized as a distinct language group as early as 1806 when Spanish explorers first entered the region.

In 1850, the City was established as a hotel and a stop for the stage. The City is located about 15 miles south of historic Sutter's Fort and thus became a crossroads for business, entertainment, mail service and agriculture, and acted as home base for gold miners in nearby communities. After it played its part in the early gold rush and statehood history in California, a close-knit community evolved with a distinctly rural and western lifestyle.

[1] James A. Bennyhoff (1926-1993) was an anthropologist and professor at UC Berkeley, California.

Initially, the town developed around a stage stop on the Monterey Trail, though after the railroad passed by east of town, the City's center shifted to its present location. "Old Town" Elk Grove is located about a mile east of State Route 99 (formerly U.S. Route 99, the north-south artery of the California Central Valley).

Despite the City's close proximity to California's capital city, Elk Grove remained quietly independent of Sacramento's growth and development as it expanded into adjoining countywide areas until the 1980s. The City was incorporated as a general law city on July 1, 2000.

B.3.3. Economy and Tax Base

Elk Grove is a rapidly growing City with one of the highest per capita incomes in the Sacramento region. In 2004 and 2005, the US Census Bureau named the City as the fastest growing city in the country. In 2008, the Gadberry Group recognized Elk Grove as one of eight most notable high-growth cities in the nation with the highest increase in average household income. US Census estimates show economic characteristics for the City of Elk Grove. These are shown in Table B-3 and Table B-4. Mean household income in the City was $113,090. Median household income in the City was $94,971.

Table B-3 City of Elk Grove – Civilian Employed Population 16 years and Over

Industry	Estimated Employment	Percent
Agriculture, forestry, fishing and hunting, and mining	686	0.8%
Construction	4,720	5.5%
Manufacturing	3,743	4.4%
Wholesale trade	2,109	2.5%
Retail trade	7,679	9.0%
Transportation and warehousing, and utilities	5,142	6.0%
Information	1,117	1.3%
Finance and insurance, and real estate and rental and leasing	6,087	7.1%
Professional, scientific, and management, and administrative and waste management services	8,068	9.5%
Educational services, and health care and social assistance	21,046	24.7%
Arts, entertainment, and recreation, and accommodation and food services	7,556	8.9%
Other services, except public administration	4,306	5.0%
Public administration	13,044	15.3%

Source: US Census Bureau American Community Survey 2019 Estimates

Table B-4 City of Elk Grove – Income and Benefits

Income Bracket	Percent
<$10,000	3.4%
$10,000 – $14,999	2.5%
$15,000 - $24,9999	4.7%
$25,000 – $34,999	5.1%

Income Bracket	Percent
$35,000 – $49,999	8.3%
$50,000 – $74,999	14.2%
$75,000 – $99,999	13.7%
$100,000 – $149,999	22.0%
$150,000 – $199,999	12.7%
$200,000 or more	13.5%

Source: US Census Bureau American Community Survey 2019 Estimates

Major employers in the vicinity are shown in Table B-5.

Table B-5 Top Ten Employers in the Vicinity of Elk Grove

Company	Est. Employees[1]
Apple, Inc.[2]	5,000
Elk Grove Unified School District	4,263
California Correctional Health Care Services[3]	1,731
Raley's	889
Wal-Mart Stores, Inc.	681
Kaiser Foundation Hospitals	524
Autozone, Inc. (including ALLDATA)	400
Elk Grove, City of[3, 4]	398
County of Sacramento	337
State of California	313

Source: EPS, Elk Grove Employment Dynamics

Notes:

1. Constitutes best estimate of current employment from available sources, based on Elk Grove Employment Dynamics Study completed by EPS in 2018.
2. While some employees at this location are contracted by other employment agencies, for purposes of this analysis, all employees at this location are considered Apple employees.
3. Based on 2018 estimates from the City of Elk Grove.
4. Includes permanent and contract staff.

B.3.4. Population

The California Department of Finance estimated the January 1, 2020, total population for the City of Elk Grove was 176,154.

B.4 Hazard Identification

Elk Grove identified the hazards that affect the City and summarized their location, extent, likelihood of future occurrence, potential magnitude, and significance specific to Elk Grove (see Table B-6).

Table B-6 City of Elk Grove—Hazard Identification Assessment

Hazard	Geographic Extent	Likelihood of Future Occurrences	Magnitude/ Severity	Significance	Climate Change Influence
Climate Change	Extensive	Likely	Limited	Medium	–
Dam Failure	Limited	Unlikely	Limited	High	Medium
Drought & Water Shortage	Extensive	Likely	Limited	Medium	High
Earthquake	Significant	Occasional	Limited	Medium	Low
Earthquake Liquefaction	Limited	Unlikely	Negligible	Low	Low
Floods: 1%/0.2% annual chance	Significant	Occasional/ Unlikely	Critical	High	Medium
Floods: Localized Stormwater	Significant	Likely	Limited	Medium	Medium
Landslides, Mudslides, and Debris Flow	Limited	Unlikely	Negligible	Low	Medium
Levee Failure	Significant	Occasional	Critical	High	Medium
Pandemic	Extensive	Likely	Catastrophic	Medium	Medium
Severe Weather: Extreme Cold and Freeze	Extensive	Likely	Limited	Medium	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Limited	Medium	High
Severe Weather: Heavy Rains and Storms	Extensive	Highly Likely	Limited	Medium	Medium
Severe Weather: Wind and Tornado	Limited	Occasional	Negligible	Low	Low
Subsidence	Limited	Unlikely	Negligible	Low	Medium
Volcano	Limited	Unlikely	Negligible	Low	Low
Wildfire	Significant	Highly Likely	Limited	High	High

Geographic Extent
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Likelihood of Future Occurrences
Highly Likely: Near 100% chance of occurrence in next year, or happens every year.
Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.
Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

Magnitude/Severity
Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths
Critical—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
Limited—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
Negligible—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

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

Climate Change Influence
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

B.5 Hazard Profile and Vulnerability Assessment

The intent of this section is to profile Elk Grove's hazards and assess the City's vulnerability separate from that of the Sacramento County Planning Area as a whole, which has already been assessed in Section 4.3 Hazard Profiles and Vulnerability Assessment in the Base Plan. The hazard profiles in the Base Plan discuss overall impacts to the Sacramento County Planning Area and describes the hazard problem description, hazard location and extent, magnitude/severity, previous occurrences of hazard events and the likelihood of future occurrences. Hazard profile information specific to the City 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 City (as identified in the Significance column of Table B-6) and also includes a vulnerability assessment to the three primary hazards to the State of California: earthquake, flood, and wildfire. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the Base Plan.

B.5.1. Hazard Profiles

Each hazard vulnerability assessment in Section B.5.3, includes a hazard profile/problem description as to how each medium or high significant hazard affects the City and includes information on past hazard occurrences and the likelihood of future hazard occurrence. The intent of this section is to provide jurisdictional specific information on hazards and further describes how the hazards and risks differ across the Sacramento County Planning Area.

B.5.2. Vulnerability Assessment and Assets at Risk

This section identifies Elk Grove's total assets at risk, including values at risk, populations at risk, critical facilities and infrastructure, natural resources, and historic and cultural resources. Growth and development trends are also presented for the community. This data is not hazard specific, but is representative of total assets at risk within the community.

Values at Risk

The following data from the Sacramento County Assessor's Office is based on the 2020 Assessor's data. The methodology used to derive property values is the same as in Section 4.3.1 of the Base Plan. This data should only be used as a guideline to overall values in the County, as the information has some limitations. The most significant limitations are created by Proposition 13 and the Williamson Act as detailed in the Base Plan. With respect to Proposition 13, instead of adjusting property values annually, the values are not adjusted or assessed at fair market value until a property transfer occurs. As a result, overall value information is most likely low and does not reflect current market value of properties within the County. It is also important to note, in the event of a disaster, it is generally the value of the infrastructure or improvements to the land that is of concern or at risk. Generally, the land itself is not a loss. However, depending on the type of hazard and impact of any given hazard event, land values may be adversely affected; thus, land values are included as appropriate. Table B-7 shows the 2020 Assessor's values and content replacement values (e.g., the values at risk) broken down by property type for the City.

Table B-7 City of Elk Grove – Total Values at Risk by Property Use

Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Agricultural	19	7	$1,376,347	$1,239,312	$1,239,312	$3,854,971
Care/Health	36	27	$37,940,058	$152,964,107	$152,964,107	$343,868,272
Church/Welfare	51	47	$32,627,506	$131,084,326	$131,084,326	$294,796,158
Industrial	206	175	$100,426,145	$329,611,799	$494,417,691	$924,455,646
Miscellaneous	1,588	1	$1,365,864	$1,100	$1,100	$1,368,064
Office	326	296	$101,150,230	$531,234,209	$531,234,209	$1,163,618,648
Public/Utilities	72	0	$110	$0	$0	$110
Recreational	20	16	$13,821,318	$54,974,841	$54,974,841	$123,771,000
Residential	51,008	50,779	$5,112,674,533	$14,134,632,301	$7,067,316,270	$26,314,623,069
Retail/ Commercial	433	400	$389,355,339	$1,006,778,621	$1,006,778,621	$2,402,912,581
Unknown	1	1	$0	$127,600	$0	$127,600
Vacant	1,824	60	$471,773,843	$12,326,932	$0	$484,100,775
Elk Grove Total	**55,584**	**51,809**	**$6,262,511,293**	**$16,354,975,148**	**$9,440,010,477**	**$32,057,496,894**

Source: Sacramento County 2020 Parcel/Assessor's Data

Critical Facilities and Infrastructure

Critical facilities and infrastructure are those buildings and infrastructure that are crucial to a community. Should these be damaged, it makes it more difficult for the community to respond to and recover from a disaster. For purposes of this Plan, a critical facility is defined as:

Put in the critical facility definition.

> *Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community 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, (3) Hazardous Materials and Solid Waste Facilities. Critical facilities in the City are shown on Figure B-2 and detailed in Table B-8.

Figure B-2 City of Elk Grove – Critical Facilities

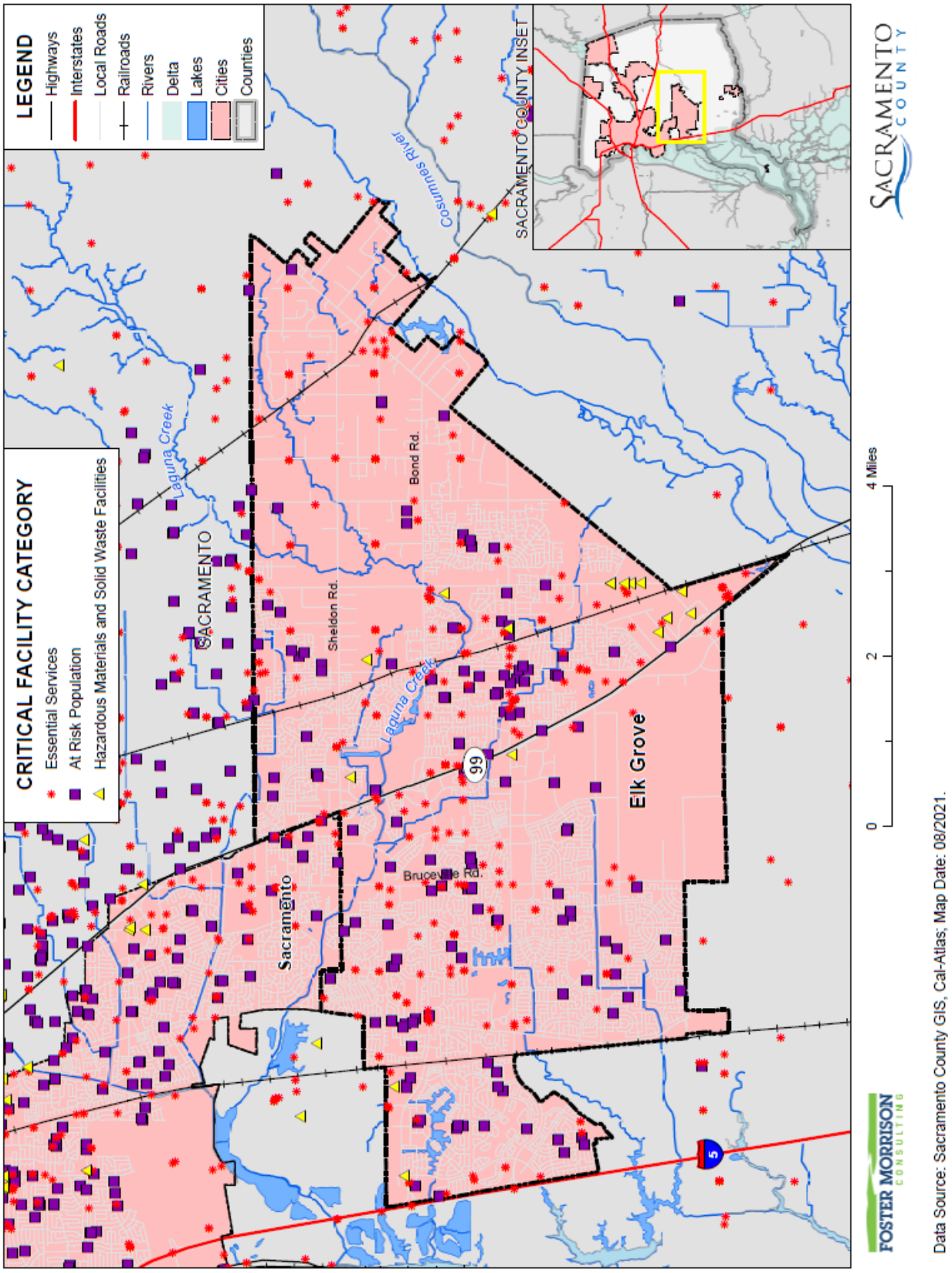


Table B-8 City of Elk Grove – Critical Facilities by Category and Type

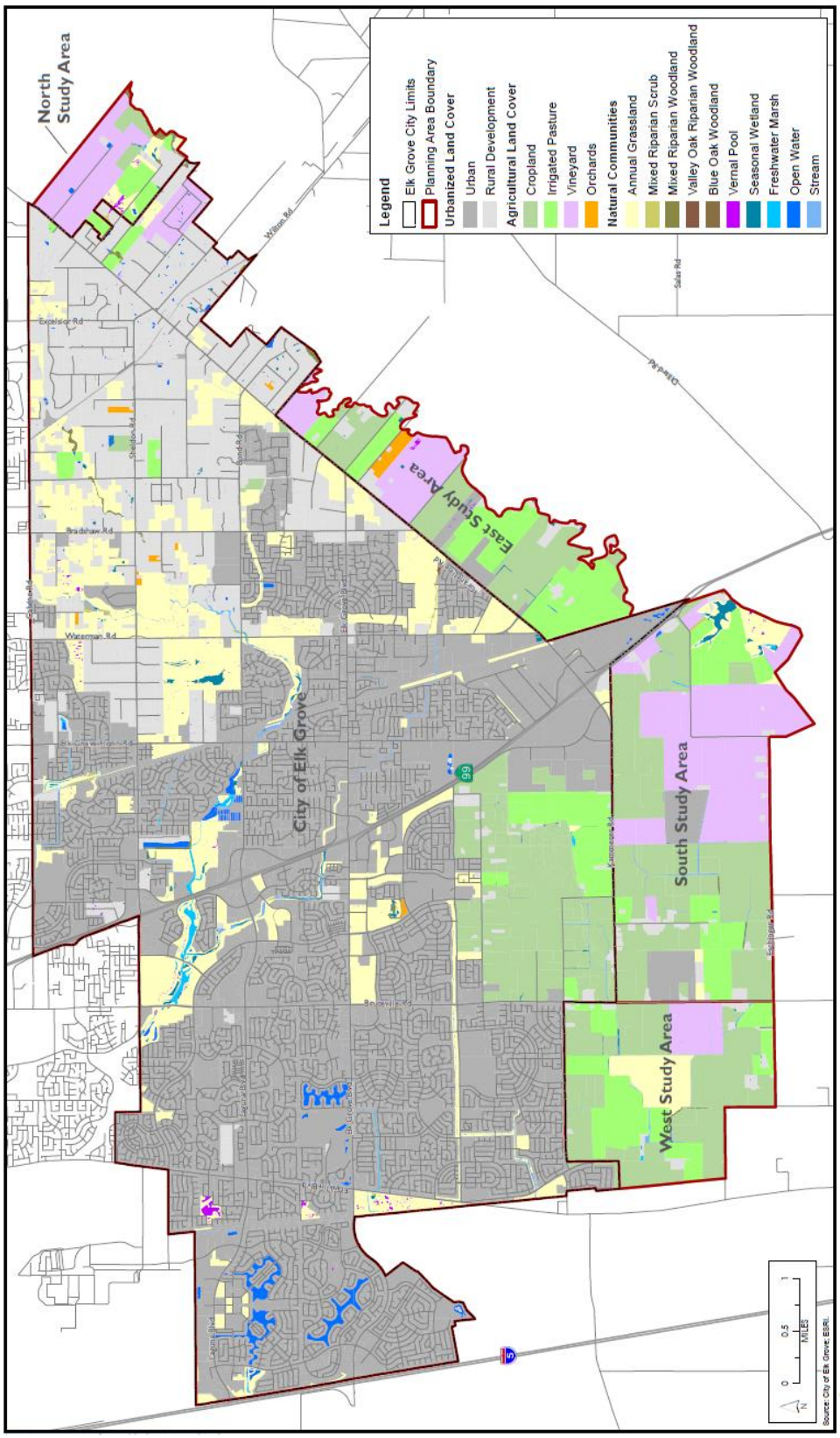
Critical Facility Category	Critical Facility Type	Facility Count
Essential Services Facilities	Cellular Tower	2
	Emergency Evacuation Center	8
	EMS Stations	7
	FDIC Insured Banks	26
	Fire Station	6
	Hospital or Urgent Care	1
	Law Enforcement	2
	Microwave Service Towers	107
	Sewage Treatment Plant	1
	Water Well	158
	Total	**318**
At Risk Population Facilities	Day Care Center	36
	Mobile Home Parks	1
	Places of Worship	89
	School	45
	Total	**171**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	6
	EPA ER TSCA Facility	3
	Leaky Underground Storage Tank	4
	Solid Waste Facility	4
	Waste Transfer Station	1
	Total	**18**
Elk Grove Total		**507**

Source: City of Elk Grove

Natural Resources

Natural resources are unique to each area and are difficult to replace. Should a natural disaster occur, these species and locations are at risk. The City consists of a mix of urban, agricultural, and natural land cover types. Agricultural lands are divided into subcategories including cropland, irrigated pasture, vineyard, and orchard. Natural land covers include annual grasslands, mixed riparian scrub, mixed riparian woodland, valley oak riparian woodland, blue oak woodland, seasonal wetlands, vernal pools, freshwater marshes, open water, and streams. Land cover type and land uses in the City are shown in Figure B-3.

Figure B-3 City of Elk Grove – Vegetative Communities and Land Uses



Source: City of Elk Grove General Plan 2018 Environmental Impact Report

Special Status Species

The following special-status species are known to occur within the natural habitats most likely to be present within the City boundaries. These and other species potentially occurring in the City can be found in Table B-9. Figure B-4 shows the locations of sensitive elements within the City.

Table B-9 Special-Status Species Potentially Occurring in the City of Elk Grove

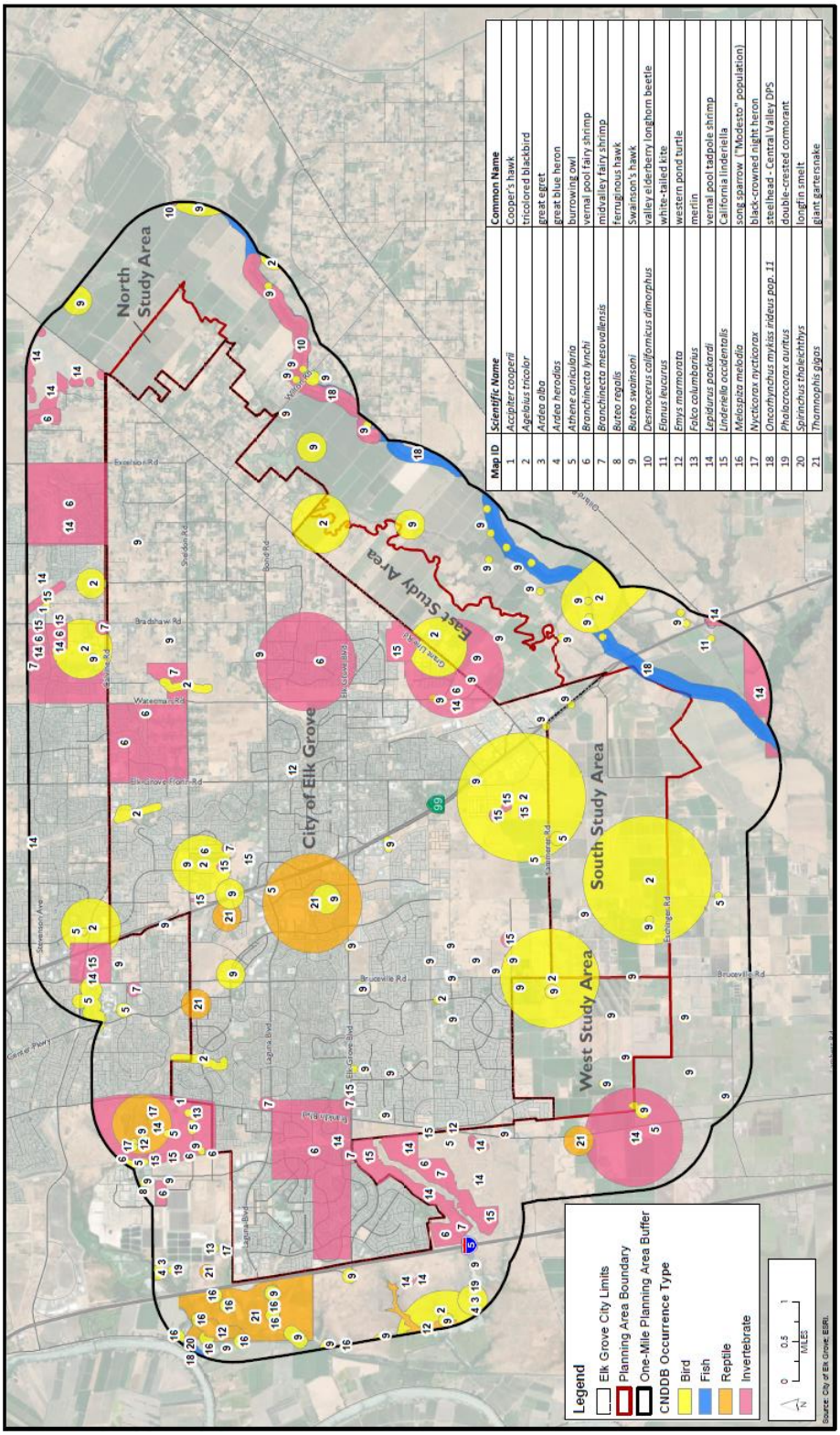
Common Name	Scientific Name	Regulatory Status
Ahart's Dwarf Rush	*Juncus leiospermus var. ahartii*	SC; --; 1 B
Boggs Lake Hedge- hyssop	*Gratiola heterosepala*	--; CE; 1 B
Delta Tule-pea	*Lath yrus jepsonii var. jepsonii*	SC; --; 1 B
Dwarf Downingia	*Downingia pusilla*	--; --; 2
Legenere	*Legenere limosa*	SC; --; 1 B
Mason's Lilaeopsis	*Lilaeopsis masonii*	SC; CR; 1 B
Northern California Black Walnut	*Juglans californica var. hindsii*	SC; --; 1 B
Pincushion navarettia	*Naverretia myersii spp. Myersii*	SC; --; 1 B
Rose Mallow	*Hibiscus lasiocarpus*	SC; --; 1 B
Sacramento Orcutt Grass	*Orcuttia viscida*	FE; CE; 1 B
Sacramento Orcutt Grass Critical Habitat	*Orcuttia viscida Critical Habitat*	--
San Joaquin Saltbrush	*Atriplex joaquiniana*	SC; --; 1 B
Sanford's Arrowhead	*Sagittaria sanfordii*	SC; --; 1 B
Slender Orcutt Grass	*Orcuttia tenuis*	FT; CE; 1 B
Slender Orcutt Grass Critical Habitat	*Orcuttia tenuis Critical Habitat*	--
California linderiella	*Linderiella occidentalis*	SC; --; --
Conservancy fairy shrimp	*Brachinecta conservation*	FE; --; --
Midvalley Fairy Shrimp	*Branchinecta mesovallensis*	SC; --; --
Valley Elderberry Longhorn beetle	*Desmocerus californicus dimorphus*	FT (PX); --; --
Vernal Pool Fairy Shrimp	*Branchinecta lynchi*	FT; --; --
Vernal Pool Tadpole Shrimp	*Lepidurus packardi*	FE; --; --
California Horned Lizard	*Phrynosoma coronatum frontale*	SC; CSC (protected full species); --
California Tiger Salamander	*Ambystoma californiense*	C; CSC (protected); --
Giant Garter Snake	*Thamnophis gigas*	FT; CT (protected); --
Northwestern Pond Turtle	*Clemmys marmorata marmorata*	SC; CSC; --
Silvery Legless Lizard	*Anniella pulchra pulchra*	SC; CSC; --
Western Spadefoot Toad	*Scaphio pus hammondii*	SC; CSC (protected); --

Common Name	Scientific Name	Regulatory Status
Central Valley Fall/Late Fall-run Chinook Salmon and Critical Habitat	*Oncorhynchus tshawytscha*	C; CSC; --
Central Valley Spring-run Chinook Salmon	*Oncorhynchus tshawytscha*	FT; CT; --
Central Valley Winter – run Chinook Salmon and Critical Habitat	*Oncorhynchus tshawytscha*	FE; CE; --
Central Valley Steelhead	*Oncorhynchus mykiss*	FT; --; --
Delta Smelt	*Hypomesus transpacificus*	FT; CT; --
Green Sturgeon	*Acipenser medirostris*	SC; CSC; --
Pacific Lamprey	*Lam petra trident ata*	SC; --; --
River Lamprey	*Lam petra ayresi*	SC; CSC; --
Sacramento Splittail	*Pogonichthys macrolepidotus*	FT; CSC; --
Aleutian Canada Goose	*Branta Canadensis leucopareia*	FD; --; -- (Wintering)
American Bittern	*Botaurus lentiginosus*	SC; --; --
Bank Swallow	*Riparia riparia*	--; CT; -- (nesting)
Black Rail	*Laterallus jamaicensis coturniculus*	SC; CT (fully protected); --
Black Tern	*Chlidonias niger*	SC; CSC; -- (nesting colony)
Cooper's Hawk	*Accipiter cooperi*	--; CSC; -- (nesting)
Grasshopper Sparrow	*Ammodramus savannarum*	SC; --; -- (nesting)
Great Blue Heron	*Ardea herodias*	--; CDF (sensitive); -- (rookery)
Great Egret	*Ardea alba*	--; CDF (sensitive); -- (rookery)
Greater Sandhill Crane	*Grus canadensis tabida*	--; CT (fully protected); --
Lesser Sandhill Crane	*Grus canadensis canadensis*	--;CSC;--
Loggerhead Shrike	*Lanius ludovivianus*	SC; CSC; -- (nesting)
Mountain Plover	*Charadrius montanus*	FPT; CSC; -- (wintering)
Northern Harrier	*Circus cyaneus*	--;CSC;--
Nuttall's Woodpecker	*Picoides nuttallii*	SLC; --; --
Oak Titmouse	*Baeolophus inornatus*	SLC; --; --
Snowy Egret	*Egretta thula*	SC; --; -- (rookery)
Song Sparrow (Modesto Population)	*Melospiza melodia*	--;CSC;--
Swainson's Hawk	*Buteo swainsoni*	--; CT; --
Tricolored Blackbird	*Agelaius tricolor*	SC; CSC; -- (nesting colony)
Vaux's Swift	*Chaetura vauxi*	--;CSC;--
Western Burrowing Owl	*Athene cunicularia hypugea*	SC; CSC; -- (burrowing sites)
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	SC; CE (fully protected); -- (nesting)
White-tailed Kite	*Elanus caeruleus*	SC; (fully protected); - - (nesting)

Common Name	Scientific Name	Regulatory Status
Yellow-breasted chat	*Icteria virens*	--;CSC;--
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	--;CSC;--
Yellow Warbler	*Setophaga petechia*	--;CSC;--
Fringed Myotis	*Myotis thysanodes*	SC; --; --
Greater Western Mastiff bat	*Eumops perotis californicus*	SC; CSC; --
Long-eared Myotis	*Myotis evotis*	SC; --; --
Long-legged Myotis	*Myotis volans*	SC; --; --
Pacific Western Big- eared bat	*Corynorhinus townsendii townsendii*	SC; CSC (full species); --
Pale Townsend's Big- eared bat	*Corynorhinus townsendii pallescens*	SC; CSC (full species); --
San Joaquin Pocket Mouse	*Perognathus inornatus*	SC; --; --
San Joaquin Woodrat	*Neotoma fuscipes riparia*	FE; CSC; --
Small-footed Myotis	*Myotis ciiolabrum*	SC; --; --
Yuma Myotis	*Myotis yumanensis*	SC; --; --

Source: Foothill Associates, 2002 and updated by Michael Baker International May 2016.
FE = federally endangered FT = federally threatened
SC = federal species of concern
C = candidate
CDF- California Department of Fish and Game (sensitive)
FPT = federal proposed threatened
FPE = federal proposed endangered
CE = State endangered
CT = State threatened
CR = State rare
CSC = California species of special concern
C = candidate for listing
1 B = CNPS (California Native Plant Society) list plants rare, threatened, or endangered in California or elsewhere
2 = CNPS list plants rare, threatened, or endangered in California, but more numerous elsewhere * = not enough information available on this species
3 = CNPS list plants about which CNPS needs more information
4 = CNPS list plants of limited distribution – a watch list
D = Delisted
MNBMC = Migratory Non-Game Bird of Management Concern
PX = Proposed Critical Habitat
SLC = Species of Local Concern

Figure B-4 City of Elk Grove Habitat Conditions and Known Occurrences of Special-Status Species



Map ID	Scientific Name	Common Name
1	*Accipiter cooperii*	Cooper's hawk
2	*Agelaius tricolor*	tricolored blackbird
3	*Ardea alba*	great egret
4	*Ardea herodias*	great blue heron
5	*Athene cunicularia*	burrowing owl
6	*Branchinecta lynchi*	vernal pool fairy shrimp
7	*Branchinecta mesovallensis*	midvalley fairy shrimp
8	*Buteo regalis*	ferruginous hawk
9	*Buteo swainsoni*	Swainson's hawk
10	*Desmocerus californicus dimorphus*	valley elderberry longhorn beetle
11	*Elanus leucurus*	white-tailed kite
12	*Emys marmorata*	western pond turtle
13	*Falco columbarius*	merlin
14	*Lepidurus packardi*	vernal pool tadpole shrimp
15	*Linderiella occidentalis*	California linderiella
16	*Melospiza melodia*	song sparrow ("Modesto" population)
17	*Nycticorax nycticorax*	black-crowned night heron
18	*Oncorhynchus mykiss irideus pop. 11*	steelhead - Central Valley DPS
19	*Phalacrocorax auritus*	double-crested cormorant
20	*Spirinchus thaleichthys*	longfin smelt
21	*Thamnophis gigas*	giant gartersnake

Source: City of Elk Grove General Plan Background Report 2018 Environmental Impact Report,

Trees

Although native trees such as oaks (*Quercus sp.*) and California black walnuts (J*uglans californica var. jepsonii*) are not afforded special protection under State or federal law, loss of these species is of concern to the California Department of Fish and Wildlife and California Native Plant Society because of their continued depletion throughout California. In addition, the City regulates all projects with the potential to affect "Trees of Local Importance" as defined in Chapter 19.12 of the City's Municipal Code, which is the City's Tree Preservation and Protection Title. Trees of Local Importance include Coast live oak, Valley oak, Blue oak, Interior live oak, Oracle oak, California sycamore, and California black walnut with a diameter at breast height of six inches or greater; or multi-trunked trees with a combined diameter at breast height of six inches or greater.

In November 2005, the City Council formally adopted the Sacramento Tree Foundation's regional Greenprint Program in order to achieve the sustainability and livability goals in the Sacramento region by expanding urban forests and optimizing the benefits of tree canopies. Since inception, the City has worked with the Sacramento Tree Foundation to plant over 2,000 trees throughout the City.

Each planting effort has been very successful in providing additional aesthetic and biological value to the community. The planting areas were strategically selected to benefit the public at large, while providing an environment for a high survival rate for the trees. All planting areas are located on City properties and Cosumnes Community Services District (CCSD) properties. Such planting areas include along creeks/channels, open spaces, parks, interchanges, and various streetscapes.

Historic and Cultural Resources

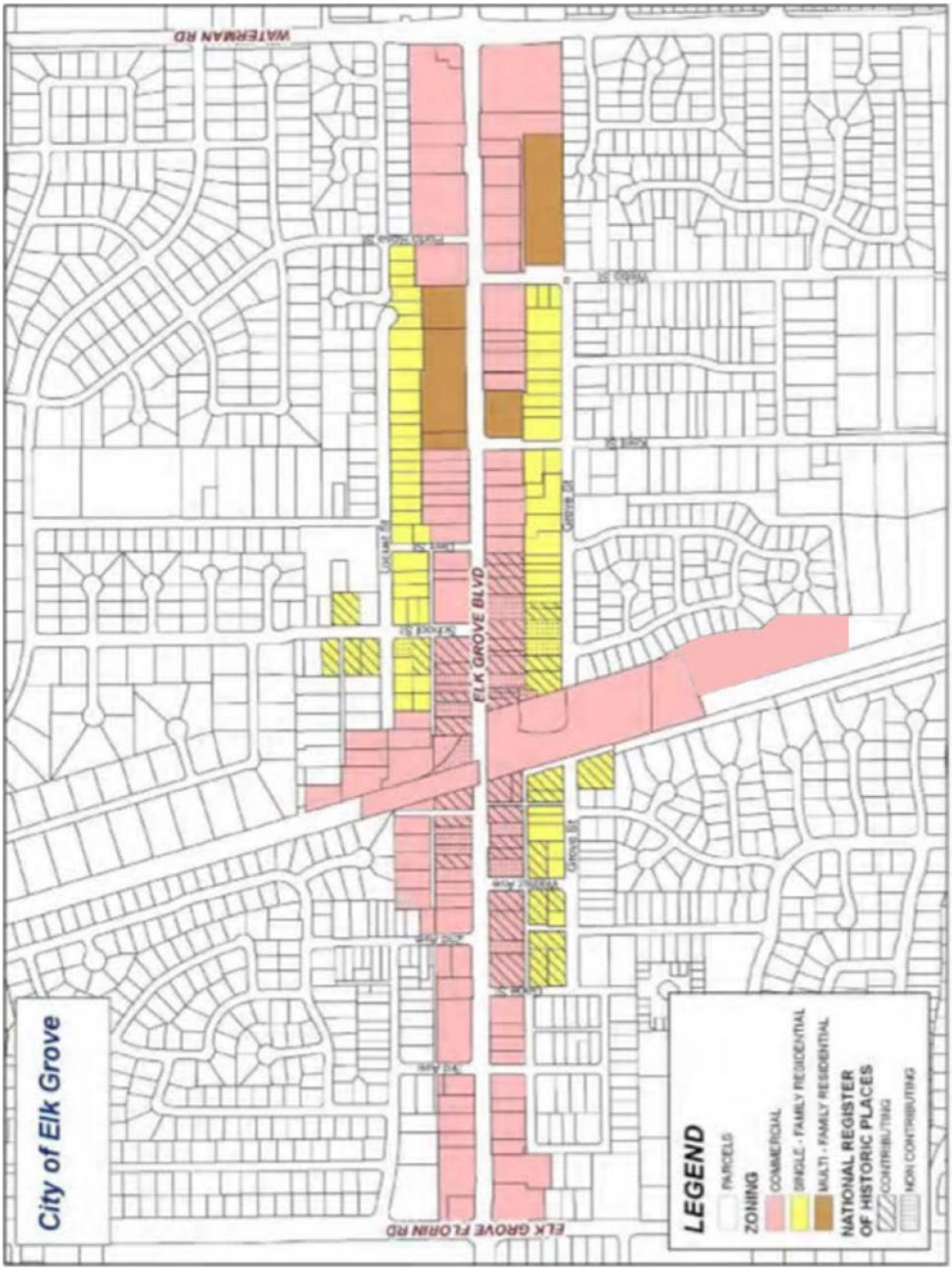
Historic and cultural resources are difficult to replace. Should a natural disaster occur, these properties and locations can be at risk. Within the City's vicinity there are ten commonly used place names representing historic communities, stations, schools or post offices, these include: Bruceville, Elk Grove, Franklin, Hood, McConnell Station, Pleasant Grove, Point Pleasant, Sheldon, Sloughhouse and Walsh. Portions of two Mexican land grants lie within the City: Leidesdorff's Rancho Rio de los Americanos and Sheldon and Daylor's Rancho Omochumnes.

The North Central Information Center's records search identified 93 prehistoric and historic Native American archaeological sites within the area of Elk Grove. Many of these archaeological sites are village mounds; some of these could contain human remains.

Euro-American settlement of Elk Grove began in the mid-19th Century with a Mexican land grant of 11 square leagues of land in the Sacramento Valley to John Sutter, including the Rancho Del San Juan subgrant. This subgrant area occupied 20,000 acres, including the modern-day Elk Grove area. The area developed as an agricultural community consisting of families settling small farms surrounding the Sylvan Corners area, located at the present-day intersection of Sylvan Road, Auburn Boulevard, and Old Auburn Road. The 20th Century saw a boom in urbanization of the area, particularly after World War II, when subdivisions began springing up to accommodate an influx of new residents to the area. The area continued to grow, in part as the rocket manufacturing plant at Aerojet in nearby Rancho Cordova attracted employees and their families to the region. As this new development occurred, many older structures throughout the

community were demolished and replaced by tract housing and new commercial development to serve the booming population. As this shift occurred, Elk Grove saw its historical character change to a more urbanized, suburban community, losing its character as a rural agricultural community. Figure B-5 illustrates properties included in the Elk Grove Historic District, which is within the Old Town Elk Grove Special Planning Area.

Figure B-5 Elk Grove Old Town Historic Property District



Source: City of Elk Grove

The City of Elk Grove has a stock of historically significant homes, public buildings, and landmarks. To inventory these resources, the HMPC collected information from a number of sources. The California Department of Parks and Recreation Office of Historic Preservation (OHP) was the primary source of information. OHP administers the National Register of Historic Places, the California Register of Historical Resources, California Historical Landmarks, and the California Points of Historical Interest programs. Each program has different eligibility criteria and procedural requirements. These requirements are detailed in Section 4.3.1 of the Base Plan. Table B-10 lists the historical buildings in the City.

Table B-10 City of Elk Grove – Historical Resources

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
Ehrhardt, William, House (N2209)	X				7/10/2003	Elk Grove
Elk Grove Grammar School / Elk Grove Unified School District (P717)				X	6/12/1989	Elk Grove
Elk Grove Historic District (N1553)	X				3/1/1988	Elk Grove
Grave of Elitha Cumi Donner Wilder (719)		X			12/2/1959	Elk Grove
Murphy's Ranch (680)		X			5/11/1959	Elk Grove
Site of First County Free Library Branch in California (817)		X			6/1/1967	Elk Grove

Source: California Department of Parks and Recreation Office of Historic Preservation, http://ohp.parks.ca.gov/

It should be noted that these lists may not be complete, as they may not include those currently in the nomination process and not yet listed. Additionally, as defined by the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), any property over 50 years of age is considered a historic resource and is potentially eligible for the National Register. Thus, in the event that the property is to be altered, or has been altered, as the result of a major federal action, the property must be evaluated under the guidelines set forth by CEQA and NEPA. Structural mitigation projects are considered alterations for the purpose of this regulation.

Growth and Development Trends

As part of the planning process, the HMPC looked at changes in growth and development, both past and future, and examined these changes in the context of hazard-prone areas, and how the changes in growth and development affect loss estimates and vulnerability over time. Information from the City of Elk Grove General Plan 2013-2021 Housing Element, the California Department of Finance, the US Census Bureau form the basis of this discussion.

Historic Population Trends and Current Population

Population growth can increase the number of people living in hazard prone areas. Elk Grove has generally seen rapid growth. The City annexed the Laguna West area in 2003, which accounted for an instant population increase of approximately 13,400 persons. While population growth has slowed over the past

decade, it has still continued at an estimated 1.5% per year, with the population expected to top 200,000 within the next decade. Elk Grove has seen growth rates as shown in Table B-11.

Table B-11 City of Elk Grove – Population Changes Since 1960

Year	Population	Change	% Change
1960	2,205	–	–
1970	3,721	1,516	68.8%
1980	10,959	7,238	194.5%
1990	17,483	6,884	59.5%
2000	59,984	42,501	243.1%
2010[1]	153,012	93,028	155.1%
2020[2]	176,154	23,142	15.1%

Source: [1]US Census Bureau, [2]California Department of Finance

Special Populations and Disadvantaged Communities

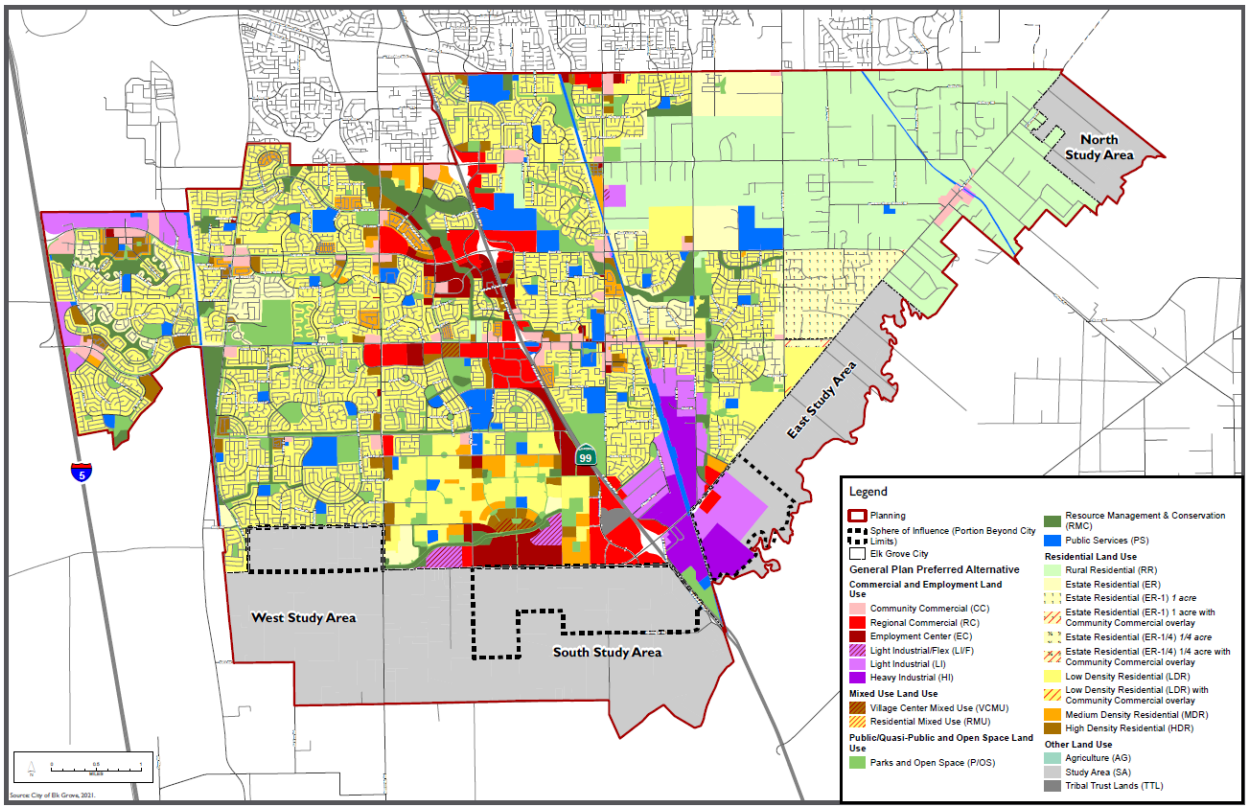
Disadvantaged communities as defined under Senate Bill 535 are not located within the City' limits. There are locations within the City with higher percentages of individuals who would be particularly vulnerable during a hazard event. This includes those who are over 65 years, individuals and families living below the poverty level, disabled individuals, those with limited English skills and those without access to vehicles. The east side of Highway 99 has several locations with higher percentages of households living in poverty and a higher percentage of the population that is over 65 years.

Land Use

State planning law requires that the land use element of a general plan include a statement of the standard population density, building intensity, and allowed uses for the various land use designations in the plan (Government Code Section 65302(a)). The City's land use designations are generally described below and mapped on the Land Use Diagram (Figure B-6). The Elk Grove Municipal Code provides detailed land use and development standards for development.

With this General Plan, a variety of new land use designations have been established to reflect the more mixed and, in some cases, more intense land uses envisioned for Elk Grove. New mixed-use designations provide the opportunity for a combination of residential, commercial, and office uses on a single site, depending on the designation. The Land Use Policy Map illustrates the planned land uses for lands within the City limits – see Figure B-6. The land use designations are used in assigning zoning categories and in the review of proposed projects.

Figure B-6 City of Elk Grove Land Use



Source: City of Elk Grove 2019 General Plan Land Use Element.

Development since 2016 Plan

As discussed in Section 4.3.1 of the Base Plan, future development has occurred in the County since the last plan. Some of this has occurred in hazard prone areas. The City Building Department tracked total building permits issued since 2016 for the City. These are tracked by total development, property use type, and hazard risk area. These are shown in Table B-12 and Table B-13.

Table B-12 City of Elk Grove – Total Development Since 2016

Property Use	2016	2017	2018	2019	2020
Agricultural	0	0	0	0	0
Commercial	8	14	123	101	384
Industrial	1	1	3	3	0
Residential	455	410	609	697	404
Unknown	0	4	9	8	5
Total	**464**	**492**	**744**	**809**	**793**

Source: City of Elk Grove Building Department

Table B-13 City of Elk Grove – Development in Hazard Areas since 2016

Property Use	1% Annual Chance Flood	Levee Protected Area	Wildfire Risk Area[1]	Other
Agricultural	0	0	0	0
Commercial	0	42	0	0
Industrial	0	1	0	0
Residential	0	102	0	0
Unknown	0	1	0	0
Total	**0**	**146**	**0**	**0**

Source: City of Elk Grove Building Department
[1]Moderate or higher wildfire risk area

In Elk Grove, development occurred in the levee protected areas. While the data shows changes in development in the City since the 2016, including development in mapped hazard areas, all development is subject to current building standards to include any requirements for building in hazard areas which act to mitigate hazard exposure. Further development in hazard areas is only one factor of many that contribute to an overall change in hazard vulnerability. Based on these considerations, it cannot be definitively stated as to whether the development or even lack of development contributed to an increase or decrease in vulnerability for Elk Grove.

Future Development

The Sacramento Council on Governments (SACOG) modeled population projections for the City of Elk Grove and other areas of the region in 2020 for a Metropolitan Transportation Plan/Sustainable Communities Strategy report. SACOG shows 65,660 housing units for 2035. With average people per household of 3.23 from the US Census Bureau Average Household size, SACOG estimates 2035 would be 212,082.

Table B-14, from the 2019 City of Elk Grove General Plan, identifies the development capacity associated with the planned distribution of land uses described in the Land Use Plan. As the density and intensity standards for each land use designation are implemented by future development projects and land use decisions, the activities occurring on properties will (consistent with the General Plan) transition from one activity to another, and land uses and intensities will shift to align with the intent of this Plan. The General Plan does not directly specify a maximum population for Elk Grove. The maximum possible number of residential units is determined by the different maximum densities allowed for each land use designation and the amount of land area within that designation. However, this maximum number of units is unlikely to be reached because every lot in Elk Grove would need to be developed to its maximum potential. Because much of the Planning Area is built out and existing buildings are generally in good condition, these changes will primarily occur on underutilized or vacant properties in the City and the Study Areas. Forecasting assumptions using reasonable inferences to determine the realistic expected development that could occur in Elk Grove after development or redevelopment of all properties that are expected to be developed, or redeveloped, are reflected in the development capacity.

Table B-14 City of Elk Grove – General Plan Development Capacity

	Acres	Dwelling Units	Population[1]	Employment (Jobs)	Jobs/ Housing Ratio
Existing Development Total[2]	31,449	53,829	171,059	45,463	0.84
General Plan Total	34,956	102,865	332,254	122,155	1.21
City Limits Subtotal	26,946	72,262	233,406	81,784	
Study Areas Subtotal	8,008	30,603	98,848	40,371	
North Study Area	*646*	*323*	*1,043*	*0*	
East Study Area	*1,772*	*4,806*	*15,523*	*3,875*	
South Study Area	*3,675*	*16,250*	*52,488*	*30,367*	
West Study Area	*1,915*	*9,224*	*29,794*	*6,129*	

Table Notes: Numbers may not sum due to rounding.

1. *Based on 3.23 persons per household, average.*

2. *Existing development represents 2017 population and dwelling information and derived from 2013 jobs data (the most current year available at time of writing the General Plan).*

Source: 2019 City of Elk Grove General Plan

GIS Analysis

The City of Elk Grove Development Services provided a list of projects that the City is seeing be developed. These were separated into three groups:

- Approved Projects (25 areas)
- In Plan Review (36 areas)
- Under Construction (20 areas)

Using GIS, the following methodology was used in determining parcel counts and acreages with future development projects in the City of Elk Grove. Future development areas in the City were provided in mapped format by the City. 3 categories of areas were provided. Using the GIS parcel spatial file for each of these areas, the 3 categories and 81 areas associated with future development projects for which the analysis was to be performed were identified. Utilizing the future development project spatial layer, the parcel centroid data was intersected to determine the parcel counts within each area. Figure B-7 shows the locations of future development areas the City is planning to develop. Table B-15 shows the summary of parcels and acreages of each future development area in the City, while Table B-16 breaks down the 3 categories into the 81 areas and shows the parcels and acres for each.

Figure B-7 City of Elk Grove – Future Development Areas

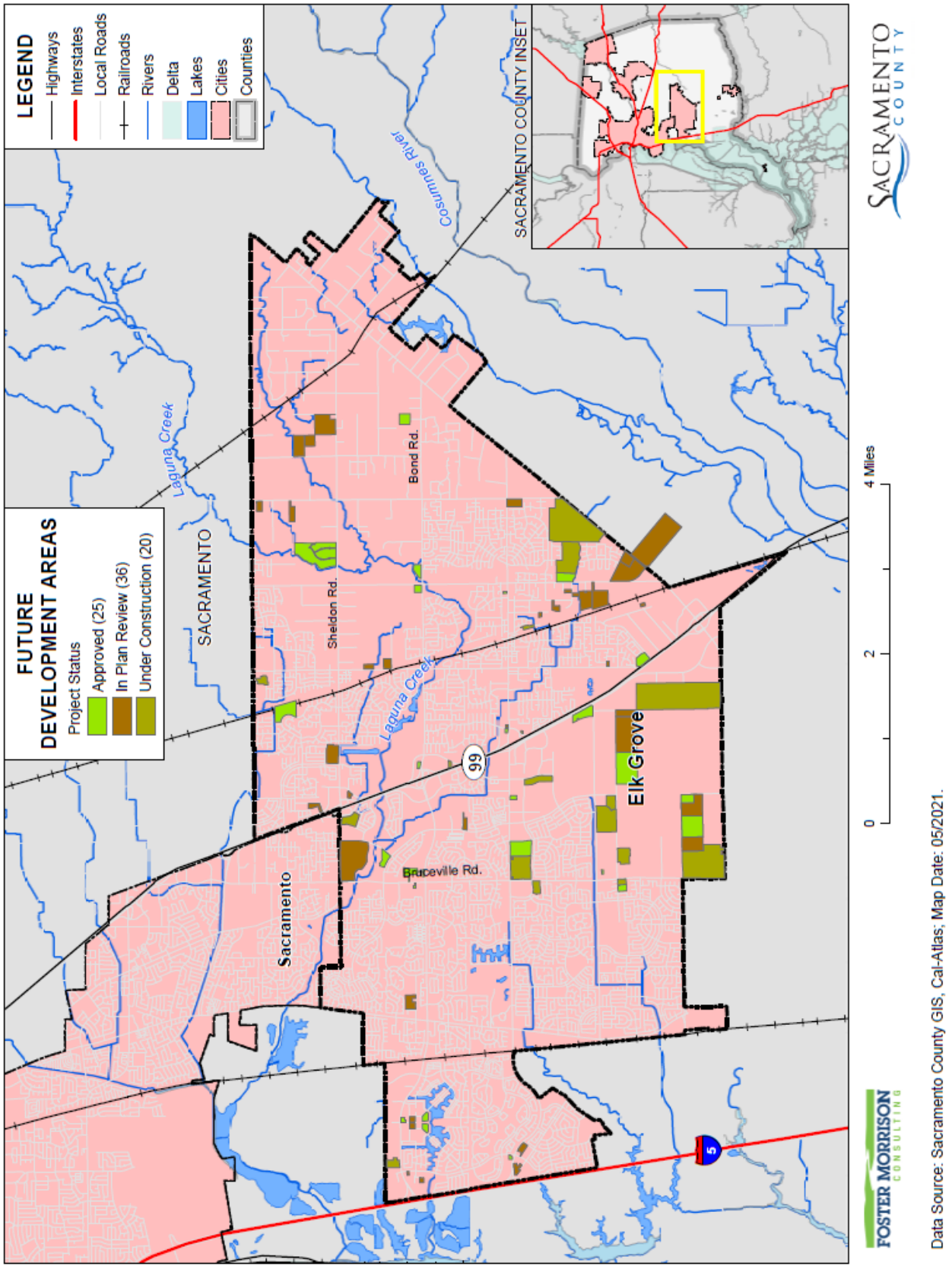


Table B-15 City of Elk Grove – Summary of Future Development Area Parcels and Acres

Future Development Status	Total Parcel Count	Improved Parcel Count	Total Acres
Approved	72	17	373.2
In Plan Review	54	21	675.5
Under Construction	2,064	888	713.5
Grand Total	**2,190**	**926**	**1,762.1**

Source: City of Elk Grove GIS

Table B-16 City of Elk Grove – Detail of Future Development Area Parcels and Acres

Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Approved			
AAA Services Building	1		0.7
Arco AM/PM Car Wash Expansion	1	1	1.2
Bond Road Rezone and Tentative Map	2	2	10.1
Buffalo Wild Wings	1		1.0
Creekside Estates	1		7.0
Crooked Creek Industrial Park	2	1	14.2
Dignity Health Medical Campus	7	1	28.0
Elk Grove Masonic Lodge	1		0.7
GreenSpace Self Storage Facility	1		3.0
Laguna West Plaza Pads 1 & 2	2		1.6
New Faze Skilled Nursing	1		15.1
Poppy Keys Southwest	3		60.2
Quail Run II	1		4.8
Raising Cane's Restaurant	1	1	1.7
Seasons at Stonebrook Master Home Plan	3		79.5
Sheldon Park Estates North Gated Community	28	9	71.9
Shell Gas Station	1		1.0
Shell with 7-Eleven & Storage Facility	4		4.5
Target Exterior Remodel	1	1	10.1
T-Mobile Evergreen Springs	1	1	2.3
T-Mobile Jones Family Park	1		26.7
Toscano Apartments	2		7.9
Trojan Storage II	1		8.9
U-Haul	4		10.2
Vineyard at Madeira Pad E	1		0.7
Approved Total	**72**	**17**	**373.2**

Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
In Plan Review			
10069 Elk Grove Florin Road TPM	1	1	1.1
10075 Sheldon Road Tentative Parcel Map	1	1	35.3
8580 Bradshaw Road	1	0	8.3
8633 Bader Road Map	1	1	20.3
8651 Bader Road TPM and Rezone	1	1	10.0
9730 Kent Street Addition	1	0	1.3
Bartholomew Vineyard Amendment	1	1	10.3
Bow Stockton Apartments	2	1	5.6
Burger King Remodel	1	1	0.7
California Northstate University Medical Center	6	5	5.3
Candlewood Hotel	1	0	1.9
Eden Gardens Banquet Hall	1	1	5.2
Elk Grove Food Bank	1	1	2.0
Elk Grove Independent Senior Housing	2	0	5.2
Elk Grove Muslim Center	2	1	6.9
Grant Line Construction Aggregate Production and Recycling Facility	1	0	24.8
Hotel at Sheldon Place	1	0	2.3
In-N-Out Burger - The Ridge Pad 14	1	0	0.9
Kubota Tractor Corporation	1	1	101.6
Laguna Main Street Apartments	4	0	5.8
Laguna Springs Corporate Center - Building A	1	0	4.9
Life Storage Expansion	1	0	4.6
Mendes Villages 2 & 3	1	0	30.6
Mountain Elk Villas	1	0	12.1
Poppy Keys Southeast	4	0	66.5
S&J Storage	1	0	4.3
Sheldon Farms MHP	2	0	80.9
Sheldon Grove Subdivision	1	0	19.8
Tegan Estates	3	3	11.9
Telos Greens TSM and Rezone	1	0	26.4
Tractor Supply Company	1	0	67.4
Triangle Point TSM Phase 2	1	0	67.4
Warda Warehouse 3	1	0	1.5
Waterman Brinkman Logistics Center	3	1	21.6

Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Wendy's Remodel	1	1	0.8
In Plan Review Total	**54**	**21**	**675.5**
Under Construction			
Bruceville Meadows Residential	253	0	96.5
Bruceville Point	2	1	8.3
Cafeteria Expansion	1	1	9.2
Calvine Pointe	1	0	7.1
Fieldstone North and South	514	234	113.6
Fortune School	2	0	40.0
Madeira South (Poppy Lane)	221	92	35.1
Madeira South Lot A Master House Plans	1	0	10.6
McGeary Ranch	84	3	13.3
Mendes Subdivision	1	0	39.5
Milestone	126	29	45.5
Railroad Street	4	1	3.2
Sheldon Farms North	1		43.8
Sheldon Terrace	204	74	14.3
Sterling Meadows	623	444	172.2
The Gardens at Quail Run	1	0	4.4
The Park Senior Housing	3	0	15.1
The Ridge Shopping Center	20	8	39.6
Towneplace Suites	1	1	1.7
Wienerschnitzel	1	0	0.4
Under Construction Total	**2,064**	**888**	**713.5**
Grand Total	**2,190**	**926**	**1,762.1**

Source: City of Elk Grove GIS

B.5.3. Vulnerability to Specific Hazards

This section provides the vulnerability assessment, including any quantifiable loss estimates, for those hazards identified above in Table B-6 as high or medium significance hazards. Impacts of past events and vulnerability of the City 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 evaluating vulnerabilities and calculating loss estimates are the same as those described in Section 4.3 of the Base Plan.

An estimate of the vulnerability of the City to each identified priority hazard, in addition to the estimate of likelihood 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.

Depending on the hazard and availability of data for analysis, this hazard specific vulnerability assessment also includes information on values at risk, populations at risk, critical facilities and infrastructure, and future development.

Climate Change

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile and Problem Description

Climate change adaptation is a key priority of the State of California. The 2018 State of California Multi-Hazard Mitigation Plan stated that climate change is already affecting California. Sea levels have risen by as much as seven inches along the California coast over the last century, increasing erosion and pressure on the state's infrastructure, water supplies, and natural resources. The State has also seen increased average temperatures, more extreme hot days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow, and earlier runoff of both snowmelt and rainwater in the year. In addition to changes in average temperatures, sea level, and precipitation patterns, the intensity of extreme weather events is also changing.

Location and Extent

Climate change is a global phenomenon. It is expected to affect the whole of the City, Sacramento County, and State of California. There is no scale to measure the extent of climate change. Climate change exacerbates other hazards, such as drought, extreme heat, flooding, wildfire, and others. The speed of onset of climate change is very slow. The duration of climate change is not yet known, but is feared to be tens to hundreds of years.

Past Occurrences

Climate change has never been directly linked to any declared disasters. Climate change is already beginning to affect the City's annual average temperature and high temperatures. New record daily high temperatures were set for the weather station nearest to the City, at the Sacramento Executive Airport, for both August (112˚F) and September (109˚F) of 2020. Increases in extreme heat and in annual precipitation are expected to continue.

Vulnerability to and Impacts from Climate Change

The California Adaptation Planning Guide (APG) prepared by California OES and CNRA was developed to provide guidance and support for local governments and regional collaboratives to address the unavoidable consequences of climate change. California's APG: Understanding Regional Characteristics has divided California into 11 different regions based on political boundaries, projected climate impacts, existing environmental setting, socioeconomic factors and regional designations. Sacramento County falls within the North Sierra Region characterized as a sparsely settled mountainous region where the region's economy is primarily tourism-based. The region is rich in natural resources, biodiversity, and is the source for the majority of water used by the state. This information can be used to guide climate adaptation planning in the City and Sacramento County Planning Area.

The California APG: Understanding Regional Characteristics identified the following impacts specific to the North Sierra region in which the Sacramento County Planning Area is part of:

- Temperature increases
- Decreased precipitation
- Reduced snowpack
- Reduced tourism
- Ecosystem change
- Sensitive species stress
- Increased wildfire

The 2019 Elk Grove Climate Action Plan (CAP) noted the following impacts to be expected from climate change:

- Increased Rate of Wildfires
  - ✓ Wildfire risk is based on a combination of factors including precipitation, winds, temperature, and vegetation. Wildfires are likely to grow in number and size throughout the State because of increased temperatures induced by climate change. Even under the "medium" warming scenario predicted by IPCC, wildfire risk will likely increase by 55 percent in California. Further, as wildfires increase in frequency and size, they will also increase in intensity.
  - ✓ Wildfire hazards in the mostly urbanized City are low, although they could occur with greater frequency in areas where development has expanded into previously rural areas. Grass fires could occur in portions of the South and East Study Areas that are currently undeveloped.
  - ✓ Although urbanized Elk Grove itself is unlikely to experience increased fire risk directly, wildfires in the Sierra Nevada and areas outside the county affect air quality in the Planning Area. Wildland

fires produce substantial emissions of particulate matter (i.e., smoke, soot), which may cause adverse health effects.

- Negative Impacts on Wildlife
  - ✓ As temperatures rise, species are moving north in California or to higher elevations. This change in migration disrupts the food chain and prevents some plant species from being pollinated. Water and food supplies are expected to be more variable and to shift as the seasons change on different time frames.
  - ✓ Further, those species that are unable to migrate face the danger of extinction: "The amount of future warming expected in California may likely exceed the tolerance of endemic species (i.e., those that are native to a specific location and that only occur there) given their limited distribution and microclimate."
  - ✓ With vegetation, reduction in soil moisture will result in early dieback of many plants, potentially leading to conflicts with animal breeding seasons and other natural processes. Many of the potential effects on wildlife are still being studied, but due to an inability to adapt to new climates, the potential for severe species loss is present.
  - ✓ Several potential hydrological changes associated with global climate change could also specifically influence the ecology of aquatic life in California and have negative effects on cold-water fish. For example, if a rise in air temperature by just a few degrees Celsius occurs, this change could be enough to raise the water temperatures above the tolerance of salmon and trout in many streams, favoring instead non-native fishes such as sunfish and carp. Unsuitable summer temperatures would be particularly problematic for many of the threatened and endangered fish that spend summers in cold-water streams, either as adults or juveniles or both.

- Heat and Deteriorating Public Health
  - ✓ When extreme heat is experienced over a period of five or more days, they are known as heat waves. In the past (1950-2000) in Sacramento County, heat waves occurred at a rate of about one to two per decade. In the next 50 years, Elk Grove would be expected to experience approximately three heat waves per year.
  - ✓ Heat waves are expected to have a major impact on public health, as well as decreasing air quality and increasing mosquito breeding and mosquito-borne diseases. Further, climate change is expected to alter the spread and prevalence of disease vectors, in addition to leading to a possible decrease in food quality and security. Vector control districts throughout the state are already evaluating how they will address the expected changes to the State's climate.
  - ✓ Taking cost-effective measures to reduce GHG emissions and protect public health is important for local governments. The new study provides evidence of what is becoming known as the "climate penalty," where rising temperatures increase ground-level ozone and airborne health-damaging particles, despite the reductions achieved by programs targeting smog-forming emissions from cars, trucks, and industrial sources. Vulnerable populations, such as the elderly and the young, are more likely to be impacted by the effects of climate change, populations which also often lack sufficient resources to adapt to these effects. These vulnerable populations require assistance to respond to the short and long-term impacts of climate change. Additionally, social equity issues related to the unequal distribution of resources and increased costs to address community-wide health risks will need to be addressed proactively to reduce the potential for financial strain on local governments.

- A Decreasing Supply of Fresh Water
  - ✓ The State's water supply is already under stress and is anticipated to shrink under even the most conservative climate change scenario. Warmer average global temperatures cause more rainfall than snowfall, making the winter snowfall season shorter and accelerating the rate at which the snowpack melt in the spring. The Sierra snowpack is estimated to experience a 25 to 40 percent reduction from its historic average by 2050 and 48 to 65 percent by 2100. With rain and snow events becoming less predictable and more variable, the rate of flooding could increase and the State's ability to store and transport fresh water for consumption could decrease. Further, warmer weather will lead to longer and hotter growing seasons and increase water demand for agricultural uses.
  - ✓ The City is supplied by a mix of surface water, groundwater, and recycled water. Much of this water ultimately originates as snowmelt from the Sierra Nevada and reaches Elk Grove through the State Water Project and the Central Valley Project. With these supplies declining, water shortages for all uses in the planning area may be affected.

- Increased Severity and Frequency of Flood Events
  - ✓ Climate change forecasts indicate more intense rainfall events, generating more frequent or extensive runoff, and flooding. Localized flood events may increase in periods of heavy rain due to increased precipitation rates. As explained by the Climate Adaptation Strategy, the State's water system is structured and operated to balance between water storage for dry months and flood protection during rainy seasons. Although climate change is likely to lead to a drier climate overall, risks from regular, more intense rainfall events can generate more frequent and/or more severe flooding that upsets this managed balance between storage and protection. Several areas in the City have been determined by the Federal Emergency Management Agency (FEMA) and California Department of Water Resources (DWR) to fall within 500-, 200-, and 100-year floodplains. The City is within the larger Sacramento-San Joaquin Delta, and flooding in the Delta will be dependent on the resilience of the existing levee system, which is undergoing deterioration due to several stressors beyond land subsidence. Areas within the floodplains will likely be more vulnerable to the heightened flooding threats that are anticipated to result from climate change. Areas within the City that are at increased risk of flooding should remain a high priority for flood risk planning and efforts to address the local impacts of climate change.

Future Development

The City could see population fluctuations as a result of climate impacts relative to those experienced in other regions, and these fluctuations are expected to impact demand for housing and other development. As with the Sacramento region, extreme heat and flooding are the two main climate change related concerns for the area, in addition to smoke from wildfires. The Community Mobility Resilience Plan, adopted by the City in February 2021, includes strategies such as climate-smart green infrastructure and climate-smart building codes to mitigate these impacts.

Dam Failure

Likelihood of Future Occurrence–Unlikely
Vulnerability–High

Hazard Profile and Problem Description

Dams are manmade structures built for a variety of uses including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they are usually engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped or fail. Overtopping is the primary cause of earthen dam failure in the United States.

Location and Extent

Dam failure is a natural disaster from two perspectives. First, the inundation from released waters resulting from dam failure is related to naturally occurring floodwaters. Second, a total dam failure would most probably happen as a consequence of the natural disaster triggering the event, such as an earthquake. There is no scale with which to measure dam failure. However, Cal DWR Division of Safety of Dams (DOSD) assigns hazard ratings to dams within the State that provides information on the potential impact should a dam fail. The following two factors are considered when assigning hazard ratings: existing land use and land use controls (zoning) downstream of the dam. Dams are classified in four categories that identify the potential hazard to life and property: Low, Significant, High, and Extremely High. These were discussed in more detail in Section 4.3.7 of the Base Plan.

While a dam may fill slowly with runoff from winter storms, a dam break has a very quick speed of onset. The duration of dam failure is generally not long – only as long as it takes to empty the reservoir of water the dam held back. The City would be affected for as long as the flood waters from the dam failure took to drain downstream.

Geographic flood extent from the DWR DSOD and Cal OES dam inundation areas are shown on Figure B-8 and Figure B-9. The City also falls in the Folsom Dam 235,000 cfs scenario, as discussed in Section 4.3.7 of the Base Plan as shown in Figure B-10. Geographical extents for these are shown in Table B-17. Based on available data, the City falls within the inundation areas of Calero and Folsom dams, as well as the Folsom Dam 235,000 cfs Scenario.

Note, the Cal OES and DSOD dam inundation data did not include inundation mapping of all dams that could affect the Sacramento County Planning Area and the City; thus, the below analysis reflects information based on available data. Other dams may be identified as a concern to the City. This includes Sly Park Dam (which stores water diverted from the North Fork Cosumnes River at Jenkinson Lake) which has the potential to cause flooding in the Planning Area, specifically in the northwestern and southeastern portions, in the event of dam failure.

Figure B-8 City of Elk Grove – Dam Inundation Areas for Dams Inside County

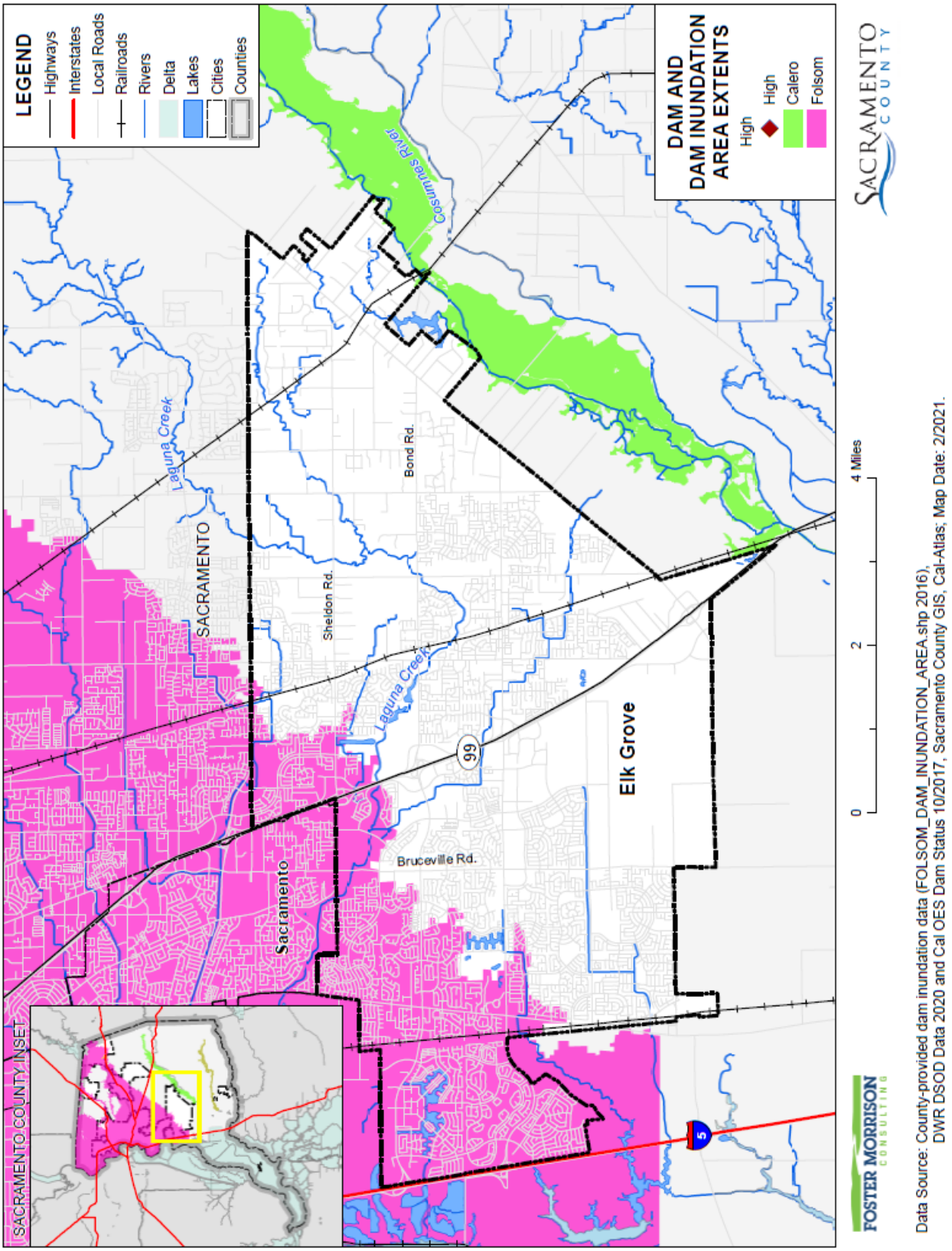


Figure B-9 City of Elk Grove – Dam Inundation Areas from Dams Outside County

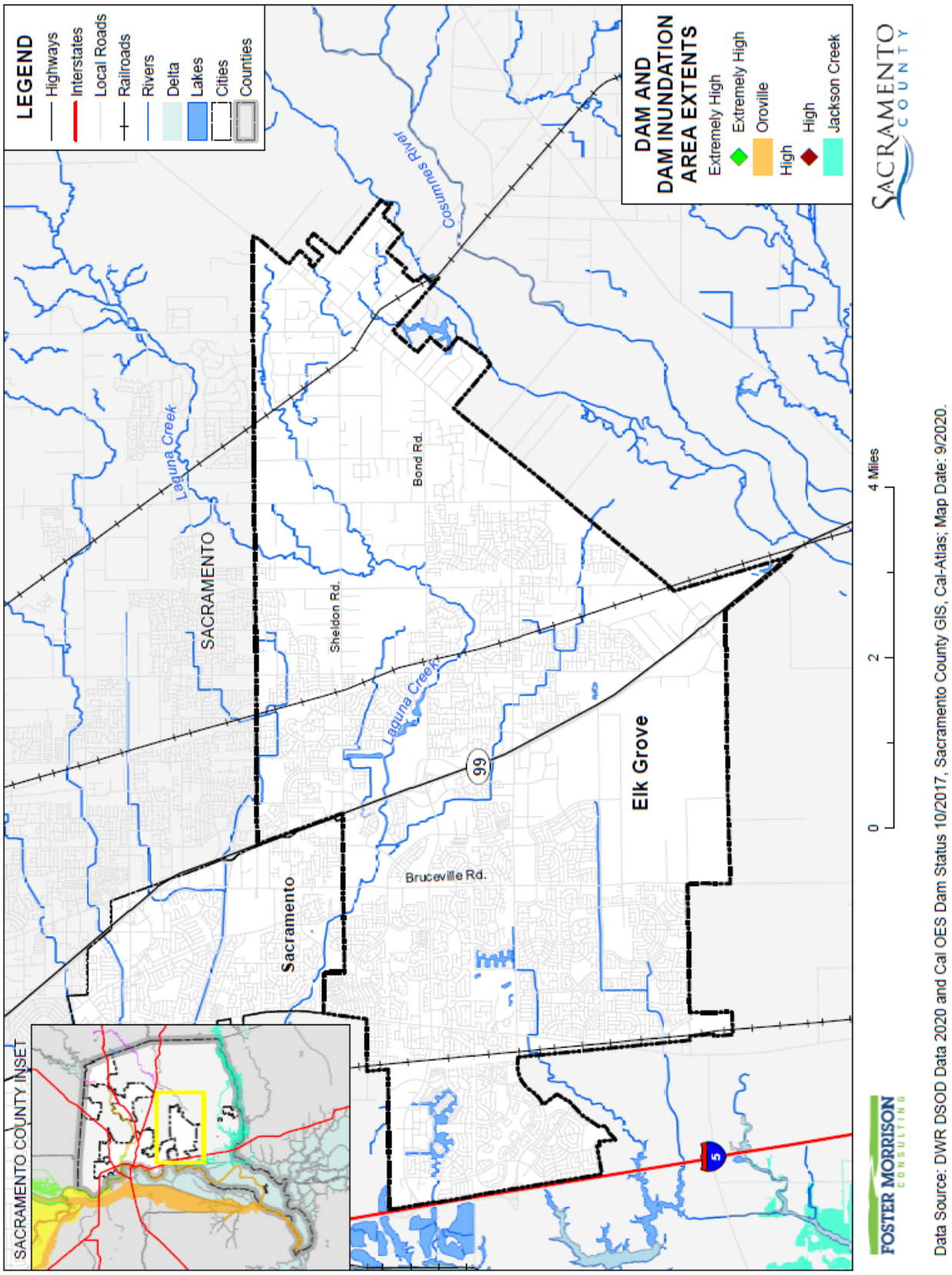


Figure B-10 City of Elk Grove – Dam Inundation from Folsom Dam 235,000 cfs Scenario

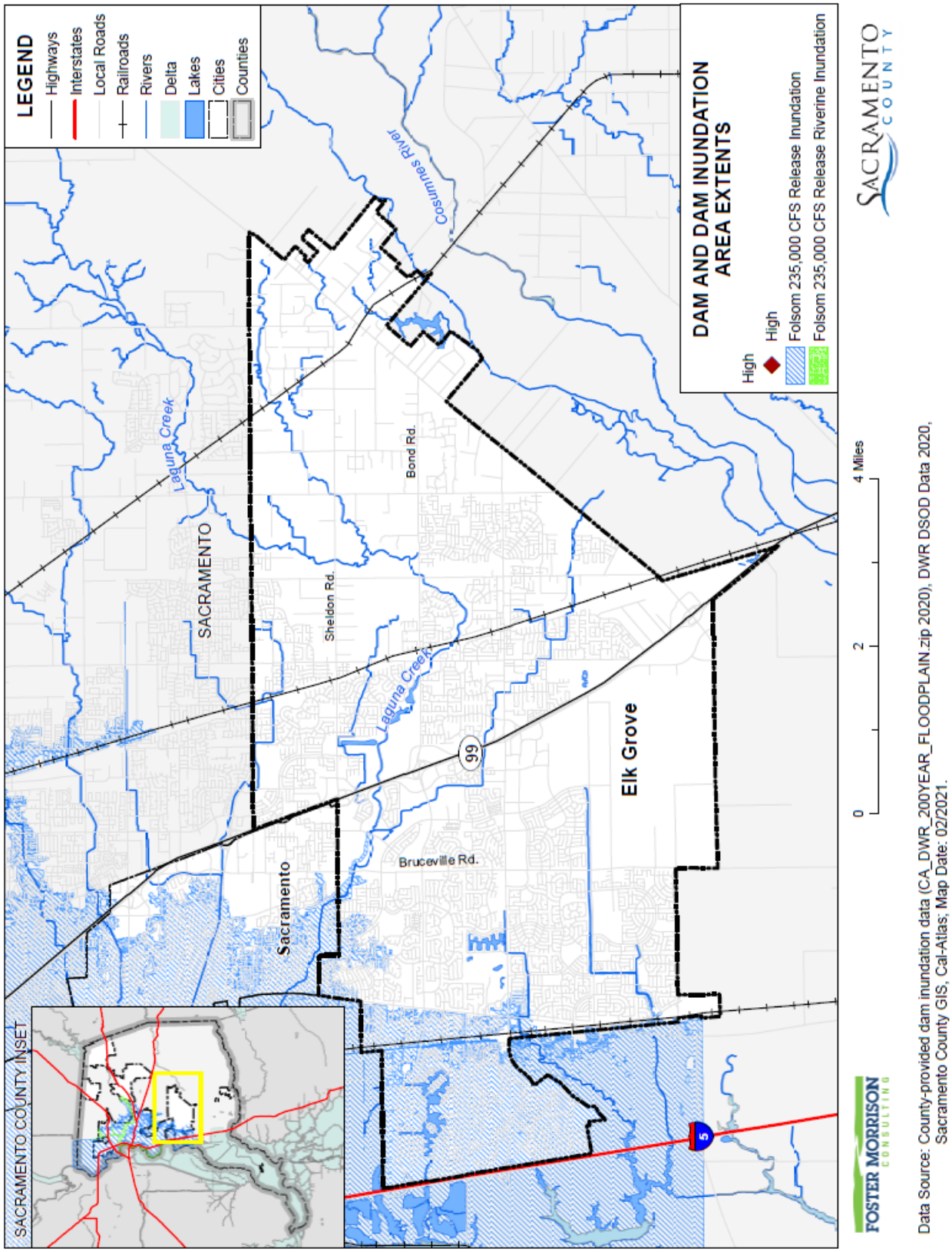


Table B-17 City of Elk Grove – Geographical Dam Inundation Extents

Dam Inundation Area	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Calero	20.11	0.08%	18.89	0.10%	1.22	0.02%
Folsom	6,834.83	25.74%	5,297.04	27.89%	1,537.79	20.34%
Folsom 235,000 cfs Scenario	3,726.59	14.03%	2,923.81	15.39%	802.78	10.62%

Source: Cal OES, DSOD

Past Occurrences

There has been no state or federal disaster declarations for dam failure in the County. The City noted no other dam failure occurrences that have affected the City.

Vulnerability to and Impacts from Dam Failure

Dam failure flooding would vary by community depending on which dam fails and the nature and extent of the dam failure and associated flooding. The City of Elk Grove General Plan Environmental Impact Report noted that although they are not located in the City Planning Area, Folsom Dam (South Fork American River) and Sly Park Dam (which stores water diverted from the North Fork Cosumnes River at Jenkinson Lake) have the potential to cause flooding in the Planning Area, specifically in the northwestern and southeastern portions, in the event of dam failure.

Mass evacuation of the inundation area may be essential to save lives if warning time should permit. Extensive search and rescue operations may be required to assist trapped or injured persons. Emergency medical care, food, and temporary shelter would be required for injured or displaced persons. Identification and burial of many dead persons would pose difficult problems; public health would be a major concern. Many families would be separated, particularly if the failure should occur during working hours, and a personal inquiry or locator system would be essential. These and other emergency operations could be seriously hampered by the loss of communications, damage to transportation routes, and the disruption of public utilities and other essential services.

Governmental assistance could be required and may continue for an extended period. These efforts would be required to remove debris and clear roadways, demolish unsafe structures, assist in re-establishing public services and utilities, and provide continuing care and welfare for the affected population including, as required, temporary housing for displaced persons.

Impacts to the City from a dam failure flood also include loss of life and injury, flooding and damage to property and structures, damage to critical facilities and infrastructure, loss of natural resources, and all other flood related impacts. Additionally, mass evacuations and associated economic losses could also be significant.

Assets at Risk

Based on the vulnerability of Elk Grove to the dam failure hazard, the sections that follow describes significant assets at risk in the City of Elk Grove. This section includes the values at risk, inundated acres, population at risk, and critical facilities at risk.

Values at Risk

GIS was used to determine the possible impacts of flooding within the City of Elk Grove. The methodology described in Section 4.3.9 of the Base Plan was followed in determining structures and values at risk to dam failure. Table B-18 shows the property use, improved parcel count, improved values, estimated contents, and total values that fall in dam inundation areas in the City.

Table B-18 City of Elk Grove – Count and Values of Parcels at Risk by Dam Inundation Area and Property Use

Dam Inundation Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Calero Dam – High Hazard Dam Inside the County						
Public / Utilities	2	0	$0	$0	$0	$0
Residential	13	13	$2,645,281	$5,415,691	$2,707,844	$10,768,819
Vacant	1	0	$224,176	$0	$0	$224,176
Elk Grove Total	**16**	**13**	**$2,869,457**	**$5,415,691**	**$2,707,844**	**$10,992,995**
Folsom Dam– High Hazard Dam Inside the County						
Care / Health	9	8	$12,434,157	$82,370,114	$82,370,114	$177,174,385
Church / Welfare	13	12	$8,567,571	$43,063,886	$43,063,886	$94,695,343
Industrial	26	23	$25,768,374	$107,568,427	$161,352,639	$294,689,440
Miscellaneous	577	0	$203,895	$0	$0	$203,895
Office	86	76	$20,753,116	$113,186,570	$113,186,570	$247,126,256
Public / Utilities	20	0	$20	$0	$0	$20
Recreational	4	4	$4,162,053	$21,101,563	$21,101,563	$46,365,179
Residential	17,099	16,961	$1,623,858,907	$4,625,937,466	$2,312,968,777	$8,562,765,034
Retail / Commercial	90	85	$67,973,067	$178,671,359	$178,671,359	$425,315,785
Vacant	217	3	$43,907,440	$759,939	$0	$44,667,379
Elk Grove Total	**18,141**	**17,172**	**$1,807,628,600**	**$5,172,659,324**	**$2,912,714,908**	**$9,893,002,716**
Folsom Dam 235,000 Scenario – High Hazard Dam Inside the County						
Care / Health	4	4	$2,144,377	$5,510,457	$5,510,457	$13,165,291

Dam Inundation Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Church / Welfare	7	6	$5,760,071	$26,586,168	$26,586,168	$58,932,407
Industrial	17	14	$21,689,632	$92,610,251	$138,915,376	$253,215,258
Miscellaneous	343	0	$34,244	$0	$0	$34,244
Office	76	67	$16,928,508	$103,827,371	$103,827,371	$224,583,250
Public / Utilities	12	0	$0	$0	$0	$0
Recreational	4	4	$4,162,053	$21,101,563	$21,101,563	$46,365,179
Residential	9,224	9,125	$955,938,275	$2,799,519,623	$1,399,759,850	$5,155,217,662
Retail / Commercial	60	57	$38,983,036	$102,430,403	$102,430,403	$243,843,842
Vacant	67	0	$30,695,841	$0	$0	$30,695,841
Elk Grove Total	**9,814**	**9,277**	**$1,076,336,037**	**$3,151,585,836**	**$1,798,131,188**	**$6,026,052,974**

Source: CAL OES, DSOD, Sacramento County 2020 Parcel/Assessor's Data

Population at Risk

The DSOD and Cal OES dam inundation areas were overlayed on the parcel layer. Those residential parcel centroids that intersect the dam inundation areas were counted and multiplied by the Census Bureau average household factors for Elk Grove – 3.20. This is shown in Table B-31.

Table B-19 City of Elk Grove – Count of Improved Residential Parcels and Population by Dam Inundation Area

Jurisdiction	Calero Dam Inundation Area		Folsom Dam Inundation Area		Folsom Dam 235,000 cfs Inundation Area	
	Improved Residential Parcels	Population	Improved Residential Parcels	Population	Improved Residential Parcels	Population
Elk Grove	13	42	16,961	54,275	9,125	29,200

Source: Cal OES, DSOD, Sacramento County 2020 Parcel/Assessor's Data, US Census Bureau

Critical Facilities at Risk

An analysis was performed on the critical facility inventory in Elk Grove in identified dam inundation areas. GIS was used to determine whether the critical facility locations intersect a DSOD or Cal OES dam inundation area. Details of critical facilities in mapped dam inundation areas in the City of Elk Groves are shown in Figure B-11 and detailed in Table B-20. Details of critical facility definition, type, name and address and jurisdiction by dam inundation area are listed in Appendix F.

Figure B-11 City of Elk Grove – Critical Facilities in Dam Inundation Areas from Dams Inside County

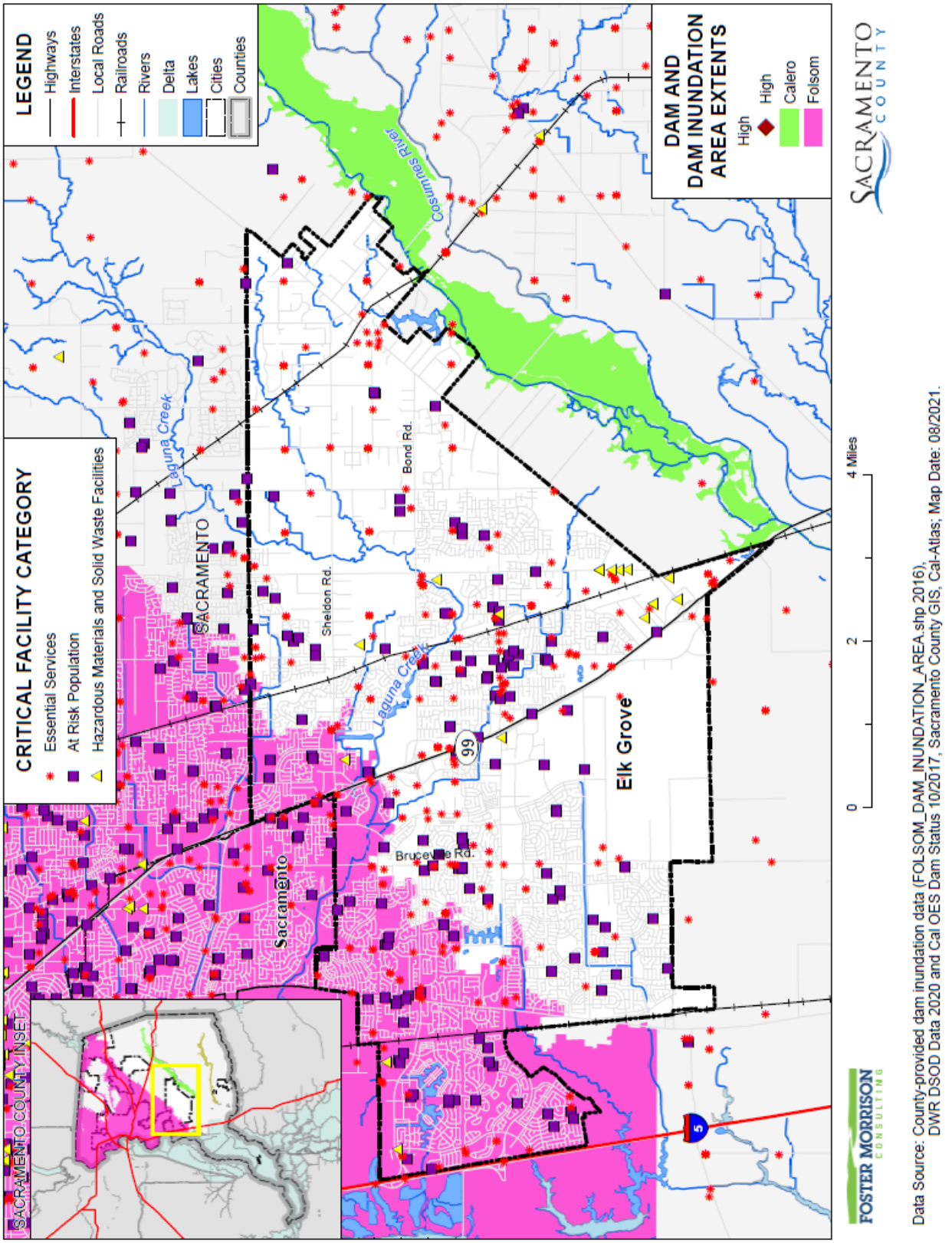


Figure B-12 City of Elk Grove – Critical Facilities in Folsom 235,000 cfs Scenario Dam Inundation Areas

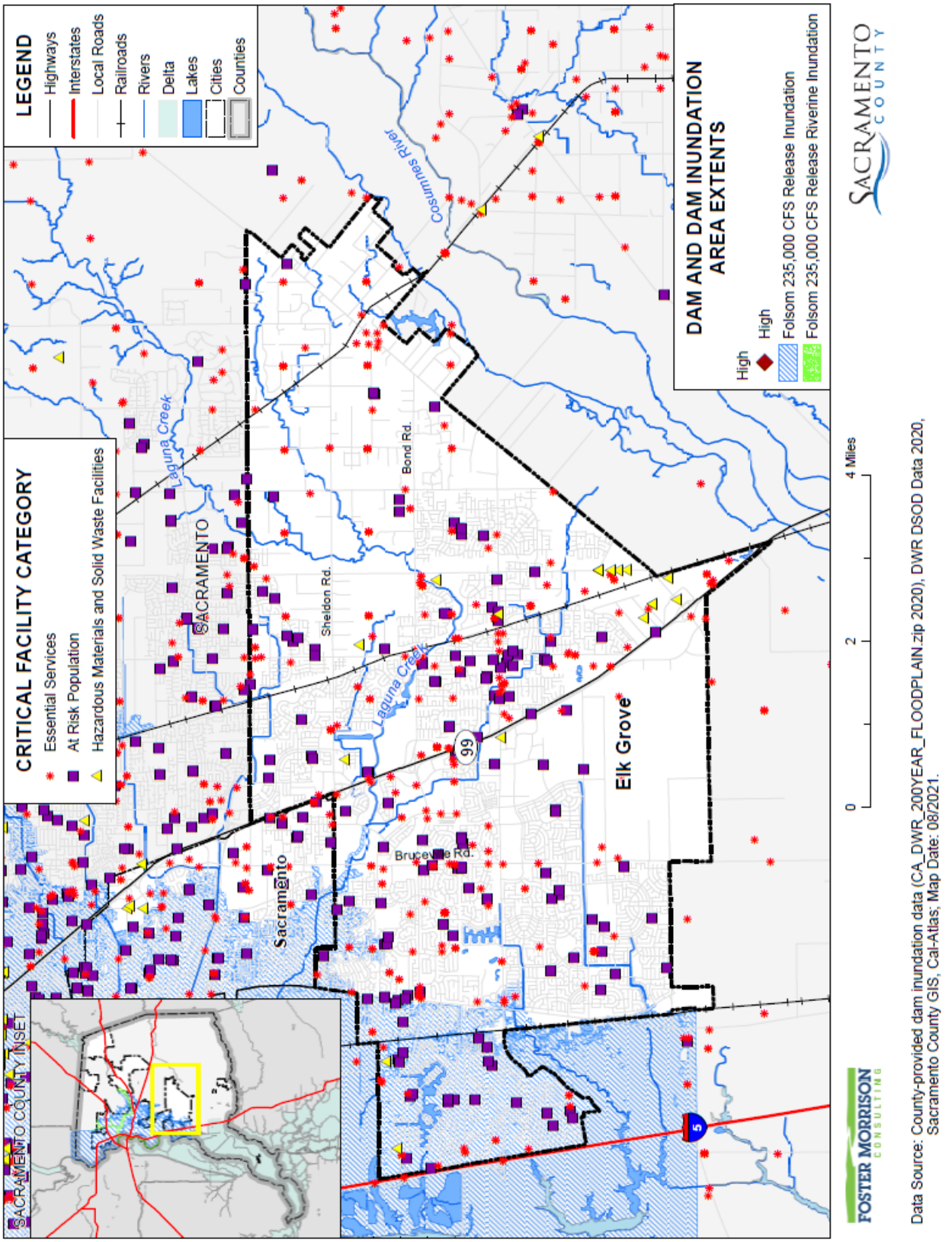


Table B-20 City of Elk Grove – Critical Facilities in Dam Inundation Areas by Category and Type

Dam Inundation Areas/Critical Facility Category	Critical Facility Type	Facility Count
Folsom Dam (High Hazard Dam Inside the County)		
Essential Services Facilities	Emergency Evacuation Center	3
	EMS Stations	3
	FDIC Insured Banks	6
	Fire Station	2
	Microwave Service Towers	33
	Water Well	22
	Total	**69**
At Risk Population Facilities	Day Care Center	14
	Places of Worship	27
	School	11
	Total	**52**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	1
	Leaky Underground Storage Tank	1
	Solid Waste Facility	1
	Total	**3**
Folsom Dam Total		**124**
Folsom Dam 235,000 cfs Scenario		
Essential Services Facilities	Emergency Evacuation Center	2
	EMS Stations	1
	FDIC Insured Banks	2
	Fire Station	1
	Microwave Service Towers	14
	Water Well	8
	Total	**28**
At Risk Population Facilities	Day Care Center	6
	Places of Worship	15
	School	4
	Total	**25**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	1
	Leaky Underground Storage Tank	1
	Total	**2**
Folsom Dam 235,000 cfs Total		**124**

Source: Cal OES, DSOD, Sacramento County GIS

Future Development

Future dam failures are considered unlikely. However, given the high number of affected parcels, future development in the City could be affected by dam failures and associated flooding. The City enforces it floodplain ordinance, which helps to reduce risk to flooding by requiring structures in the 1% annual chance floodplains to be above the base flood elevation, which depending on inundation depths and affected areas may provide some relief. Siting of future development areas will take dam failure flooding into account.

GIS Analysis

The City provided future development areas were used as the basis for the inventory of future development areas for the City. Using the GIS parcel spatial file for each of these areas, the areas and parcels associated with future development projects for which the analysis was to be performed were identified. Utilizing the future development project spatial layer, the parcel centroid data was intersected to determine the parcel counts within each area. Figure B-13 shows the locations of future development areas the City is planning to develop on the dam inundation zones from dams inside the County. Table B-21 shows the parcels and acreages of each future development area in the City in the dam inundation areas inside the County. Figure B-14 shows the locations of future development areas the City is planning to develop on Folsom Dam 235,000 cfs scenario inundation zones. Table B-22 shows the parcels and acreages of each future development area in the City in the Folsom 235,000 cfs release inundation area.

Figure B-13 City of Elk Grove – Dam Inundation Areas from Dams Inside the County and Future Development Areas

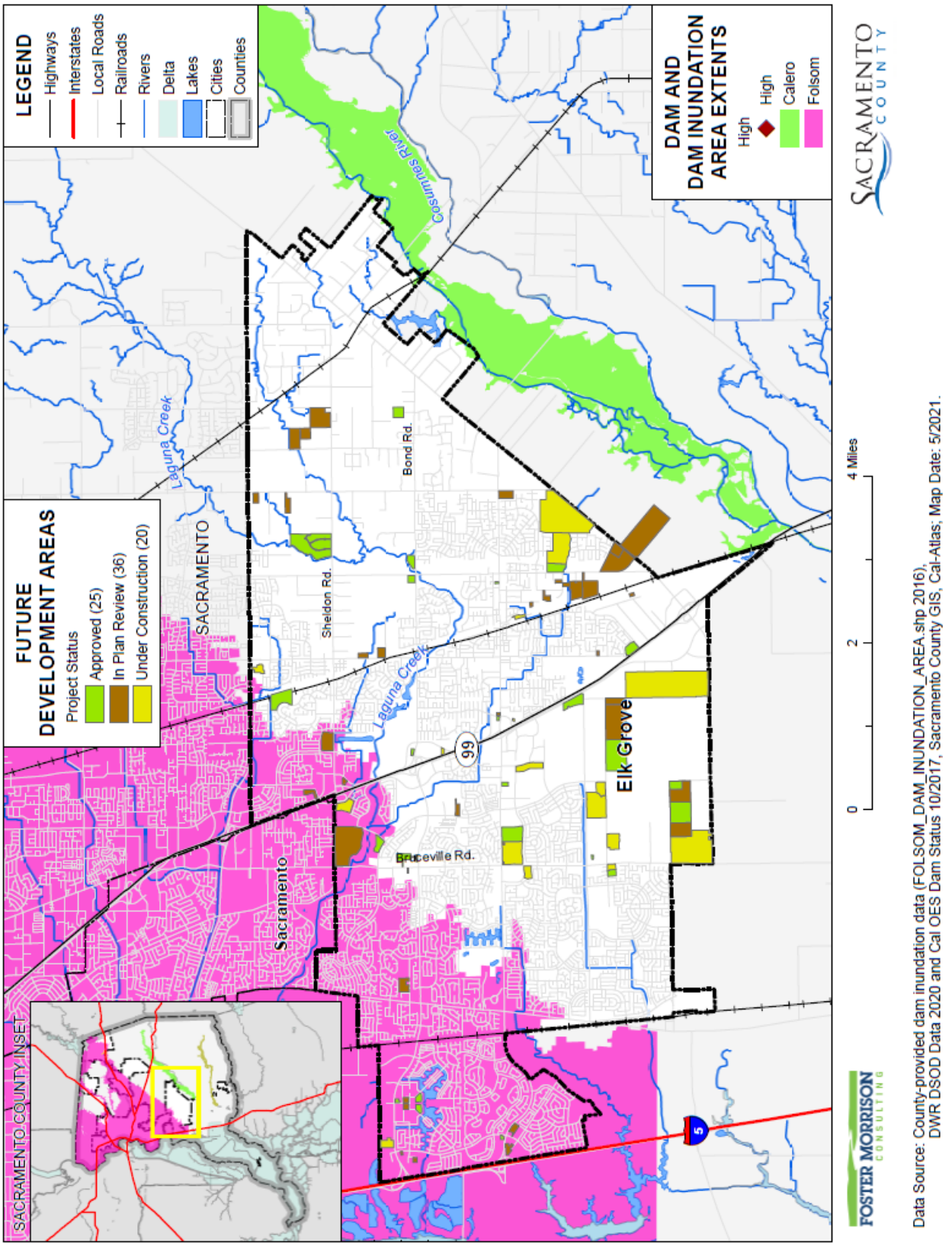


Table B-21 City of Elk Grove – Dam Inundation Areas from Dams Inside the County and Future Development Areas

Dam Inundation Areas / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Folsom			
Approved			
Arco AM/PM Car Wash Expansion	1	1	1.2
Laguna West Plaza Pads 1 & 2	2	0	1.6
Toscano Apartments	2	0	7.9
Trojan Storage II	1	0	8.9
Approved Total	**6**	**1**	**19.5**
In Plan Review			
Bow Stockton Apartments	2	1	5.6
California Northstate University Medical Center	6	5	5.3
Candlewood Hotel	1	0	1.9
Elk Grove Independent Senior Housing	2	0	5.2
Hotel at Sheldon Place	1	0	2.3
Laguna Main Street Apartments	4	0	5.8
Sheldon Farms MHP	2	0	80.9
Sheldon Grove Subdivision	1	0	19.8
Tegan Estates	3	3	11.9
Wendy's Remodel	1	1	0.8
In Plan Review Total	**23**	**10**	**139.3**
Under Construction			
Cafeteria Expansion	1	1	9.2
Sheldon Farms North	1	0	43.8
Sheldon Terrace	204	74	14.3
Under Construction Total	**206**	**75**	**67.3**
Grand Total	**235**	**86**	**226.1**

Source: City of Elk Grove GIS, Cal OES, DSOD

Figure B-14 City of Elk Grove – Folsom Dam 235,000 cfs Scenario and Future Development Areas

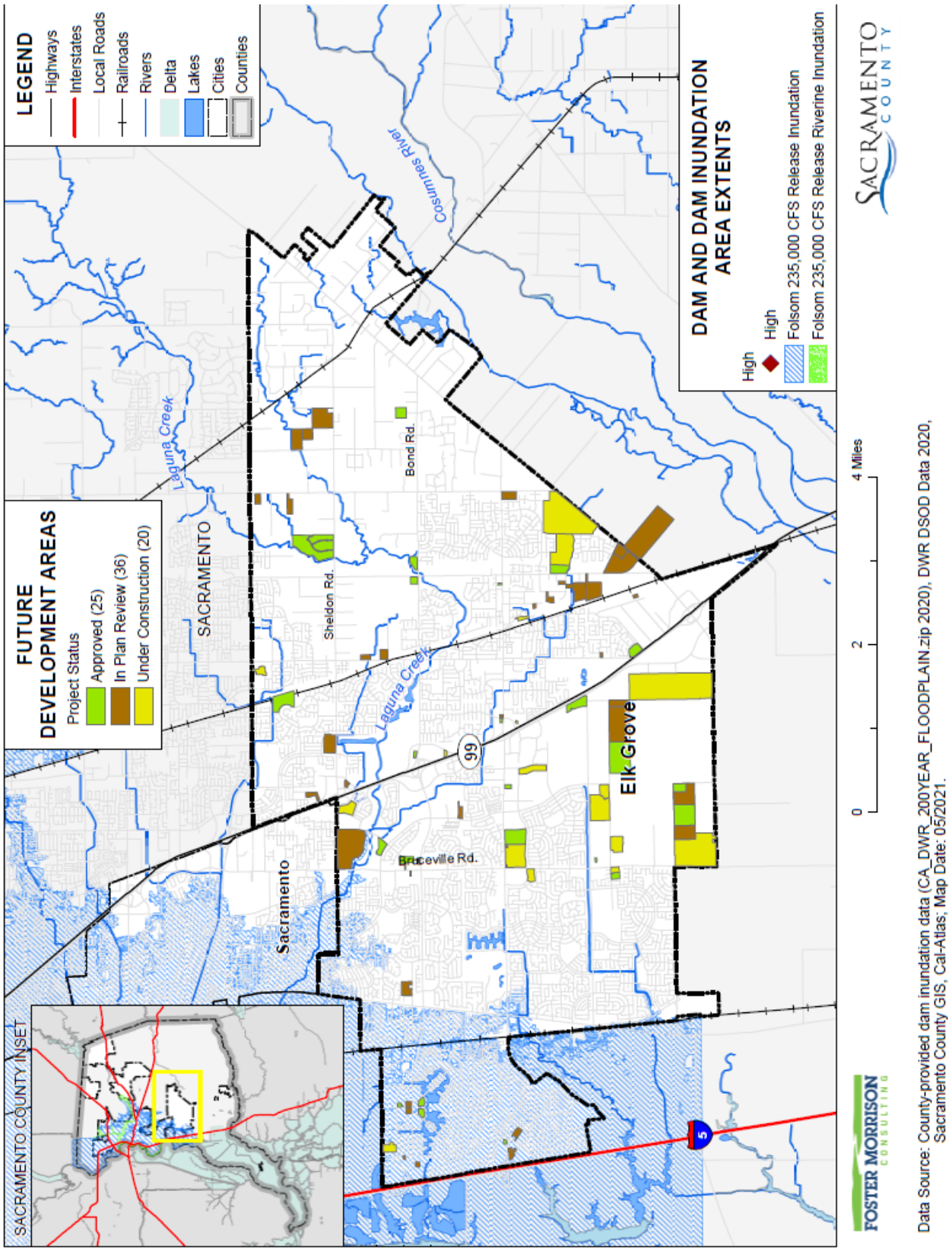


Table B-22 City of Elk Grove – Dam Inundation Areas from Folsom Dam 235,000 cfs Release and Future Development Areas

Dam Inundation Areas / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Folsom 235,000 cfs Release			
Approved			
Arco AM/PM Car Wash Expansion	1	1	1.2
Laguna West Plaza Pads 1 & 2	2	0	1.6
Toscano Apartments	2	0	7.9
Approved Total	**6**	**1**	**10.7**
In Plan Review			
California Northstate University Medical Center	6	5	5.3
Candlewood Hotel	1	0	1.9
Elk Grove Independent Senior Housing	2	0	5.2
Laguna Main Street Apartments	4	0	5.8
Wendy's Remodel	1	1	0.8
In Plan Review Total	**14**	**6**	**18.9**
Under Construction			
Cafeteria Expansion	1	1	9.2
Under Construction Total	**1**	**1**	**9.2**
Grand Total	**20**	**8**	**38.7**

Source: City of Elk Grove GIS, Cal OES, DSOD

Drought & Water Shortage

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile and Problem Description

Drought is a complex issue involving many factors—it occurs when a normal amount of precipitation and snow is not available to satisfy an area's usual water-consuming activities. Drought can often be defined regionally based on its effects. Drought is different than many of the other natural hazards in that it is not a distinct event and usually has a slow onset. Drought can severely impact a region both physically and economically. Drought affects different sectors in different ways and with varying intensities. Adequate water is the most critical issue and is critical for agriculture, manufacturing, tourism, recreation, and commercial and domestic use. As the population in the area continues to grow, so will the demand for water.

Location and Extent

Drought and water shortage are regional phenomenon. The whole of the County, as well as the whole of the City, is at risk. The US Drought Monitor categorizes drought conditions with the following scale:

- None
- D0 – Abnormally dry
- D1 – Moderate Drought
- D2 – Severe Drought
- D3 – Extreme drought
- D4 – Exceptional drought

Drought has a slow speed of onset and a variable duration. Drought can last for a short period of time, which does not usually affect water shortages and for longer periods. Should a drought last for a long period of time, water shortage becomes a larger issue. Current drought conditions in the City and the County are shown in Section 4.3.8 of the Base Plan.

Past Occurrences

There have been two state and one federal disaster declaration from drought. This can be seen in Table B-23.

Table B-23 Sacramento County – State and Federal Drought Disaster Declarations 1950-2020

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Drought	2	2008, 2014	1	1977

Source: Cal OES, FEMA

Since drought is a regional phenomenon, past occurrences of drought for the City are the same as those for the County and includes 4 multi-year droughts since 1950. Details on past drought occurrences can be found in Section 4.3.8 of the Base Plan.

The City had moderate issues during the 2014-2016 drought. Quality of life was impacted due to severe cutbacks in irrigation, leaving many private landscape areas as browned out. The parks district limited watering to only certain facilities, leaving many neighborhood parks without irrigation. In addition, water was limited for construction-related use, such as fugitive dust mitigation.

Vulnerability to and Impacts from Drought and Water Shortage

Based on historical information, the occurrence of drought in California, including the City, is cyclical, driven by weather patterns. Drought has occurred in the past and will occur in the future. Periods of actual drought with adverse impacts can vary in duration, and the period between droughts can be extended. Although an area may be under an extended dry period, determining when it becomes a drought is based on impacts to individual water users.

Water for the City comes from the south American sub basin, as well as surface water from the Sacramento River. The Elk Grove Water District gets water from the aquifer and wholesale from the Sacramento County Water Agency (SCWA). SCWA gets its water from a number of sources, including a network of wells in Elk Grove and around the south county area, in addition to using surface water through conjunctive use.

Water resources are essential assets to communities and a shared economic responsibility of business and industry, farms and factories, individuals and communities. Water resource management is an urgent and growing need. Without water, neither small businesses nor major global industries can function. Nor can family farms, major agribusinesses, energy production facilities, computer manufacturers, or steel companies. Similarly, poor water quality, or limited or unreliable access to water means higher costs for all businesses – and all consumers. Water scarcity means greater risks for a community's long-term viability and a negative impact on their competitiveness. It also means that a community's ability to grow and create jobs is at risk.

The vulnerability of the City to drought is City-wide, but impacts may vary and include reduction in water supply and an increase in dry fuels. The potential for a reduction in water supply during drought conditions generally leads to both mandated and voluntary conservations measures during extended droughts. During these times, the costs of water can also increase. The increased dry fuels and fuel loads associated with drought conditions can also result in an increased fire danger. In areas of extremely dry fuels, the intensity and speed of fires can be significant. Water supply and flows for fire suppression can also be an issue during extended droughts.

Other qualitative impacts associated with drought in the City and Sacramento County Planning Area are those related to water intensive activities such as, municipal usage, commerce, tourism, recreation and agricultural use. Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding.

With more precipitation likely falling as rain instead of snow in the Sierra's, and warmer temperatures causing decreased snowfall to melt faster and earlier, water supply is likely to become more unreliable. In addition, drought and water shortage is predicted to become more common. This means less water available for use over the long run, and additional challenges for water supply reliability, especially during periods of extended drought.

Future Development

As the population in the area continues to grow, so will the demand for water. Water shortages in the future may be worsened by drought, as the City relies on surface water and groundwater for its water source. Increased planning including conjunctive use will be needed to account for population growth and increased water demands.

Earthquake

Likelihood of Future Occurrence–Occasional
Vulnerability–Medium

Hazard Profile and Problem Description

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up, and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that is felt during an earthquake. Earthquakes can cause structural damage, injury, and loss of life, as well as damage to infrastructure networks, such as water, power, gas, communication, and transportation. Earthquakes may also cause collateral emergencies including dam and levee failures, seiches, hazmat incidents, fires, avalanches, and landslides. The degree of damage depends on many interrelated factors. Among these are: the magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of surface deposits or bedrock, degree of consolidation of surface deposits, presence of high groundwater, topography, and the design, type, and quality of building construction.

Location and Extent

Since earthquakes are regional events, the whole of the City is at risk to earthquake. Elk Grove and the surrounding area are at limited risk from significant seismic and geologic hazards. Geological literature indicates that no major active faults transect the County; however, there are several subsurface faults in the Delta. The Midland fault, buried under alluvium, extends north of Bethel Island in the Delta to the east of Lake Berryessa and is considered inactive but possibly capable of generating a near 7.0 (Richter Scale) earthquake. This magnitude figure is speculative based on an 1895 earthquake measuring 6.9 on the Richter Scale with an epicenter possibly in the Midland Fault vicinity. However, oil and gas companies exploring the area's energy potential have identified several subsurface faults, none of which show any recent surface rupture. A second, presumably inactive, fault is in the vicinity of Citrus Heights near Antelope Road. This fault's only exposure is along a railroad cut where offsetting geologic beds can be seen. Neither the lateral extent of the trace, the magnitude of the offset, nor the age of faulting has been determined. To the east, the Bear Mountain fault zone trends northwest-southeast through Amador and El Dorado Counties. Geologists believe this series of faults has not been active in historic time.

The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. An earthquake's magnitude is expressed in whole numbers and decimals (e.g., 6.8). Seismologists have developed several magnitude scales, as discussed in Section 4.3.9 of the Base Plan.

Another measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. The City is located in an area where few earthquakes of significant magnitude occur, so both magnitude and intensity of earthquakes are expected to remain low. Seismic shaking maps for the area show Sacramento County and the City fall within a low to moderate shake risk.

Past Occurrences

The City noted no past occurrences of earthquakes or that affected the City in any meaningful way.

Vulnerability to and Impacts from Earthquake

The combination of plate tectonics and associated California coastal mountain range building geology generates earthquake as a result of the periodic release of tectonic stresses. Sacramento County lies in the center of the North American and Pacific tectonic plate activity. There have been earthquakes as a result of this activity in the historic past, and there will continue to be earthquakes in the future.

Fault ruptures itself contributes very little to damage unless the structure or system element crosses the active fault; however, liquefaction can occur further from the source of the earthquake. In general, newer construction is more earthquake resistant than older construction due to enforcement of improved building codes. Manufactured housing is very susceptible to damage because their foundation systems are rarely braced for earthquake motions. Locally generated earthquake motions and associated liquefaction, even from very moderate events, tend to be more damaging to smaller buildings, especially those constructed of unreinforced masonry (URM) and soft story buildings. The City has a few URM buildings in the Old Town area, and no soft story buildings.

The Uniform Building Code (UBC) identifies four seismic zones in the United States. The zones are numbered one through four, with Zone 4 representing the highest level of seismic hazard. The UBC establishes more stringent construction standards for areas within Zones 3 and 4. All of California lies within either Zone 3 or Zone 4. The City of Elk Grove is within the less hazardous Zone 3.

Earthquake vulnerability is primarily based on population and the built environment. Urban areas in high seismic hazard zones are the most vulnerable, while uninhabited areas are less vulnerable. Impacts from an earthquake in the City will vary depending on the fault that the earthquake occurs on, the distance to the epicenter, the depth of the earthquake strike, and the intensity of shaking. Large events could cause damages to infrastructure, critical facilities, residential and commercial properties, and possible injuries or loss of life. A variety of industrial uses are located in the City of Elk Grove, primarily in the southern portion of Elk Grove and in the Laguna West area west of the City. Many of these industrial facilities use and/or store chemicals and other materials that could result in damage both on- and off-site in the event of seismic event.

Earthquake Analysis

Due to the regional effects of an earthquake, a Hazus earthquake analysis was performed on a countywide basis. This can be found in Section 4.3.11 of the Base Plan. While these runs were not done specific to the City, maps showing damage in the County show greater areas of damage near the cities in the County.

Future Development

Although new growth and development corridors would fall in the area affected by earthquake, given the small chance of major earthquake and the building codes in effect, development in areas prone to earthquakes will continue to occur. The City enforces the state building code, which mandates construction

techniques that minimize seismic hazards. Future development in the City is subject to these building codes.

Flood: 1%/0.2% Annual Chance

Likelihood of Future Occurrence–Occasional/Unlikely
Vulnerability–High

Hazard Profile and Problem Description

This hazard analyzes the FEMA DFIRM 1% and 0.2% annual chance floods. These tend to be the larger floods that can occur in the County or in the City, and have caused damages in the past. Flooding is a significant problem in Sacramento County and the City of Elk Grove. Historically, the City has been at risk to flooding primarily during the winter and spring months when river systems in the County swell with heavy rainfall and snowmelt runoff. Normally, storm floodwaters are kept within defined limits by a variety of storm drainage and flood control measures. Occasionally, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage. Flooding has occurred both within the 1% and 0.2% annual chance floodplains and in other localized areas.

As previously described in Section 4.3.11 of the Base Plan, the Sacramento County Planning Area and the City of Elk Grove have been subject to historical flooding. Elk Grove is traversed by several stream systems and is at risk to the 1% and 0.2% flood.

Location and Extent

Location and extent of flooding for the City is discussed using three sources:

- FEMA 11/2/201/ DFIRM
- CA DWR 200-Year Flood Study
- Local Drainage and Flood Control

FEMA DFIRM Extents

The City of Elk Grove has areas located in the 1% and 0.2% annual chance flood zones. This is seen in Figure B-15. According to the 2019 City of Elk Grove General Plan, the areas most susceptible to flooding are in the eastern portion of Elk Grove where major drainage facilities have not been built and stormwater flows either in natural channels or in small ditches where capacity is frequently exceeded. Another area susceptible to flooding is the Sheldon area, where local flooding is widespread but generally minor; the flat land causes floodwaters to spread out, reducing threats to life and property. Finally, along the eastern and southern edges of the City, the Cosumnes River (and Deer Creek tributary) represents a major flood hazard. The Cosumnes River is the last river in California that remains undammed along its entire length, so flooding caused by this river can be extensive. In the City, 1% annual chance flood zones include areas along Laguna Creek in the northwest and north-central portion of the City, and along the Cosumnes River to the southeast, primarily outside of City limits. Flood risk is intensified in the lower stream reaches by the likelihood of coincident high tides and strong offshore winds during heavy rainfall.

Figure B-15 City of Elk Grove – FEMA DFIRM Flood Zones

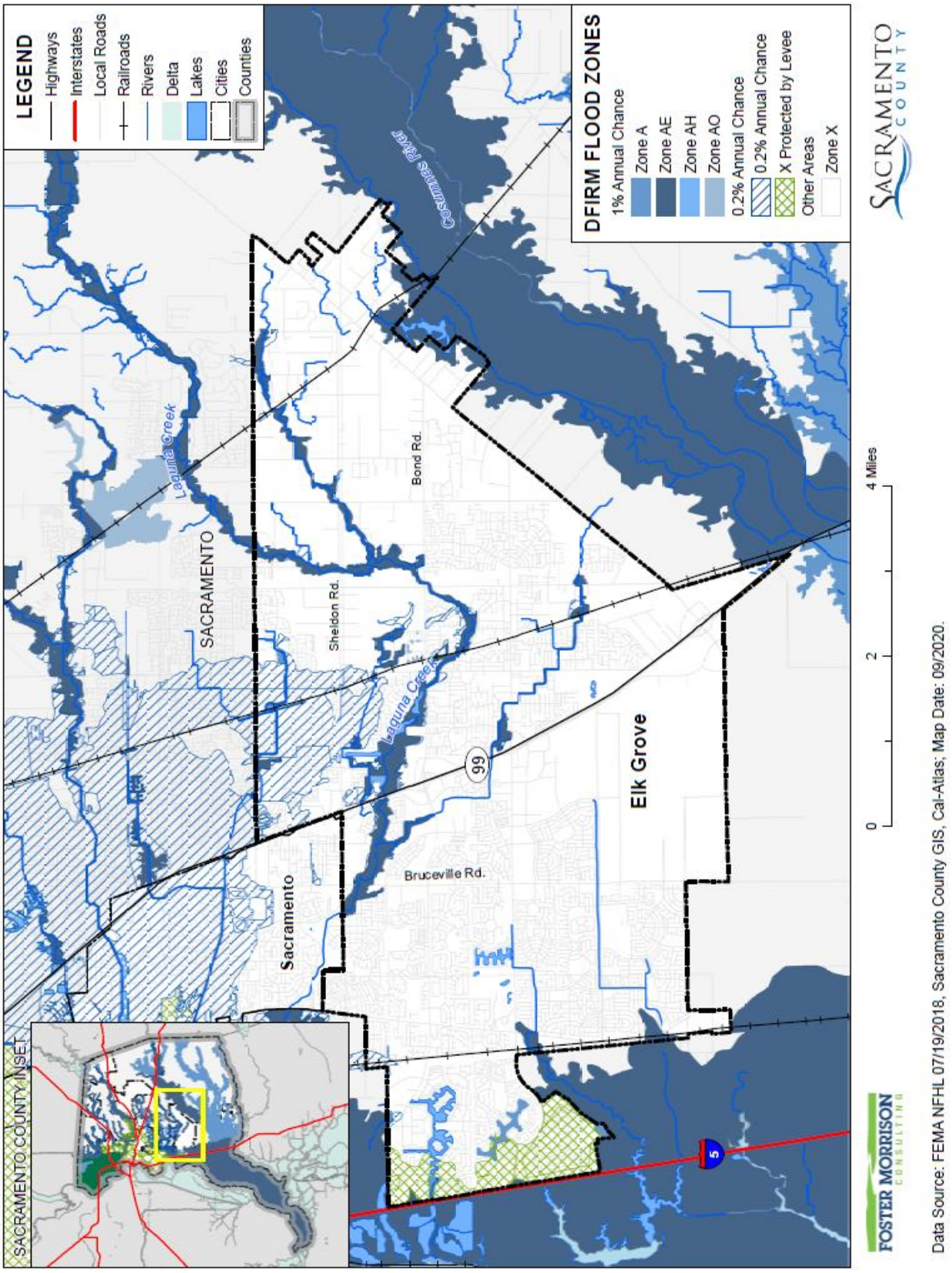


Table B-24 details the DFIRM mapped flood zones located within the City.

Table B-24 City of Insert– DFIRM Flood Hazard Zones

Flood Zone	Description	Flood Zone Present in City
A	1% annual chance flooding: No base flood elevations provided. Mandatory flood insurance purchase requirements and floodplain management standards apply.	X
AE	1% annual chance flooding: Base flood elevations provided. Mandatory flood insurance purchase requirements and floodplain management standards apply.	X*
AH	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between one and three feet. Base Flood Elevations (BFEs) derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.	
AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.	
A99	Areas subject to inundation by the 1-percent-annual-chance flood event, but which will ultimately be protected upon completion of an under-construction Federal flood protection system. These are areas of special flood hazard where enough progress has been made on the construction of a protection system, such as dikes, dams, and levees, to consider it complete for insurance rating purposes. Zone A99 may only be used when the flood protection system has reached specified statutory progress toward completion. No Base Flood Elevations (BFEs) or depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.	
Shaded X	0.2% annual chance flooding: The areas between the limits of the 1% annual chance flood and the 0.2-percent-annual-chance (or 500-year) flood. Flood insurance is not mandatory but is available.	X
X Protected by Levee	Areas protected by levees from 1% annual chance flood event. Levee protection places these areas in the 0.2% annual chance flood zone. Flood insurance is not mandatory but is available.	X
X (unshaded)	No flood hazard	X

Source: FEMA

* Some of these parcels were actually removed from the SFHA by a Letter of Map Revision from FEMA (the FEMA maps still show the areas in the SFHA since the maps have not been updated.

Additionally, flood extents can generally be measured in volume, velocity, and depths of flooding. Expected flood depths in the City vary, depending on the nature and extent of a flood event; specific depths are unknown. Flood durations in the City tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Flooding in the City tends to have a shorter speed of onset, due to the amount of water that flows through the City.

Geographical flood extents for the City from the FEMA DFIRMs are shown in Table B-25.

Table B-25 City of Elk Grove – Geographical DFIRM Flood Zone Extents

Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
1% Annual Chance	1,266	0.20%	477	0.13%	789	0.28%
0.2% Annual Chance	3,176	0.49%	2,607	0.72%	569	0.20%
Other Areas	22,114	3.43%	15,912	4.41%	6,202	2.19%
Total	**26,556**	**4.12%**	**18,996**	**5.26%**	**7,560**	**2.67%**

Source: FEMA DFIRM 11/2/2018

CA DWR 200-Year Flood Study

The limits of the 200-year floodplain for the City of Elk Grove are shown in Figure B-16. This map identifies areas where higher standards of development and flood protection may be required prior to the issuance of building permits. Figure B-16 was developed using data provided by DWR, supplemented by floodplain studies commissioned by the City, covering local creek systems that have watershed areas of at least 10 square miles. These areas include the Laguna Creek and Deer Creek/Cosumnes River watersheds, as well as the Sacramento River watershed, which affects local creek systems.

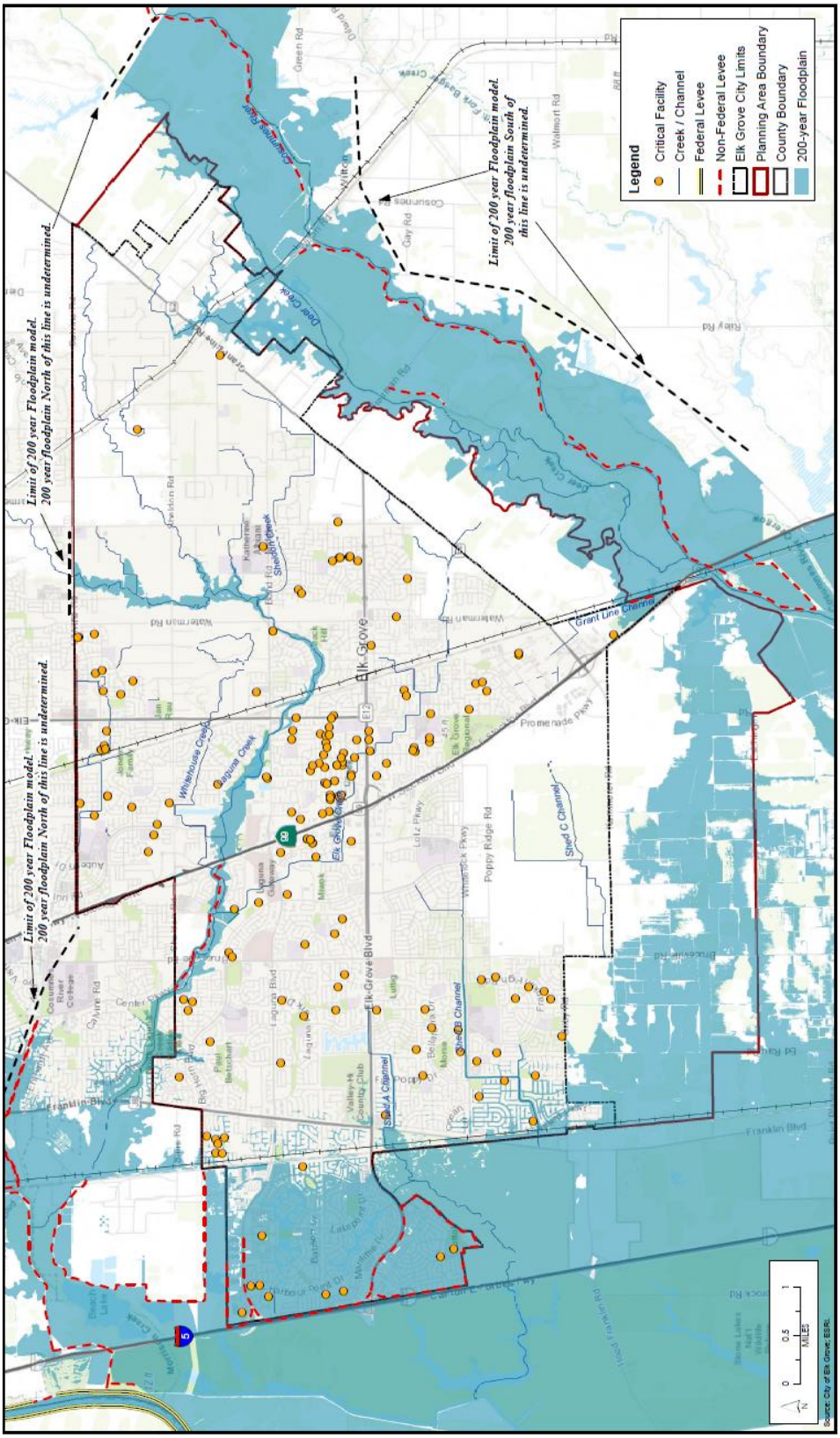
The City commissioned hydrologic modeling to supplement the DWR 200-year floodplain mapping of Laguna Creek to account for levee improvements completed or in process that were not included in the DWR mapping. The Sacramento Area Flood Control Agency (SAFCA) is in the process of implementing a levee improvement project to provide 200-year flood protection for the Sacramento River, and the US Army Corps of Engineers has completed improvements to the Folsom Dam spillway on the American River. These projects were not accounted for in the DWR mapping. Because of these improvements, the City's supplemental 200-year floodplain calculations use a scenario in which the levees and dams along the Sacramento and American Rivers do not fail.

The City's supplemental mapping also differs from DWR 200-year floodplain mapping by adding 200-year water surface elevations along Deer Creek. The DWR mapping did not assess Deer Creek since no State flood improvement projects are located in this watershed. Levees in this area have not been certified to provide 100-year protection and have failed in the past during large storm events. Therefore, modeling for this area considers the possibility of extensive levee failure, especially along the north bank of the Cosumnes River.

The area potentially affected by a 200-year flood event in the City is located along Deer Creek and the Cosumnes River. Much of this land is preserved for agricultural use and would be at limited risk of damage from flood hazard zones. However, a 200-year flood event caused by levee breaks along the Sacramento River could result in flooding in small portions of Laguna West, an existing residential neighborhood on the western side of the City. If, in the future, the City were to consider expanding beyond its existing Planning Area north or south along I-5, development in these areas would also be at risk in a 200-year flood event.

The City recognizes that flood risk conditions can change over time through natural processes or project improvements on the local or regional scale. Therefore, the 200-year flood map is considered the base case for establishing potential flood risk. The City will keep updated data on the 200-year floodplain through an annual review, accounting for the results of new technical studies and changes in flood protection infrastructure. This updated information will be referenced during the development review process for areas on the base case 200-year flood map, as shown in Figure B-16.

Figure B-16 City of Elk Grove – 0.5% (200-Year) Floodplain



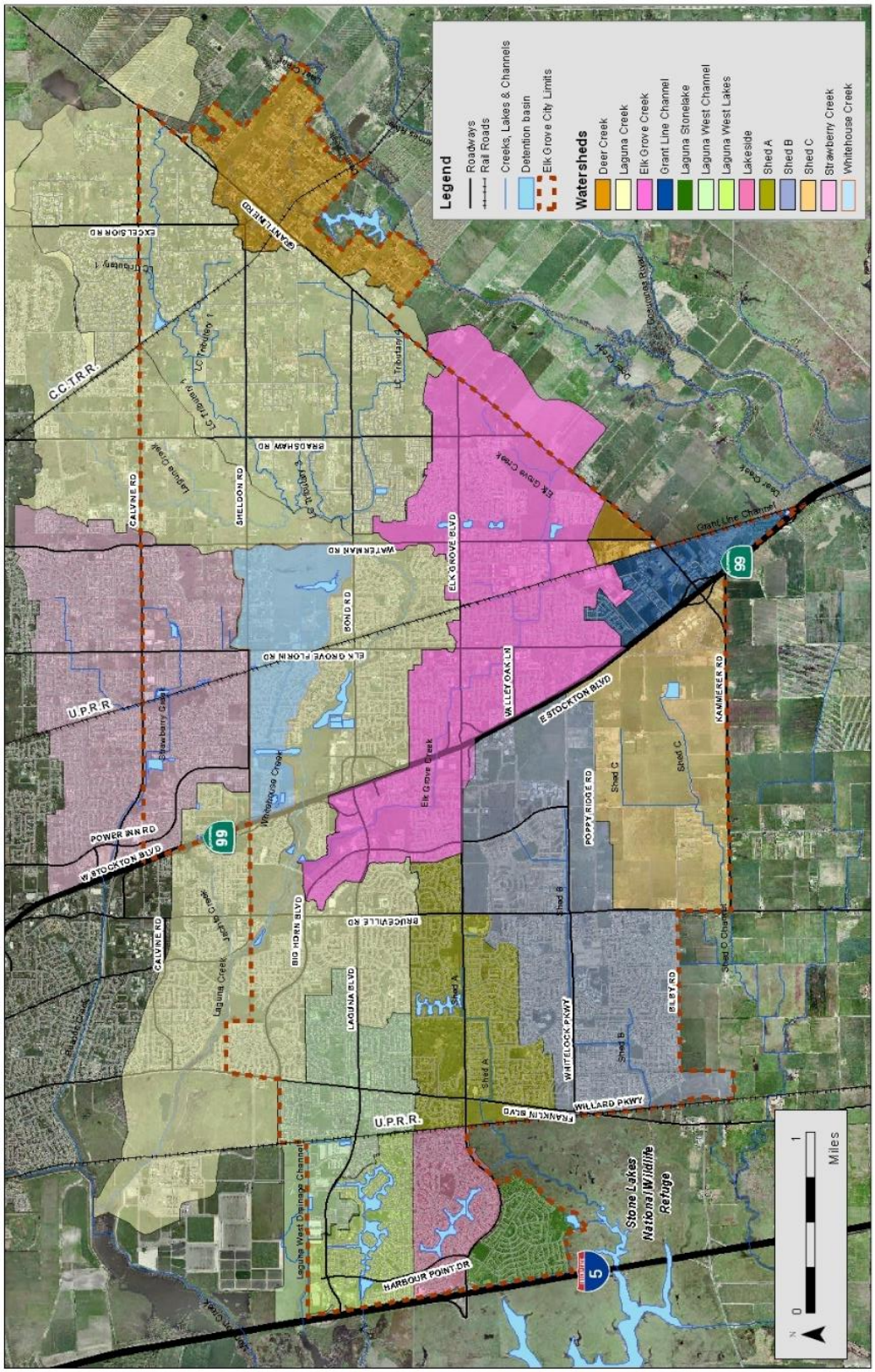
Source: City of Elk Grove General Plan 2018 Environmental Impact Report

Local Drainage and Flood Control

The City inherited a traditional storm drainage and flood control system from Sacramento County upon incorporation in 2000 and this storm drainage collection and conveyance system, which consists of channels, creeks, ditches, pipes, streets and detention basins provides the City with a dependable means of minimizing the opportunities of flooding which can cause damage to the City's residents and infrastructure. The City's storm drainage and flood control system is continually undergoing expansion to accommodate new development flows as well as making improvements to the existing infrastructure in order to encourage nonstructural environmentally friendly storm drainage and flood control practices.

The drainage within the City is conveyed through a storm drainage and flood control system consisting of about 400 miles of underground pipes; and 60 miles of natural and constructed channels. The City drains within thirteen watersheds as delineated in Figure B-17. Within the watersheds there are ten major natural creeks or open channels (Figure B-17) that convey runoff within the City including Elk Grove Creek, Laguna Creek, Strawberry Creek, Whitehouse Creek, Deer Creek, Ehrhardt Channel, Franklin Creek, Shed C Channel, Grant Line Channel, and the Laguna West Channel. Four of the creeks, Elk Grove Creek, Laguna Creek, Strawberry Creek, and Deer Creek convey runoff that originates outside the City limits. All of the watersheds and channels located within the City, ultimately drain into the Stone Lakes National Wildlife Refuge floodplain with the exception of the Deer Creek and Grant Line Channel watersheds, which drain to Deer Creek and ultimately to the Cosumnes and Mokelumne Rivers.

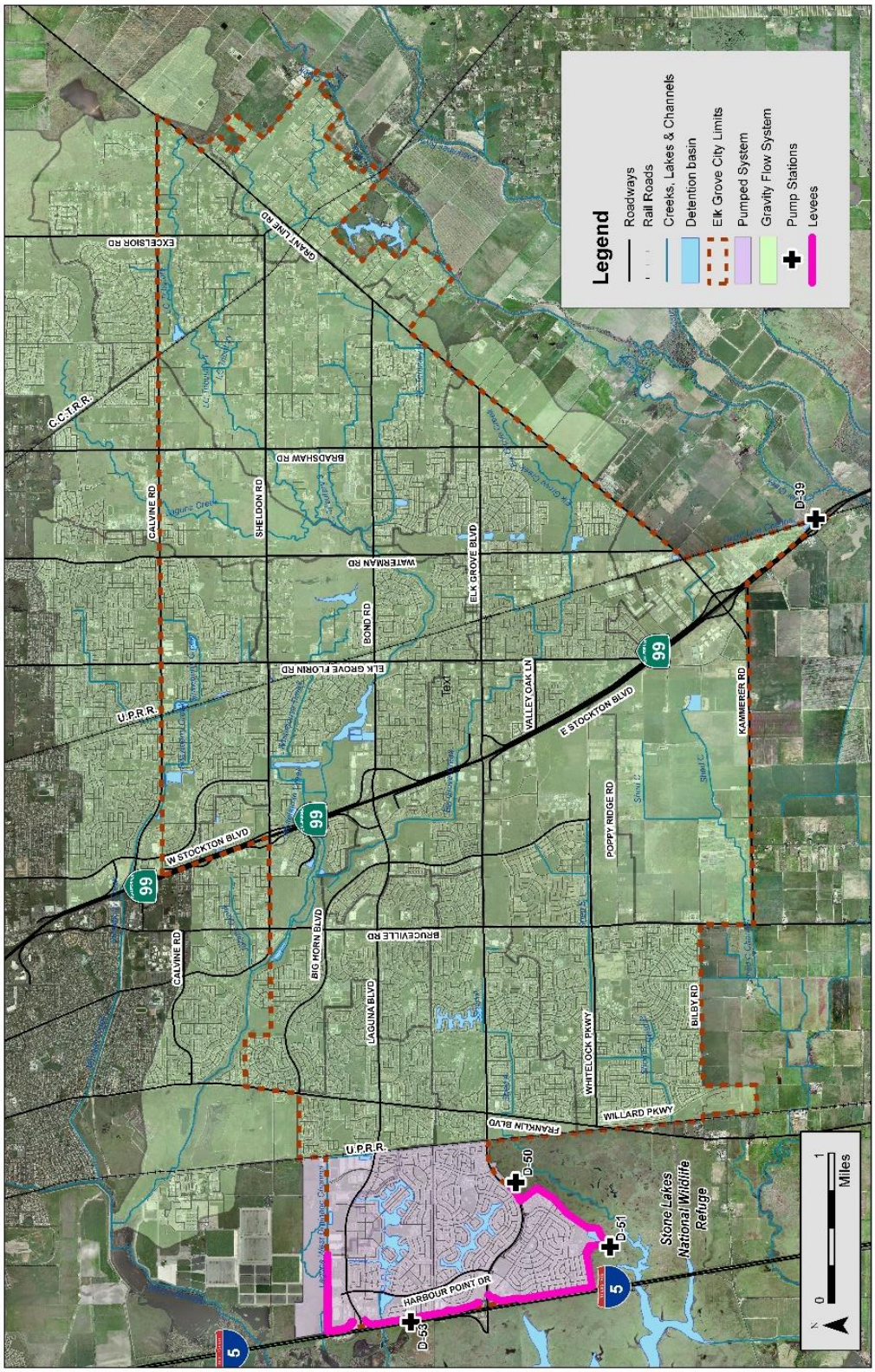
Figure B-17 City of Elk Grove Watershed Delineations, Creeks and Channels



Source: City of Elk Grove GIS

The City's storm drainage and flood control system can be characterized as a gravity flow system for the portion of the City east of the Union Pacific Railroad tracks and a pumped system west of the Union Pacific Railroad tracks for the area referred to as the Laguna West communities. The three pump stations for the Laguna West area are located in the Laguna West Channel, Lakeside and Laguna Stonelake watersheds. The Laguna West area is protected by a perimeter levee system which protects the communities from the backwater effects of the Cosumnes and Mokelumne Rivers. There is also a pump station located in the Grant Line Channel watershed. The City has nineteen detention basins that were primarily constructed in conjunction with commercial and residential development in order to mitigate project stormwater runoff flows to pre-project levels. Figure B-18 depicts the locations of the pump stations, levees, basins, and the gravity flow areas.

Figure B-18 City of Elk Grove Pump Stations, Levees, Detention Basins, and Gravity Flow Areas



Source: City of Elk Grove GIS

The majority of the City's storm drainage and flood control system facilities and channels are owned by the City, with some portions being privately owned. The City owns and operates the storm drainage and flood control facilities, which consist of pump stations, levees, detention basins and other flood control features.

Current land use of properties adjacent to storm drainage, flood control facilities and channels vary widely, and include all types of land uses present within the City, such as commercial, residential, industrial, recreational, open space, small scale agricultural, mixed-use and public facilities. Underground drainage pipes are typically located within or adjacent to public roadways. Natural and constructed channels are typically maintained as open space, with some recreational uses, such as bicycle trails, located along the channel corridor in some areas of the City.

The eastern portion of the City (primarily east of Waterman Road) is predominately rural with residences built on large lots where agricultural practices are common. A majority of the East Elk Grove area/rural region does not have an underground pipe system, curbs or gutters. Stormwater is collected and conveyed by roadside ditches that have very limited flow carrying capacity. This results in roads experiencing flooding and standing water at a few locations. In some areas the roads may overtop, which impacts driving, particularly at night.

Along the eastern and southern edges of the City, the Cosumnes River represents a major flood hazard. The Cosumnes River is the last river in California, which remains undammed along its entire length, so flooding caused by this river can be extensive.

Past Occurrences

A list of state and federal disaster declarations for Sacramento County from flooding is shown on Table B-26. These events also likely affected the City to some degree.

Table B-26 Sacramento County – State and Federal Disaster Declarations from Flood 1950-2020

Disaster Type	Federal Declarations		State Declarations	
	Count	Years	Count	Years
Flood (including heavy rains and storms)	19	1950, 1955, 1958 (twice), 1963, 1969, 1982 (twice), 1983, 1986, 1995 (twice), 1996, 1997, 1998, 2008, 2017 (three times)	14	1955, 1958, 1964, 1969, 1983, 1986, 1995 (twice), 1997, 1998, 2006, 2017 (three times)

Source: Cal OES, FEMA

The flooding in 2017 caused localized flooding and downed trees in the City. Many of the localized street flooding issues were due to maintenance practices, which have subsequently been corrected. Highway 99, a major transportation corridor through the City, was flooded just south of the City boundary. This is a result of the highway being on low ground and is being corrected by Caltrans. The Emerald Oaks Golf Course, on the southern tip of the City and immediately east of Hwy 99, also flooded by design as it is a flood basin.

Vulnerability to and Impacts from Flood

Floods have been a part of the City's historical past and will continue to be so in the future. During winter months, long periods of precipitation and the timing of that precipitation are critical in determining the threat of flood, and these characteristics further dictate the potential for widespread structural and property damages. Predominantly, the effects of flooding are generally confined to areas near the waterways of the County and City. As waterways grow in size from local drainages, so grows the threat of flood and dimensions of the threat. This threatens structures in the floodplain. Structures can also be damaged from trees falling as a result of water-saturated soils. Electrical power outages happen, and the interruption of power causes major problems. Loss of power is usually a precursor to closure of governmental offices and community businesses. Public schools may also be required to close or be placed on a delayed start schedule. Roads can be damaged and closed, causing safety and evacuation issues. People may be swept away in floodwaters, causing injuries or deaths.

Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. Floods can cause substantial damage to structures, landscapes, and utilities as well as life safety issues. Floods can be extremely dangerous, and even six inches of moving water can knock over a person given a strong current. During a flood, people can also suffer heart attacks or electrocution due to electrical equipment short outs. Floodwaters can transport large objects downstream which can damage or remove stationary structures. Ground saturation can result in instability, collapse, or other damage. Objects can also be buried or destroyed through sediment deposition. Floodwaters can also break utility lines and interrupt services. Standing water can cause damage to crops, roads, foundations, and electrical circuits. Direct impacts, such as drowning, can be limited with adequate warning and public education about what to do during floods. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, loss of environmental resources, and economic impacts.

One of the biggest concerns with major flooding is timely evacuation and access to vulnerable populations. The City is currently working on evacuation plans for hazardous events.

Assets at Risk

Based on the vulnerability of Elk Grove to the flood hazard, the sections that follow describes significant assets at risk in the City of Elk Grove. This section includes the values at risk, flooded acres, population at risk, and critical facilities at risk.

Values at Risk

GIS was used to determine the possible impacts of flooding within the City of Elk Grove. The methodology described in Section 4.3.12 of the Base Plan was followed in determining structures and values at risk to the 1% (100-year) and 0.2% (500-year) annual chance flood event. Table B-27 is a summary table for the City of Elk Grove. Parcel counts, values, estimated contents, and total values in the City are shown for the 1% and 0.2% annual chance flood zones, as well as for those properties that fall outside of the mapped FEMA DFIRM flood zones. Table B-28 breaks down Table B-27 and shows the property use, improved parcel count, improved values, estimated contents, and total values that fall in FEMA flood zones in the City.

The City noted that some of these parcels (that fall in Zone AE) were actually removed from the SFHA by a Letter of Map Revision from FEMA (the FEMA maps still show the areas in the SFHA since the maps have not been updated.

Table B-27 City of Elk Grove – Count and Value of Parcels at Risk in Summary DFIRM Flood Zones

Flood Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
1% Annual Chance Flood Hazard	403	269	$61,274,181	$135,476,549	$92,047,967	$288,798,693
0.2% Annual Chance Flood Hazard	7,021	6,737	$785,686,811	$2,248,156,539	$1,315,971,218	$4,349,814,522
Other Areas	48,160	44,803	$5,415,550,301	$13,971,342,060	$8,031,991,292	$27,418,883,679
City of Elk Grove Total	**55,584**	**51,809**	**$6,262,511,293**	**$16,354,975,148**	**$9,440,010,477**	**$32,057,496,894**

Source: FEMA 11/2/2018 DFIRM, Sacramento County 2020 Parcel/Assessor's Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Table B-28 City of Elk Grove – Count and Values of Parcels at Risk by Detailed Flood Zone and Property Use

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
1% Annual Chance Flood Hazard						
Zone A						
Agricultural	0	0	$0	$0	$0	$0
Care/Health	0	0	$0	$0	$0	$0
Church/Welfare	0	0	$0	$0	$0	$0
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	26	0	$99	$0	$0	$99
Office	0	0	$0	$0	$0	$0
Public/Utilities	0	0	$0	$0	$0	$0
Recreational	0	0	$0	$0	$0	$0
Residential	3	0	$0	$0	$0	$0
Retail/ Commercial	0	0	$0	$0	$0	$0
Unknown	0	0	$0	$0	$0	$0
Vacant	6	0	$27	$0	$0	$27
Zone A Total	**35**	**0**	**$126**	**$0**	**$0**	**$126**

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Zone AE						
Agricultural	1	0	$9	$0	$0	$9
Care/Health	3	1	$2,943,280	$5,652,593	$5,652,593	$14,248,466
Church/Welfare	1	1	$268,289	$54,835	$54,835	$377,959
Industrial	3	2	$817,755	$1,317,876	$1,976,814	$4,112,445
Miscellaneous	54	0	$437,414	$0	$0	$437,414
Office	2	1	$403,259	$2,780,364	$2,780,364	$5,963,987
Public/Utilities	2	0	$2	$0	$0	$2
Recreational	1	1	$470,772	$1,524,986	$1,524,986	$3,520,744
Residential	257	254	$40,188,748	$88,175,049	$44,087,529	$172,451,322
Retail/ Commercial	10	9	$10,296,835	$35,970,846	$35,970,846	$82,238,527
Unknown	0	0	$0	$0	$0	$0
Vacant	34	0	$5,447,692	$0	$0	$5,447,692
Zone AE Total	**368**	**269**	**$61,274,055**	**$135,476,549**	**$92,047,967**	**$288,798,567**
1% Annual Chance Flood Hazard Total	**403**	**269**	**$61,274,181**	**$135,476,549**	**$92,047,967**	**$288,798,693**
0.2% Annual Chance Flood Hazard						
0.2% Annual Chance						
Agricultural	0	0	$0	$0	$0	$0
Care/Health	4	3	$7,669,150	$54,732,171	$54,732,171	$117,133,492
Church/Welfare	1	1	$333,286	$203,812	$203,812	$740,910
Industrial	9	9	$4,616,628	$12,397,077	$18,595,615	$35,609,321
Miscellaneous	128	0	$85,875	$0	$0	$85,875
Office	5	4	$2,829,252	$8,350,409	$8,350,409	$19,530,070
Public/Utilities	3	0	$9	$0	$0	$9
Recreational	4	4	$4,200,131	$16,354,956	$16,354,956	$36,910,043
Residential	4,038	4,033	$380,639,074	$1,044,687,963	$522,344,013	$1,947,671,034
Retail/ Commercial	30	30	$35,104,712	$85,390,336	$85,390,336	$205,885,384
Unknown	0	0	$0	$0	$0	$0
Vacant	35	1	$10,273,306	$4,123	$0	$10,277,429
0.2% Annual Chance Total	**4,257**	**4,085**	**$445,751,423**	**$1,222,120,847**	**$705,971,312**	**$2,373,843,567**
X Protected by Levee						
Agricultural	0	0	$0	$0	$0	$0

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Care/Health	1	1	$745,000	$1,735,000	$1,735,000	$4,215,000
Church/Welfare	4	4	$4,115,302	$15,770,564	$15,770,564	$35,656,430
Industrial	6	3	$9,383,367	$20,127,566	$30,191,348	$59,702,281
Miscellaneous	60	0	$584	$0	$0	$584
Office	51	44	$14,324,891	$93,962,948	$93,962,948	$202,250,787
Public/Utilities	0	0	$0	$0	$0	$0
Recreational	1	1	$520,200	$1,500,000	$1,500,000	$3,520,200
Residential	2,584	2,567	$269,922,489	$852,199,179	$426,099,611	$1,548,221,248
Retail/ Commercial	34	32	$23,045,949	$40,740,435	$40,740,435	$104,526,819
Unknown	0	0	$0	$0	$0	$0
Vacant	23	0	$17,877,606	$0	$0	$17,877,606
X Protected by Levee Total	**2,764**	**2,652**	**$339,935,388**	**$1,026,035,692**	**$609,999,906**	**$1,975,970,955**
0.2% Annual Chance Flood Hazard Total	**7,021**	**6,737**	**$785,686,811**	**$2,248,156,539**	**$1,315,971,218**	**$4,349,814,522**
Other Areas						
Zone X						
Agricultural	18	7	$1,376,338	$1,239,312	$1,239,312	$3,854,962
Care/Health	28	22	$26,582,628	$90,844,343	$90,844,343	$208,271,314
Church/Welfare	45	41	$27,910,629	$115,055,115	$115,055,115	$258,020,859
Industrial	188	161	$85,608,395	$295,769,280	$443,653,914	$825,031,599
Miscellaneous	1,320	1	$841,892	$1,100	$1,100	$844,092
Office	268	247	$83,592,828	$426,140,488	$426,140,488	$935,873,804
Public/Utilities	67	0	$99	$0	$0	$99
Recreational	14	10	$8,630,215	$35,594,899	$35,594,899	$79,820,013
Residential	44,126	43,925	$4,421,924,222	$12,149,570,110	$6,074,785,117	$22,646,279,465
Retail/ Commercial	359	329	$320,907,843	$844,677,004	$844,677,004	$2,010,261,851
Unknown	1	1	$0	$127,600	$0	$127,600
Vacant	1,726	59	$438,175,212	$12,322,809	$0	$450,498,021
Zone X Total	**48,160**	**44,803**	**$5,415,550,301**	**$13,971,342,060**	**$8,031,991,292**	**$27,418,883,679**
Other Areas Total	**48,160**	**44,803**	**$5,415,550,301**	**$13,971,342,060**	**$8,031,991,292**	**$27,418,883,679**
Elk Grove Total	**55,584**	**51,809**	**$6,262,511,293**	**$16,354,975,148**	**$9,440,010,477**	**$32,057,496,894**

Source: FEMA 11/2/2018 DFIRM, Sacramento County 2020 Parcel/Assessor's Data
*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone
**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Table B-29 summarizes Table B-28 above and shows City of Elk Grove loss estimates and improved values at risk by FEMA 1% and 0.2% annual chance flood zones.

Table B-29 City of Elk Grove – Flood Loss Estimates

Flood Zone	Total Parcel Count	Improved Parcel Count	Improved Structure Value	Estimated Contents Value	Total Value	Loss Estimate	Loss Ratio
1% Annual Chance Flood Hazard	403	269	$135,476,549	$92,047,967	$227,524,516	$45,504,903	0.03%
0.2% Annual Chance Flood Hazard	7,021	6,737	$2,248,156,539	$1,315,971,218	$3,564,127,757	$712,825,551	0.40%
Grand Total	**7,424**	**7,006**	**$2,383,633,088**	**$1,408,019,185**	**$3,791,652,273**	**$758,330,454**	**0.43%**

Source: FEMA 11/2/2018 DFIRM, Sacramento County 2020 Parcel/Assessor's Data
*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone
**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

According to Table B-28 and Table B-29, the City of Elk Grove has 269 parcels and $227.5 million of structure and contents values or values in the 1% annual chance flood zone, and 6,737 improved parcels and $3.56 billion of structure and contents values in the 0.2% annual chance flood zone. These values can be refined a step further. Applying the 20 percent damage factor as previously described in Section 4.3.11 of the Base Plan, there is a 1% chance in any given year of a flood event causing $45.4 million in damage and a 0.2% chance in any given year of a flood event causing $712.8 million in damage in the City of Elk Grove. The loss ratio of 0.03% and 0.40% indicates that flood losses for 1% and 0.2% annual chance flooding, respectively, would be somewhat minor relative to the total values of structures in the City.

Flooded Acres

Also of interest is the land area affected by the various flood zones. The following is an analysis of flooded acres in the City in comparison to total area within the City limits. The same methodology, as discussed in Section 4.3.12 of the Base Plan, was used for the City of Elk Grove as well as for the County as a whole. Table B-30 represents a detailed and summary analysis of total acres for each FEMA DFIRM flood zone in the City.

Table B-30 City of Elk Grove – Flooded Acres by Flood Zone

Flood Zone/ Property Use	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
1% Annual Chance Flood Hazard						
Zone A						
Agricultural	0.0	0.00%	0.0	0.00%	0.0	0.00%
Care/Health	0.0	0.00%	0.0	0.00%	0.0	0.00%
Church/Welfare	0.0	0.00%	0.0	0.00%	0.0	0.00%
Industrial	0.0	0.00%	0.0	0.00%	0.0	0.00%
Miscellaneous	92.3	0.35%	0.0	0.00%	92.3	0.00%
Office	0.0	0.00%	0.0	0.00%	0.0	1.22%
Public/Utilities	2.6	0.01%	0.0	0.00%	2.6	0.00%
Recreational	0.0	0.00%	0.0	0.00%	0.0	0.03%
Residential	32.2	0.12%	11.8	0.06%	20.5	0.00%
Retail/ Commercial	0.0	0.00%	0.0	0.00%	0.0	0.27%
Unknown	0.0	0.00%	0	0.00%	0.0	0.00%
Vacant	48.8	0.18%	0	0.00%	48.8	0.00%
Zone A Total	**176.0**	**0.66%**	**11.8**	**0.06%**	**164.2**	**0.65%**
Zone AE						
Agricultural	25.8	0.10%	0.0	0.00%	25.8	0.34%
Care/Health	97.3	0.37%	52.3	0.28%	45.1	0.60%
Church/Welfare	6.0	0.02%	6.0	0.03%	0	0.00%
Industrial	11.8	0.04%	11.3	0.06%	0.5	0.01%
Miscellaneous	282.1	1.06%	0.0	0.00%	282.1	3.73%
Office	17.7	0.07%	0.6	0.00%	17.1	0.23%
Public/Utilities	16.8	0.06%	0.0	0.00%	16.8	0.22%
Recreational	4.4	0.02%	4.4	0.02%	0.0	0.00%
Residential	378.2	1.42%	369.8	1.95%	8.4	0.11%
Retail/ Commercial	16.4	0.06%	15.3	0.08%	1.1	0.01%
Unknown	0.0	0.00%	0.0	0.00%	0.0	0.00%
Vacant	227.8	0.86%	0.0	0.00%	227.8	3.01%
Zone AE Total	**1,084.3**	**4.08%**	**459.6**	**2.42%**	**624.7**	**8.26%**
Zone AH						
Agricultural	0.0	0.00%	0.0	0.00%	0.0	0.00%
Care/Health	0.0	0.00%	0.0	0.00%	0.0	0.00%
Church/Welfare	5.7	0.02%	5.7	0.03%	0.0	0.00%

Flood Zone/ Property Use	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Industrial	0.0	0.00%	0.0	0.00%	0.0	0.00%
Miscellaneous	0.2	0.00%	0.0	0.00%	0.2	0.00%
Office	0.0	0.00%	0.0	0.00%	0.0	0.00%
Public/Utilities	0.0	0.00%	0.0	0.00%	0.0	0.00%
Recreational	0.0	0.00%	0.0	0.00%	0.0	0.00%
Residential	0.0	0.00%	0.0	0.00%	0.0	0.00%
Retail/ Commercial	0.0	0.00%	0.0	0.00%	0.0	0.00%
Unknown	0.0	0.00%	0.0	0.00%	0.0	0.00%
Vacant	0.0	0.00%	0.0	0.00%	0.0	0.00%
Zone AH Total	**5.9**	0.02%	**5.7**	0.03%	**0.2**	**0.00%**
Zone AO						
Agricultural	0.0	0.00%	0.0	0.00%	0.0	0.00%
Care/Health	0.0	0.00%	0.0	0.00%	0.0	0.00%
Church/Welfare	0.0	0.00%	0.0	0.00%	0.0	0.00%
Industrial	0.0	0.00%	0.0	0.00%	0.0	0.00%
Miscellaneous	0.0	0.00%	0.0	0.00%	0.0	0.00%
Office	0.0	0.00%	0.0	0.00%	0.0	0.00%
Public/Utilities	0.0	0.00%	0.0	0.00%	0.0	0.00%
Recreational	0.0	0.00%	0.0	0.00%	0.0	0.00%
Residential	0.3	0.00%	0.3	0.00%	0.0	0.00%
Retail/ Commercial	0.0	0.00%	0.0	0.00%	0.0	0.00%
Unknown	0.0	0.00%	0.0	0.00%	0.0	0.00%
Vacant	0.0	0.00%	0.0	0.00%	0.0	0.00%
Zone AO Total	**0.3**	**0.00%**	**0.3**	**0.00%**	**0.0**	**0.00%**
1% Annual Chance Flood Hazard Total	**1,266.4**	**4.77%**	**477.4**	**2.51%**	**789.0**	**10.44%**
0.2% Annual Chance Flood Hazard						
0.2% Annual Chance						
Agricultural	2.0	0.01%	0.0	0.00%	2.0	0.03%
Care/Health	27.4	0.10%	21.2	0.11%	6.2	0.08%
Church/Welfare	10.5	0.04%	10.5	0.06%	0.0	0.00%
Industrial	19.7	0.07%	19.4	0.10%	0.3	0.00%
Miscellaneous	126.2	0.48%	0.0	0.00%	126.2	1.67%
Office	8.0	0.03%	3.8	0.02%	4.2	0.06%

Flood Zone/ Property Use	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Public/Utilities	36.2	0.14%	0.0	0.00%	36.2	0.48%
Recreational	6.6	0.02%	6.6	0.03%	0.0	0.00%
Residential	718.5	2.71%	716.5	3.77%	2.0	0.03%
Retail/ Commercial	54.6	0.21%	54.2	0.29%	0.3	0.00%
Unknown	0	0.00%	0	0.00%	0	0.00%
Vacant	200.3	0.75%	1.0	0.01%	199.3	2.64%
0.2% Annual Chance Total	**1,210.0**	**4.56%**	**833.2**	**4.39%**	**376.8**	**4.98%**
X Protected by Levee						
Agricultural	0.0	0.00%	0.0	0.00%	0.0	0.00%
Care/Health	1.4	0.01%	1.4	0.01%	0.0	0.00%
Church/Welfare	15.2	0.06%	15.2	0.08%	0.0	0.00%
Industrial	25.5	0.10%	21.9	0.12%	3.7	0.05%
Miscellaneous	83.8	0.32%	0.0	0.00%	83.8	1.11%
Office	60.2	0.23%	49.8	0.26%	10.4	0.14%
Public/Utilities	0.1	0.00%	0.0	0.00%	0.1	0.00%
Recreational	1.0	0.00%	1.0	0.01%	0.0	0.00%
Residential	1,672.3	6.30%	1,646.2	8.67%	26.0	0.34%
Retail/ Commercial	46.5	0.18%	38.4	0.20%	8.1	0.11%
Unknown	0.0	0.00%	0.0	0.00%	0.0	0.00%
Vacant	59.7	0.22%	0.0	0.00%	59.7	0.79%
X Protected by Levee Total	**1,965.7**	7.40%	**1,773.9**	9.34%	**191.8**	2.54%
0.2% Annual Chance Flood Hazard Total	**3,175.7**	**11.96%**	**2,607.1**	**13.72%**	**568.6**	**7.52%**
Other Areas						
Zone X						
Agricultural	489.0	1.84%	331.2	1.74%	157.8	2.09%
Care/Health	82.1	0.31%	57.0	0.30%	25.1	0.33%
Church/Welfare	177.8	0.67%	157.0	0.83%	20.9	0.28%
Industrial	521.6	1.96%	441.5	2.32%	80.1	1.06%
Miscellaneous	1,497.6	5.64%	0.0	0.00%	1,497.6	19.81%
Office	592.1	2.23%	523.1	2.75%	69.0	0.91%
Public/Utilities	506.6	1.91%	0	0.00%	506.6	6.70%
Recreational	255.3	0.96%	206.7	1.09%	48.6	0.64%

Flood Zone/ Property Use	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Residential	13,308.0	50.11%	13,092.1	68.92%	215.8	2.86%
Retail/ Commercial	667.8	2.51%	636.3	3.35%	31.5	0.42%
Unknown	0.1	0.00%	0.1	0.00%	0	
Vacant	4,015.9	15.12%	466.7	2.46%	3,549.1	46.95%
Agricultural	22,113.8	83.27%	15,911.5	83.76%	6,202.2	82.04%
Other Areas Total	**22,113.8**	**83.27%**	**15,911.5**	**83.76%**	**6,202.2**	**82.04%**
Elk Grove Total	**26,555.9**	**100.0%**	**18,996.0**	**100.0%**	**7,559.9**	**100.0%**

Source: FEMA 11/2/2018 DFIRM

Population at Risk

The DFIRM flood zones were overlayed on the parcel layer. Those residential parcel centroids that intersect the flood zones were counted and multiplied by the 2010 Census Bureau average household factors for Elk Grove – 3.20. According to this analysis, there is a total population of 813 and 12,906 residents of the City at risk to flooding in the 1% and 0.2% annual chance floodplains, respectively. This is shown in Table B-31.

Table B-31 City of Elk Grove – Count of Improved Residential Parcels and Population by Flood Zone

Jurisdiction	1% Annual Chance		0.2% Annual Chance	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Elk Grove	254	813	4,033	12,906

Source: FEMA DFIRM 11/2/2018, Sacramento County 2020 Parcel/Assessor's Data, US Census Bureau

Critical Facilities at Risk

An analysis was performed on the critical facility inventory in Elk Grove in identified DFIRM flood zones. GIS was used to determine whether the critical facility locations intersect a DFIRM flood zones and if so, which zone it intersects. Details of critical facilities in mapped dam inundation areas in the City of Elk Groves are shown in Figure B-19 and detailed in Table B-32. Details of critical facility definition, type, name and address and jurisdiction by DFIRM flood zones are listed in Appendix F.

Figure B-19 City of Elk Grove – Critical Facilities and DFIRM Flood Zones

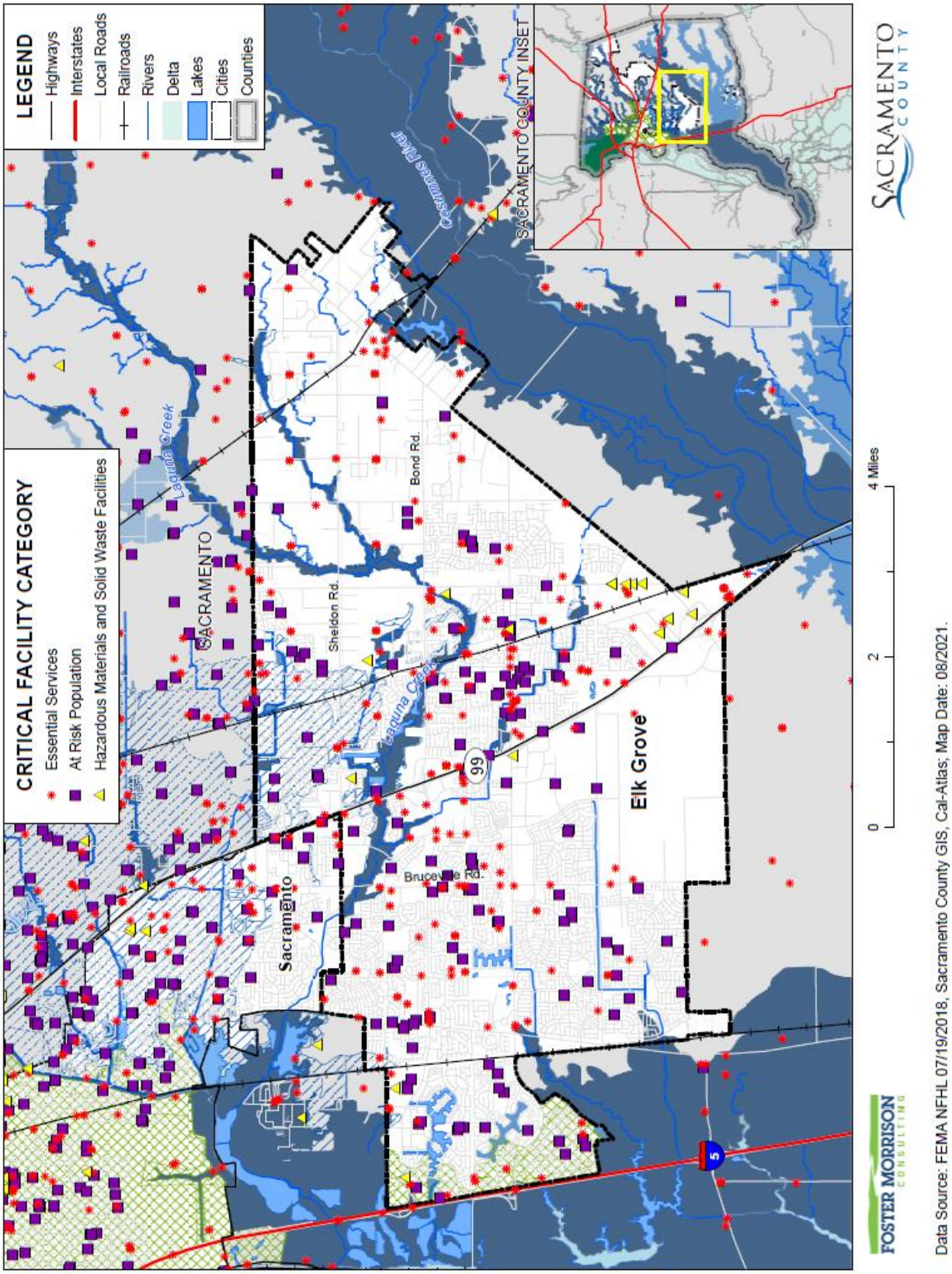


Table B-32 City of Elk Grove – Critical Facilities in FEMA DFIRM Flood Zones by Category and Type

Flood Zone Critical Facility Category	Critical Facility Type	Facility Count
1% Annual Chance Flood Hazard		
Essential Services Facilities	FDIC Insured Banks	1
	Water Well	2
	Total	**3**
At Risk Population Facilities	Places of Worship	1
	Total	**1**
1% Annual Chance Flood Hazard Total		**4**
0.2% Annual Chance Flood Hazard		
Essential Services Facilities	Emergency Evacuation Center	1
	EMS Stations	1
	FDIC Insured Banks	5
	Fire Station	1
	Microwave Service Towers	17
	Water Well	13
	Total	**38**
At Risk Population Facilities	Day Care Center	4
	Places of Worship	6
	School	5
	Total	**15**
Hazardous Materials and Solid Waste Facilities	Leaky Underground Storage Tank	1
	Total	**1**
0.2% Annual Chance Flood Hazard Total		**54**
Other Areas		
Essential Services Facilities	Cellular Tower	2
	Emergency Evacuation Center	7
	EMS Stations	6
	FDIC Insured Banks	20
	Fire Station	5
	Hospital or Urgent Care	1
	Law Enforcement	2
	Microwave Service Towers	90
	Sewage Treatment Plant	1
	Water Well	143
	Total	**277**
At Risk Population Facilities	Day Care Center	32

Flood Zone Critical Facility Category	Critical Facility Type	Facility Count
	Mobile Home Parks	1
	Places of Worship	82
	School	40
	Total	**155**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	6
	EPA ER TSCA Facility	3
	Leaky Underground Storage Tank	3
	Solid Waste Facility	4
	Waste Transfer Station	1
	Total	**17**
Other Areas Total		**449**
Elk Grove Total		**507**

Source: City of Elk Grove, FEMA 7/19/2018 DFIRM

Insurance Coverage, Claims Paid, and Repetitive Losses

Standard property insurance does not include flood coverage because of the relatively high risk. The National Flood Insurance Program (NFIP) provides flood insurance to residents in those communities that participate in the NFIP. Federal financial assistance requires the purchase of flood for structures located within a 100-year floodplain – a requirement that affects nearly all mortgages financed through commercial lending institutions. Flood insurance is also recommended for all structures protected by levees, even if not mapped within a floodplain.

The City of Elk Grove joined the National Flood Insurance Program (NFIP) on October 15, 2001. The City does not participate in CRS program. NFIP data indicates that as of March 24, 2020, there were 1,002 flood insurance policies in force in the City with $337,426,500 of coverage. Of the 1,002 policies, 986 were residential (single-family homes) and 16 were non-residential. Of the 1,002 policies, 33 were in the A zones, while 979 in B, C, and X zones. There have been 5 historical claims for flood losses totaling $103,021.75. NFIP data further indicates that there are no repetitive loss (RL) or severe repetitive loss (SRL) buildings in Elk Grove. There have been no substantial damage claims.

Based on this analysis of insurance coverage, the City has values at risk to the 1% annual chance and greater floods. Of the 269 improved parcels within the 1% annual chance flood zone, only 33 (or 12.3 percent) of those parcels maintain flood insurance. This can be seen on Table B-33.

Table B-33 City of Elk Grove – Percentage of Policy Holders to Improved Parcels in the 1% Annual Chance Floodplain

Jurisdiction	Improved Parcels in SFHA (1% Annual Chance) Floodplain*	Insurance Policies in the SFHA (1% Annual Chance) Floodplain	Percentage of 1% Annual Chance Floodplain Parcels Currently Insured
City of Elk Grove	269	33	12.3%

Source: FEMA DFIRM 11/2/2018, Sacramento County 2020 Parcel/Assessor's Data

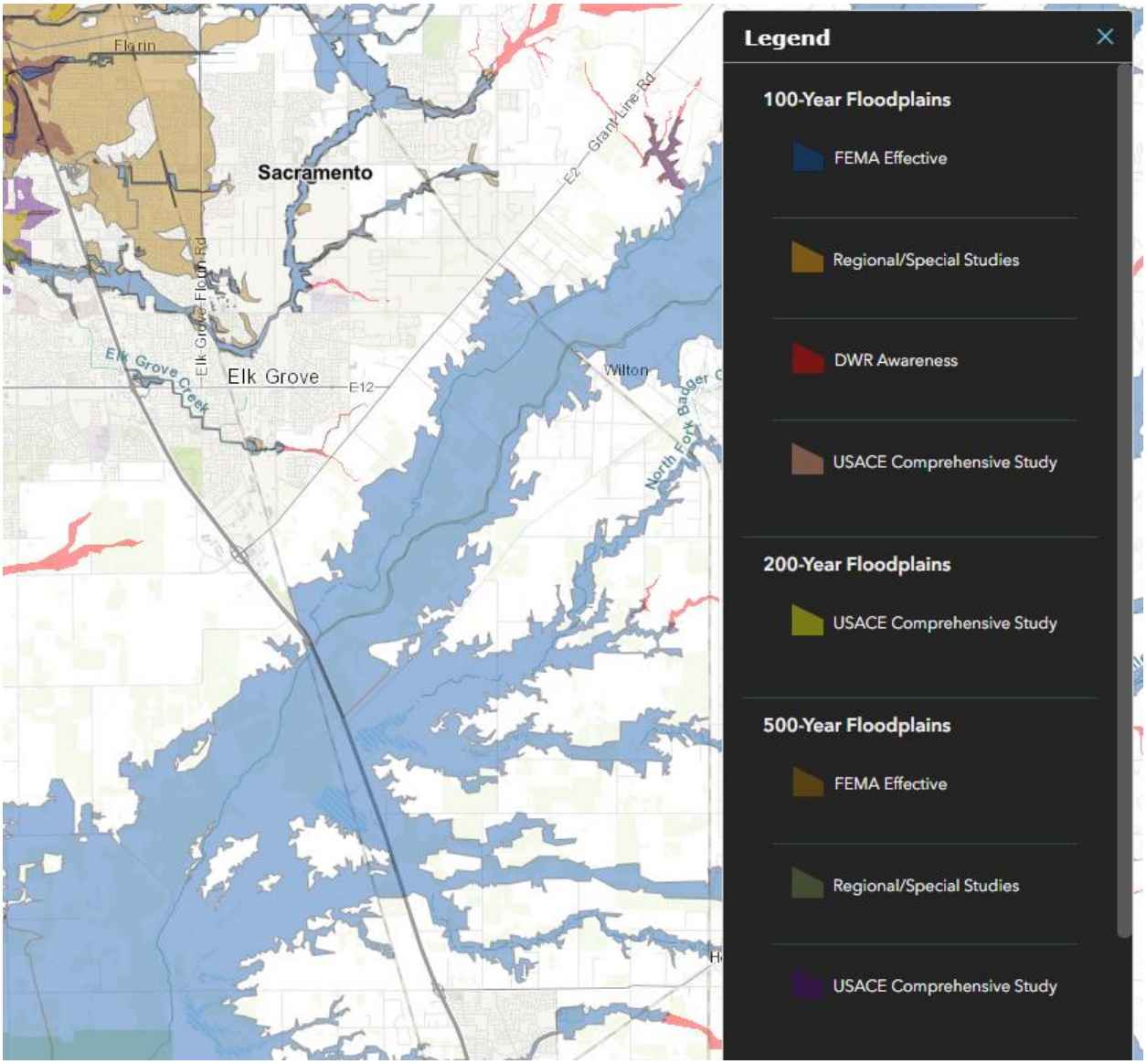
California Department of Water Resources Best Available Maps (BAM)

The FEMA regulatory maps provide just one perspective on flood risks in Sacramento County. Senate Bill 5 (SB 5), enacted in 2007, authorized the California DWR to develop the Best Available Maps (BAM) displaying 100- and 200-year floodplains for areas located within the Nevada-San Joaquin (SAC-SJ) Valley watershed. This effort was completed by DWR in 2008. DWR has expanded the BAM to cover all counties in the State and to include 500-year floodplains.

Different than the FEMA DFIRMs which have been prepared to support the NFIP and reflect only the 100-year event risk, the BAMs are provided for informational purposes and are intended to reflect current 100-, 200-(as applicable), and 500-year event risks using the best available data. The 100-year floodplain limits on the BAM are a composite of multiple 100-year floodplain mapping sources. It is intended to show all currently identified areas at risk for a 100-year flood event, including FEMA's 100-year floodplains. The BAM are comprised of different engineering studies performed by FEMA, Corps, and DWR for assessment of potential 100-, 200-, and 500-year floodplain areas. These studies are used for different planning and/or regulatory applications, and for each flood frequency may use varied analytical and quality control criteria depending on the study type requirements.

The value in the BAMs is that they provide a bigger picture view of potential flood risk to the City than that provided in the FEMA DFIRMs. The BAM map for Elk Grove is shown in Figure B-20.

Figure B-20 City of Elk Grove – Best Available Map



Source: California DWR

Legend explanation: Blue - FEMA 1%, Orange – Local 1% (developed from local agencies), Red – DWR 1%r (Awareness floodplains identify the 1% annual chance flood hazard areas using approximate assessment procedures.), Pink – USACE 1% (2002 Sac and San Joaquin River Basins Comp Study), Yellow – USACE 0.5% (2002 Sac and San Joaquin River Basins Comp Study), Tan – FEMA 0.2%, Grey – Local 0.2% (developed from local agencies), Purple – USACE 0.2% (2002 Sac and San Joaquin River Basins Comp Study).

Future Development

The potential for flooding may increase as floodwaters are channeled due to land development. Such changes can exacerbate flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. Floodplain modeling and master planning should be based on build out property use to ensure that all new development remains safe from future flooding. While local floodplain

management, stormwater management, and water quality regulations and policies address these changes on a site-by-site basis, their cumulative effects can have a negative impact on the overall floodplain.

The City enforces Chapter 16.50 of the Elk Grove Municipal Code (EGMC) - Flood Damage Prevention. If development is to occur in the floodplain, it is required to conform to the elevation and other standards of the EGMC. While the use of fill to create buildable area is strongly discouraged by City policy, should it be allowed, there shall be no net increase to the water surface elevation adjacent to, downstream, and upstream of the development, as determined by the City. Other improvements may be required as part of the proposed project. A Conditional Letter of Map Revision (CLOMR) issued by FEMA shall be required prior to grading permit issuance, unless only a Letter of Map Revision (LOMR) is required. A LOMR issued by FEMA shall be required prior to issuance of the first building permit.

GIS Analysis

The City provided future development areas were used as the basis for the inventory of future development areas for the City. Using the GIS parcel spatial file for each of these areas, the areas and parcels associated with future development projects for which the analysis was to be performed were identified. Utilizing the future development project spatial layer, the parcel centroid data was intersected to determine the parcel counts within each area. Figure B-21 shows the locations of future development areas the City is planning to develop on the DFIRM flood zones. Table B-34 shows the parcels and acreages of each future development area in the City in the DFIRM flood zones.

Figure B-21 City of Elk Grove – DFIRM Flood Zones and Future Development

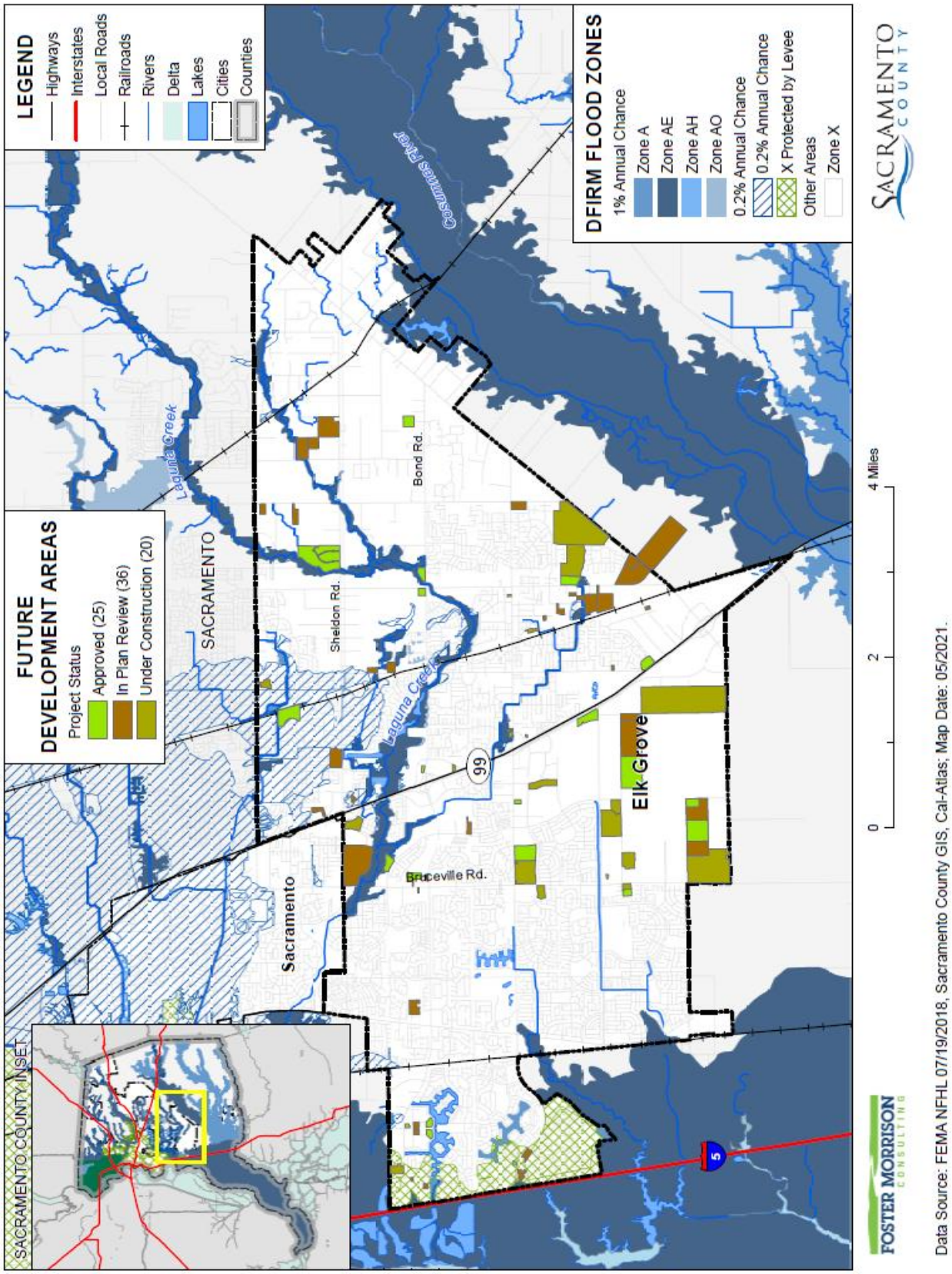


Table B-34 City of Elk Grove – DFIRM Flood Zones and Future Development Areas

Flood Zone / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
1% Annual Chance Flood Hazard			
Zone AE			
Approved			
Sheldon Park Estates North Gated Community	5	0	10.4
Shell Gas Station	1	0	1.0
Approved Total	***6***	***0***	***11.4***
In Plan Review			
8633 Bader Road Map	1	1	20.3
Elk Grove Muslim Center	1	1	2.4
In Plan Review Total	***2***	***2***	***22.6***
Zone AE Total	**8**	**2**	**34.1**
1% Annual Chance Flood Hazard Total	**8**	**2**	**34.1**
0.2% Annual Chance Flood Hazard			
0.2% Annual Chance			
Approved			
Sheldon Park Estates North Gated Community	1	0	18.7
T-Mobile Jones Family Park	1	0	26.7
Approved Total	***2***	***0***	***45.3***
In Plan Review			
Hotel at Sheldon Place	1	0	2.3
Sheldon Grove Subdivision	1	0	19.8
In Plan Review Total	***2***	***0***	***22.0***
Under Construction			
Calvine Pointe	1	0	7.1
Under Construction Total	***1***	***0***	***7.1***
0.2% Annual Chance Total	**5**	**0**	**74.5**
X Protected by Levee			
Approved			
Arco AM/PM Car Wash Expansion	1	1	1.2
Approved Total	***1***	***1***	***1.2***
In Plan Review			
California Northstate University Medical Center	6	5	5.3
Candlewood Hotel	1	0	1.9
Elk Grove Independent Senior Housing	2	0	5.2
Wendy's Remodel	1	1	0.8

Flood Zone / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
In Plan Review Total	***10***	***6***	***13.1***
Under Construction			
Cafeteria Expansion	1	1	9.2
Under Construction Total	***1***	***1***	***9.2***
X Protected by Levee Total	**12**	**8**	**23.5**
0.2% Annual Chance Flood Hazard Total	**17**	**8**	**98.0**
Other Areas			
Zone X			
Approved			
AAA Services Building	1	0	0.7
Bond Road Rezone and Tentative Map	2	2	10.1
Buffalo Wild Wings	1	0	1.0
Creekside Estates	1	0	7.0
Crooked Creek Industrial Park	2	1	14.2
Dignity Health Medical Campus	7	1	28.0
Elk Grove Masonic Lodge	1	0	0.7
GreenSpace Self Storage Facility	1	0	3.0
Laguna West Plaza Pads 1 & 2	2	0	1.6
New Faze Skilled Nursing	1	0	15.1
Poppy Keys Southwest	3	0	60.2
Quail Run II	1	0	4.8
Raising Cane's Restaurant	1	1	1.7
Seasons at Stonebrook Master Home Plan	3	0	79.5
Sheldon Park Estates North Gated Community	22	9	42.8
Shell with 7-Eleven & Storage Facility	4	0	4.5
Target Exterior Remodel	1	1	10.1
T-Mobile Evergreen Springs	1	1	2.3
Toscano Apartments	2	0	7.9
Trojan Storage II	1	0	8.9
U-Haul	4	0	10.2
Vineyard at Madeira Pad E	1	0	0.7
Approved Total	***63***	***16***	***315.2***
In Plan Review			
10069 Elk Grove Florin Road TPM	1	1	1.1
10075 Sheldon Road Tentative Parcel Map	1	1	35.3
8580 Bradshaw Road	1	0	8.3

Flood Zone / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
8651 Bader Road TPM and Rezone	1	1	10.0
9730 Kent Street Addition	1	0	1.3
Bartholomew Vineyard Amendment	1	1	10.3
Bow Stockton Apartments	2	1	5.6
Burger King Remodel	1	1	0.7
Eden Gardens Banquet Hall	1	1	5.2
Elk Grove Food Bank	1	1	2.0
Elk Grove Muslim Center	1	0	4.6
Grant Line Construction Aggregate Production and Recycling Facility	1	0	24.8
In-N-Out Burger - The Ridge Pad 14	1	0	0.9
Kubota Tractor Corporation	1	1	101.6
Laguna Main Street Apartments	4	0	5.8
Laguna Springs Corporate Center - Building A	1	0	4.9
Life Storage Expansion	1	0	4.6
Mendes Villages 2 & 3	1	0	30.6
Mountain Elk Villas	1	0	12.1
Poppy Keys Southeast	4	0	66.5
S&J Storage	1	0	4.3
Sheldon Farms MHP	2	0	80.9
Tegan Estates	3	3	11.9
Telos Greens TSM and Rezone	1	0	26.4
Tractor Supply Company	1	0	67.4
Triangle Point TSM Phase 2	1	0	67.4
Warda Warehouse 3	1	0	1.5
Waterman Brinkman Logistics Center	3	1	21.6
In Plan Review Total	**40**	**13**	**617.7**
Under Construction			
Bruceville Meadows Residential	253	0	96.5
Bruceville Point	2	1	8.3
Fieldstone North and South	514	234	113.6
Fortune School	2	0	40.0
Madeira South (Poppy Lane)	221	92	35.1
Madeira South Lot A Master House Plans	1	0	10.6
McGeary Ranch	84	3	13.3
Mendes Subdivision	1	0	39.5
Milestone	126	29	45.5

Flood Zone / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Railroad Street	4	1	3.2
Sheldon Farms North	1	0	43.8
Sheldon Terrace	204	74	14.3
Sterling Meadows	623	444	172.2
The Gardens at Quail Run	1	0	4.4
The Park Senior Housing	3	0	15.1
The Ridge Shopping Center	20	8	39.6
Towneplace Suites	1	1	1.7
Wienerschnitzel	1	0	0.4
Under Construction Total	***2,062***	***887***	***697.2***
Zone X Total	**2,165**	**916**	**1,630.1**
Other Areas Total	**2,165**	**916**	**1,630.1**
Grand Total	**2,190**	**926**	**1,762.1**

Source: City of Elk Grove GIS, FEMA 7/19/2018 DFIRM

Flood: Localized Stormwater Flooding

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile and Problem Description

Flooding occurs in areas other than the FEMA mapped 1% and 0.2% annual chance floodplains. Flooding may be from drainages not studied by FEMA, lack of or inadequate drainage infrastructure, or inadequate maintenance. Localized, stormwater flooding occurs throughout the City during the rainy season from November through April. Prolonged heavy rainfall contributes to a large volume of runoff resulting in high peak flows of moderate duration. This may produce localized street flooding due to high water in the waterway/creek systems. The previous discussion in the Flood: 1%/0.2% Annual Chance section included detailed information of the City's drainage and localized creek systems that during these heavy rains can be overwhelmed and cause flooding.

Location and Extent

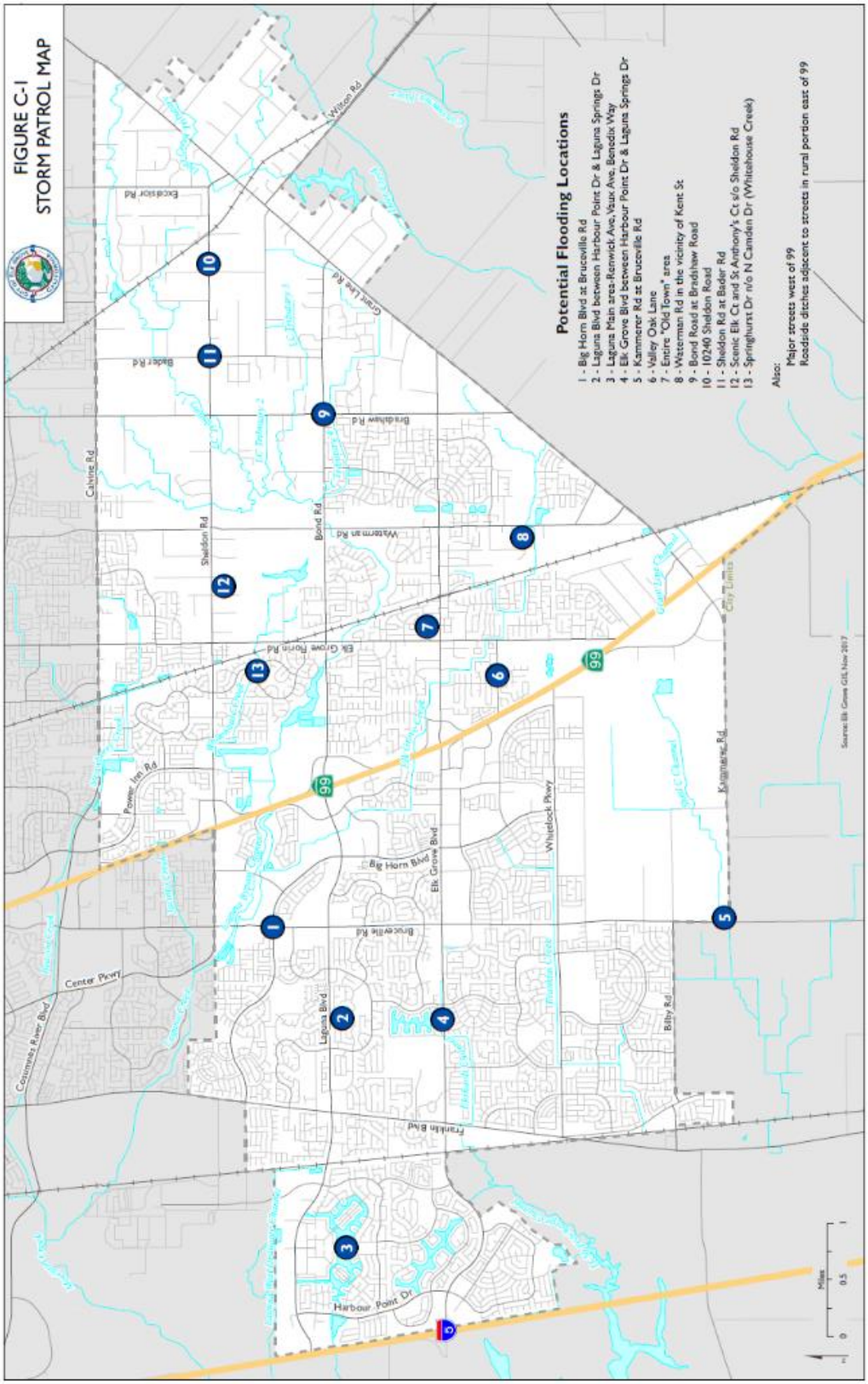
The City of Elk Grove is subject to localized flooding throughout the City. Flood extents are usually measured in areas affected, velocity of flooding, and depths of flooding. Expected flood depths in the City vary by location. Flood durations in the City tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Localized flooding in the City tends to have a shorter speed of onset, especially when antecedent rainfall has soaked the ground and reduced its capacity to absorb additional moisture.

The East Elk Grove area and rural area has localized flooding which is widespread but generally minor. These areas of potential concern are included in Figure B-22 and Table B-35. In portions of this area, roadside ditches and culverts lack volume capacity and are prone to blockages from debris. Streets of primary concern that are monitored during rain events in this area are Sheldon Road, Bradshaw Road, Grant Line Road, Waterman Road, Bader Road, Bond Road, and Elk Grove Boulevard.

During heavy rainfall, the major streets west of Highway 99 experience localized flooding due to inlets being blocked with leaves resulting in standing water on one or more lanes in the roadway. Major streets of primary concern that are monitored during rain events in this area are Big Horn Boulevard, Laguna Boulevard, Bruceville Road, Elk Grove Boulevard, and Franklin Boulevard.

Figure B-22 and Table B-35 identifies known and past occurrences of such areas and the associated problems encountered. This list is an initial inventory of key problem areas and is not intended to be a complete inventory of all problems and locations associated with severe weather events and localized flooding in the City.

Figure B-22 Potential Localized Flooding Locations



Source: City of Elk Grove GIS.

Table B-35 City of Elk Grove's Road List of Localized Flooding Problem Areas

Road Name	Flooding	Pavement Deterioration	Washout	High Water	Landslide/ Mudslide	Debris	Downed Trees
Big Horn Blvd. at Bruceville Rd.	X					X	
Laguna Blvd. between Harbour Point Dr. and Laguna Springs Dr.	X			X		X	X
Laguna Main areas – Renwick Ave., Vaux Ave., Benedix Way	X					X	X
Elk Grove Blvd. between Harbour Point Dr. and Laguna Springs Dr.	X			X		X	X
Kammerer Rd. at Bruceville Rd.	X	X		X		X	
Valley Oak Ln.	X					X	X
Entire "Old Town" Area	X					X	X
Waterman Rd. in the vicinity of Kent St.	X			X		X	
Bond Rd. at Bradshaw Rd.	X					X	
Sheldon Rd.	X					X	
Sheldon Rd. at Bader Rd.	X					X	X
Scenic Elk Ct. and St. Anthony's Ct. s/o Sheldon Rd.	X					X	
Springhurst Dr. north of N. Camden Dr.	X					X	
Major Roads west of Hwy. 99	X					X	X
Roadside Ditches East Elk Grove Area/ Rural area	X					X	X

Source: City of Elk Grove

Past Occurrences

The City noted that localized flooding is an annual occurrence and affects those areas described above.

Vulnerability to and Impacts from Localized Flooding

Historically, much of the growth in the City and County has occurred adjacent to streams, resulting in significant damages to property, and losses from disruption of community activities when the streams overflow. Additional development in the watersheds of these streams affects both the frequency and duration of damaging floods through an increase in stormwater runoff.

Primary concerns associated with stormwater flooding include impacts to infrastructure that provides a means of ingress and egress throughout the community. Ground saturation can result in instability, collapse, or other damage to trees, structures, roadways and other critical infrastructure. Objects can also be buried or destroyed through sediment deposition. Floodwaters can break utility lines and interrupt services. Standing water can cause damage to crops, roads, and foundations. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

The City has not experienced any large flooding events since incorporation, although smaller localized flooding events occur annually. Localized flooding occurs primarily during the winter and spring months, with areas of concern largely near waterways and creek systems that swell during heavy rainfall events. Roadway flooding has also occurred in specific locations during heavy rainfall events due to inadequate drainage or blockages of the drainage system. With expected increases in average annual precipitation as a result of climate change, the City is expecting to see increased rainfall during larger storm events. This could place increased stress on stormwater drainage systems.

Future Development

Future development in the City will use Low Impact Development (LID) techniques and infiltration best management practices (BMPs) such as infiltration trenches, infiltration basins, bio retention planters, porous pavement, dry wells and green streets. The City will need to be proactive to ensure that increased development has proper siting and drainage for stormwater. The risk of localized flooding to future development can also be minimized by accurate recordkeeping of repetitive localized flooding. Mitigating the causes of the localized stormwater flooding will reduce future risks of losses.

Levee Failure

Likelihood of Future Occurrence–Occasional
Vulnerability–High

Hazard Profile and Problem Description

A levee is a raised area that runs along the banks of a stream or canal. Levees reinforce the banks and help prevent flooding by containing higher flow events to the main channel of a stream. By confining the flow to a narrower steam channel, levees can also increase the speed of the water. Levees can be natural or man-made.

Levees provide strong flood protection, but they are not failsafe. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events or dam failure. For example, levees can be certified to provide protection against the 1% annual chance flood. Levees reduce, not eliminate, the risk to individuals and structures located behind them. A levee system failure or overtopping can create severe flooding and high water velocities. Levee failure can occur through overtopping or from seepage issues resulting from burrowing rodents, general erosion, excessive vegetation and root systems and other factors that compromise the integrity of the levee. No levee provides protection from events for which it was not designed, and proper operation and maintenance are necessary to reduce the probability of failure.

Location and Extent

There is not a scientific scale or measurement system in place for levee failure. Expected flood depths from a levee failure in the City are not known. The speed of onset is slow as the river rises, but if a levee fails the warning times are generally short for those in the inundation area. The duration of levee failure risk times can be hours to weeks, depending on the river flows that the levee holds back. The HMPC noted that when northern California reservoirs are nearing maximum capacity, they release water through the river systems, causing additional burdens on County levees.

Additionally, flood extents can generally be measured in volume, velocity, and depths of flooding. Expected flood depths in the City vary, depending on the nature and extent of a flood event; specific depths are unknown. Flood durations in the City tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Flooding in the City tends to have a shorter speed of onset, due to the amount of water that flows through the City.

The Elk Grove area is protected by a number of project levees that are part of federally authorized flood projects and are considered part of the State Plan of Flood Control. There are no project levees in Elk Grove, but several project levees located outside of the City affect flooding in the City along the Sacramento River. A number of non-project levees also provide flood protection to the community. These non-project levees were generally constructed prior to project levees and without federal or State assistance. They are not part of the State Plan of Flood Control. Non-project levees are located along the eastern side of Interstate 5 and along Morrison Creek, Laguna Creek, and the Cosumnes River. Figure B-23 shows the FEMA DFIRM X Protected by Levee areas in the City. Geographical levee failure flood extent for the City from the FEMA DFIRMs is shown in Table B-36.

Figure B-23 City of Elk Grove – DFIRM X Protected by Levee Areas

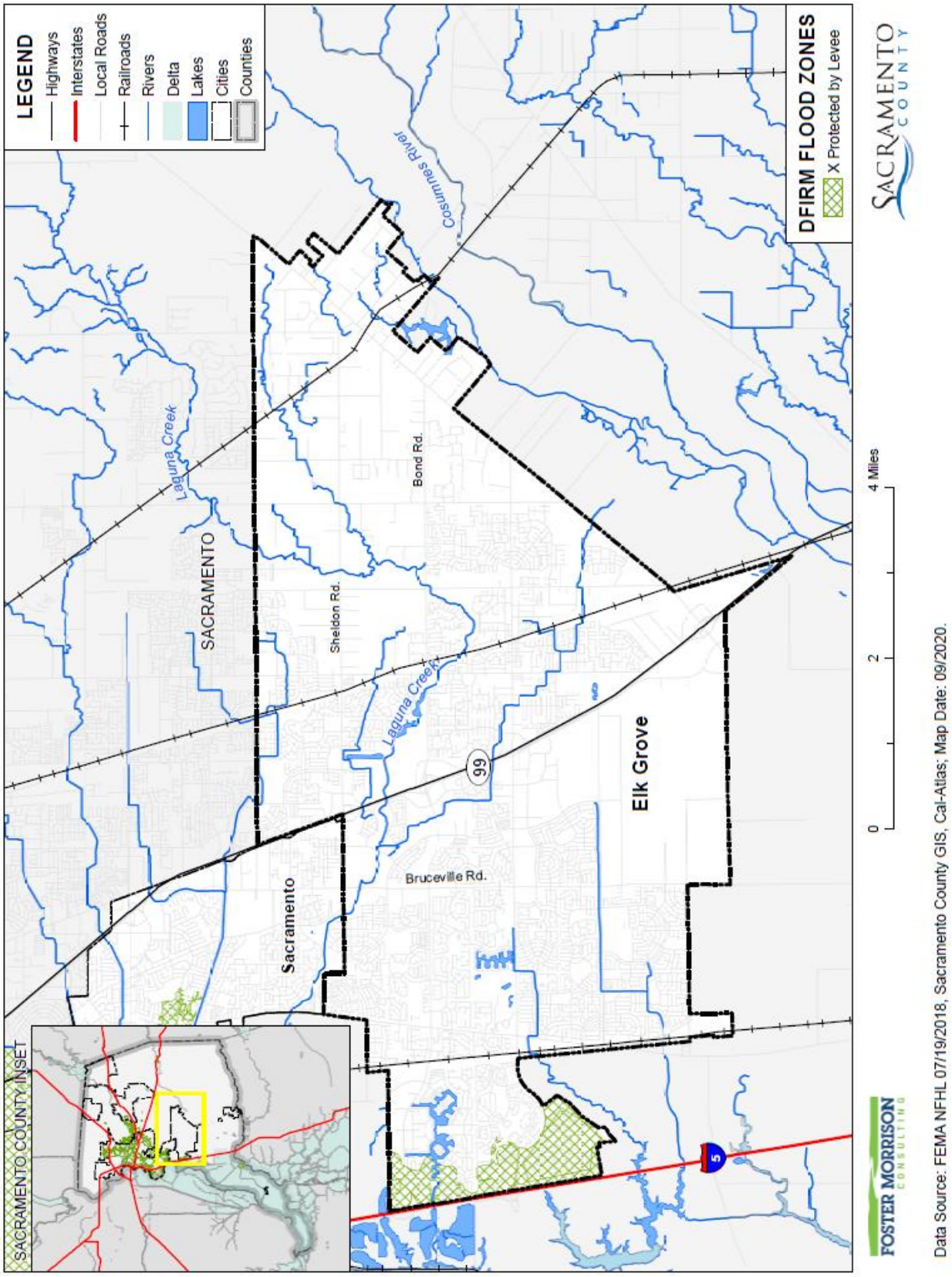


Table B-36 City of Elk Grove – Geographical Levee Failure Extents

X Protected by Levee/ Jurisdiction	Total Acres	% of Total Acres*	Improved Acres	% of Total Improved Acres*	Unimproved Acres	% of Total Unimproved Acres*
Elk Grove	1,966	5.64%	1,774	6.81%	192	2.18%

Source: FEMA DFIRM 7/19/2018

*Percentage of total acres is the percent of total acres of the entire County Planning Area, not the total acres of the jurisdiction

Past Occurrences

There have been two state and two federal disaster declaration from levee failure. This can be seen in Table B-37.

Table B-37 Sacramento County – State and Federal Levee Failure Disaster Declarations 1950-2020

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Levee Break	2	1972, 1980	2	1972, 1980

Source: Cal OES, FEMA

There have been no past occurrences of levee failure in the City.

Vulnerability to and Impacts from Levee Failure

A levee failure can range from a small, uncontrolled release to a catastrophic failure. Levee failure flooding can occur as the result of prolonged rainfall and flooding. The primary danger associated with levee failure is the high velocity flooding of those properties outside and downstream of the breach. Generally, levees fail due to overtopping or collapse. A catastrophic levee failure resulting from collapse can occur very quickly with relatively little warning. Such a failure could occur where a levee is saturated and the high hydrostatic water pressure on the river side, coupled with erosion of the levee from high water flows or an inherent defect in the levee, causes an almost instant collapse of a portion of the levee. Under such circumstances, structures located relatively near the break will suffer immediate and extensive damage. Several hundred yards away from the break the energy of the flood waters will be dispersed sufficiently to reduce, but not eliminate, flooding damage to structures in its path. The flood water will flow in a relatively shallow path toward any low point in the affected area. Flood water will collect in these low areas and the levels will rise as the flow continues. When the rivers are high, it is not possible to close or repair a levee break until the water surface in the river and the flooded area equalize.

The City of Elk Grove 2019 General Plan noted that the existing levee system in areas surrounding Elk Grove was initially constructed by hand labor, and later by dredging to hold back river floods and tidal influences, to obtain additional lands for grazing and crop growing. Constant maintenance is necessary to hold these levees against the river floods that threaten surrounding areas. Because levees are vulnerable to peat oxidation as well as sand, silt, and peat erosion, new material is continually added to maintain them. Subsiding farmlands adjacent to levees may increase water pressure against the levees, adding to the

potential for levee failure. In addition, many levees, known as non-project levees, are not maintained to any specified standard, which can increase the likelihood of failure and inundation.

The City's levee system is designed to protect the Laguna West communities from the backwater effects of the Cosumnes and Mokelumne Rivers. These levees have never experienced flood waters on the water side of the levees. If a 100-year flood event should occur, backwater effects from the Cosumnes and Mokelumne Rivers are expected to last for only one (1) to two (2) days as the Cosumnes River is an uncontrolled watershed and the peak flows from the river will last for a short period of time.

A major overtopping of a levee may result in severe erosion of the levee crowns on the landward side and cause levee failure over a period of minutes to several hours. A severe levee overtopping can, therefore, be considered as a levee break for the purpose of determining the extent of flooding that any area will suffer. Generally, overtopping can be predicted based on river stages and the warning given depending on the source of the flood waters. On the Sacramento River system, depending on which dams are releasing the flows, advance warning of river stages may be as much as 24 hours.

Should a levee fail, some or all of the area protected by the levees would be at risk to flooding. Impacts from a levee failure include property damage, critical facility damage, and life safety issues. Business and economic losses could be large as facilities could be flooded and services interrupted. School and road closures could occur. Road closures would impede both evacuation routes and ability of first responders to quickly respond to calls for aid. Other problems connected with levee failure flooding include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

Assets at Risk

Based on the vulnerability of Elk Grove to the levee failure hazard, the sections that follow describes significant assets at risk in the City of Elk Grove. This section includes the values at risk, population at risk, and critical facilities at risk.

Values at Risk

GIS was used to determine the possible impacts of levee failure flooding within the City of Elk Grove. The methodology described in Section 4.3.14 of the Base Plan was followed in determining structures and values at risk to the levee failure flooding. Table B-38 shows the property use, improved parcel count, improved values, estimated contents, and total values that fall in FEMA X Protected by Levee flood zones in the City.

Table B-38 City of Elk Grove – Count and Values of Parcels at Risk in X Protected by Levee Flood Zone and Property Use

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
X Protected by Levee						
Agricultural	0	0	$0	$0	$0	$0
Care/Health	1	1	$745,000	$1,735,000	$1,735,000	$4,215,000

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Church/Welfare	4	4	$4,115,302	$15,770,564	$15,770,564	$35,656,430
Industrial	6	3	$9,383,367	$20,127,566	$30,191,348	$59,702,281
Miscellaneous	60	0	$584	$0	$0	$584
Office	51	44	$14,324,891	$93,962,948	$93,962,948	$202,250,787
Public/Utilities	0	0	$0	$0	$0	$0
Recreational	1	1	$520,200	$1,500,000	$1,500,000	$3,520,200
Residential	2,584	2,567	$269,922,489	$852,199,179	$426,099,611	$1,548,221,248
Retail/ Commercial	34	32	$23,045,949	$40,740,435	$40,740,435	$104,526,819
Unknown	0	0	$0	$0	$0	$0
Vacant	23	0	$17,877,606	$0	$0	$17,877,606
X Protected by Levee Total	**2,764**	**2,652**	**$339,935,388**	**$1,026,035,692**	**$609,999,906**	**$1,975,970,955**

Source: FEMA 11/2/2018 DFIRM, Sacramento County 2020 Parcel/Assessor's Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Table B-39 shows City of Elk Grove levee failure flood loss estimates and improved values at risk by FEMA X Protected by Levee flood zones.

Table B-39 City of Elk Grove – X Protected by Levee Flood Loss Estimates

Flood Zone	Total Parcel Count	Improved Parcel Count	Improved Structure Value	Estimated Contents Value	Total Value	Loss Estimate	Loss Ratio
X Protected by Levee	4,257	4,085	$1,222,120,847	$705,971,312	$1,928,092,159	$385,618,432	0.21%

Source: FEMA 11/2/2018 DFIRM, Sacramento County 2020 Parcel/Assessor's Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

According to Table B-39, the City of Elk Grove has 4,085 parcels and $1.93 billion of structure and contents values or values in the X Protected by Levee flood zone. These values can be refined a step further. Applying the 20 percent damage factor as previously described in Section 4.3.11 of the Base Plan, two feet of flooding would cause $385 million in flood damages in the City.

Structures protected by levees that fail are often total losses. The analysis above assumes all levees in the City break at one time, which is unlikely. The extent and depth of actual flooding and associated damage will vary depending on the location, nature, depth, and extent of any levee break.

Population at Risk

The DFIRM flood zones were overlayed on the parcel layer. Those residential parcel centroids that intersect the levee failure flood zones were counted and multiplied by the 2010 Census Bureau average household factors for Elk Grove – 3.20. According to this analysis, there is a total population of 813 residents of the City at risk to levee failure flooding. This is shown in Table B-31.

Table B-40 City of Elk Grove – Count of Improved Residential Parcels and Population by Flood Zone

Jurisdiction	X Protected by Levee	
	Improved Residential Parcels	Population at Risk
Elk Grove	2,567	8,214

Source: FEMA DFIRM 11/2/2018, Sacramento County 2020 Parcel/Assessor's Data, US Census Bureau

Critical Facilities at Risk

An analysis was performed on the critical facility inventory in Elk Grove in identified DFIRM X Protected by Levee flood zones. GIS was used to determine whether the critical facility locations intersect a DFIRM flood zones and if so, which zone it intersects. Details of critical facilities in mapped dam inundation areas in the City of Elk Groves are shown in Figure B-24 and detailed in Table B-41. Details of critical facility definition, type, name and address and jurisdiction by DFIRM X Protected by Levee flood zones are listed in Appendix F.

Figure B-24 City of Elk Grove – Critical Facilities in X Protected by Levee Flood Zones

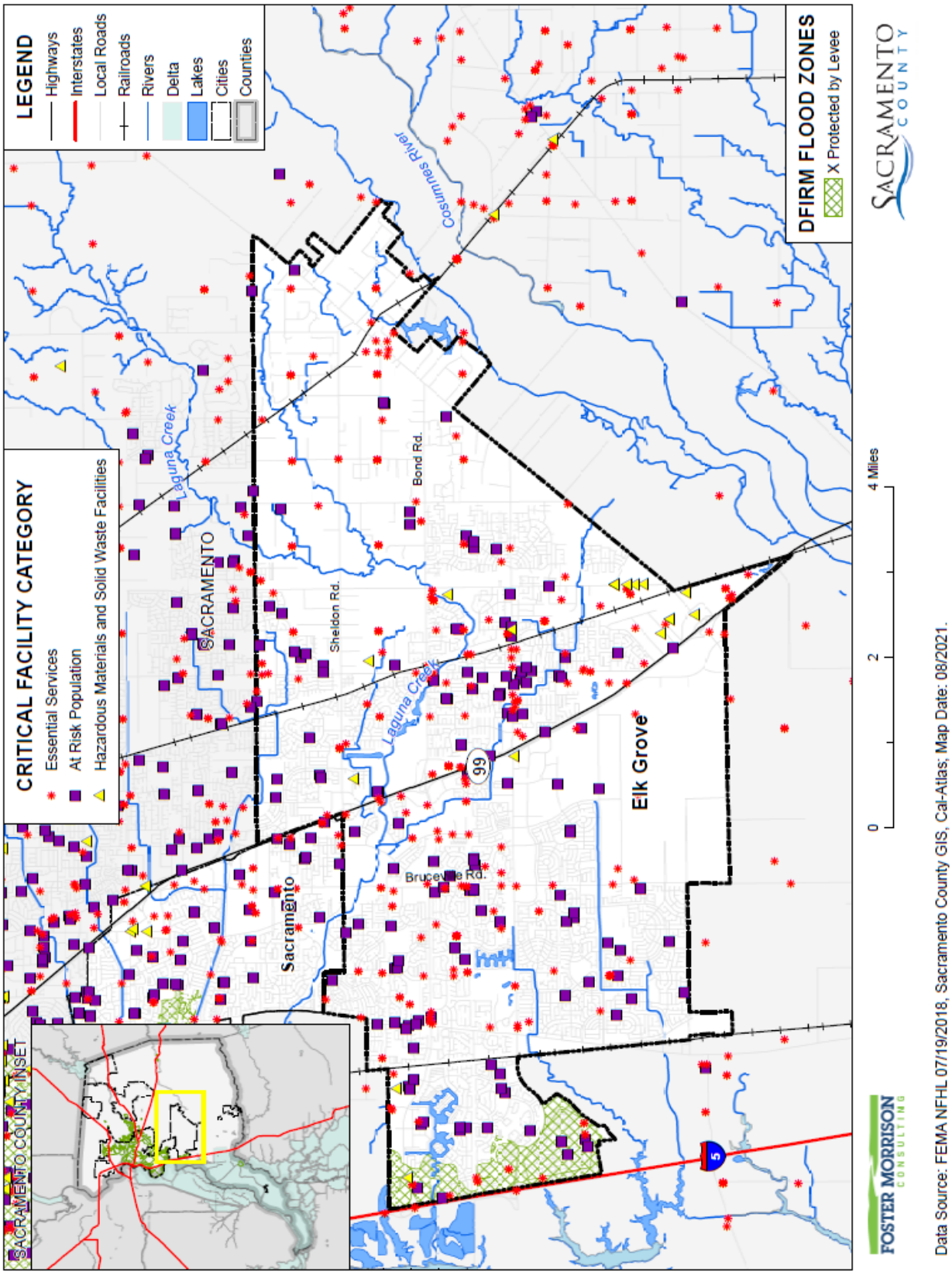


Table B-41 City of Elk Grove – Critical Facilities in DFIRM X Protected by Levee Flood Zones by Category and Type

Flood Zone Critical Facility Category	Critical Facility Type	Facility Count
0.2% Annual Chance Flood Hazard – X Protected by Levee		
Essential Services Facilities	Emergency Evacuation Center	1
	EMS Stations	1
	FDIC Insured Banks	5
	Fire Station	1
	Microwave Service Towers	7
	Water Well	12
	Total	**27**
At Risk Population Facilities	Day Care Center	3
	Places of Worship	1
	School	4
	Total	**8**
Hazardous Materials and Solid Waste Facilities	–	–
	Total	**0**
X Protected by Levee Flood Hazard Total		**35**

Source: City of Elk Grove, FEMA 7/19/2018 DFIRM

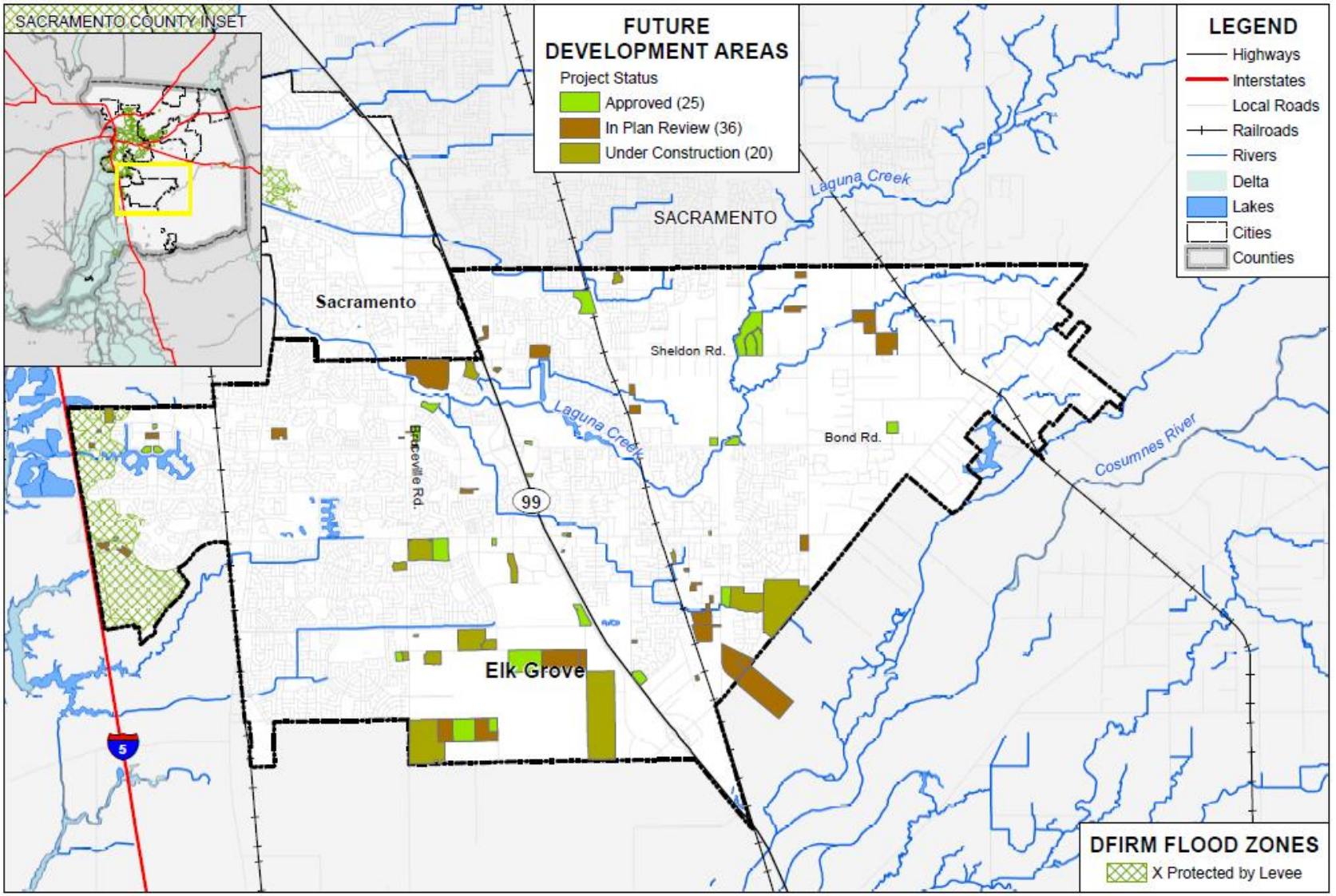
Future Development

The City's levee system is located in the Laguna West/Stonelake communities. These communities are built-out and only infill projects are anticipated to occur in these areas. Any future development will be required to meet the City's development standards, policies and ordinances.

GIS Analysis

The City provided future development areas were used as the basis for the inventory of future development areas for the City. Using the GIS parcel spatial file for each of these areas, the areas and parcels associated with future development projects for which the analysis was to be performed were identified. Utilizing the future development project spatial layer, the parcel centroid data was intersected to determine the parcel counts within each area. Figure B-25 shows the locations of future development areas the City is planning to develop on the DFIRM X Protected by Levee layer. Table B-42 shows the parcels and acreages of each future development area in the City in the X Protected by Levee areas.

Figure B-25 City of Elk Grove – DFIRM X Protected by Levee Zones and Future Development



Data Source: FEMA NFHL 07/19/2018, Sacramento County GIS, Cal-Atlas; Map Date: 05/2021.

Table B-42 City of Elk Grove – DFIRM X Protected by Levee Flood Zones and Future Development Areas

Flood Zone / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
X Protected by Levee			
Approved			
Arco AM/PM Car Wash Expansion	1	1	1.2
Approved Total	**1**	**1**	**1.2**
In Plan Review			
California Northstate University Medical Center	6	5	5.3
Candlewood Hotel	1	0	1.9
Elk Grove Independent Senior Housing	2	0	5.2
Wendy's Remodel	1	1	0.8
In Plan Review Total	**10**	**6**	**13.1**
Under Construction			
Cafeteria Expansion	1	1	9.2
Under Construction Total	**1**	**1**	**9.2**
X Protected by Levee Total	**12**	**8**	**23.5**

Source: City of Elk Grove GIS, FEMA 7/19/2018 DFIRM

Pandemic

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile and Problem Description

According to the World Health Organization (WHO), a disease epidemic occurs when there are more cases of that disease than normal. A pandemic is a worldwide epidemic of a disease. A pandemic may occur when a new virus appears against which the human population has no immunity. A pandemic occurs when a new virus emerges for which people have little or no immunity, and for which there is no vaccine. This disease spreads easily person-to-person, causes serious illness, and can sweep across the country and around the world in a very short time. The U.S. Centers for Disease Control and Prevention has been working closely with other countries and the WHO to strengthen systems to detect outbreaks of that might cause a pandemic and to assist with pandemic planning and preparation. An especially severe a pandemic could lead to high levels of illness, death, social disruption, and economic loss.

Location and Extent

During a pandemic, the whole of the City, County, and surrounding region is at risk, as pandemic is a regional, national, and international event. The speed of onset of pandemic is usually short, while the duration is variable, but can last for more than a year as shown in the 1918/1919 Spanish Flu. There is no

scientific scale to measure the magnitude of pandemic. Pandemics are usually measured in numbers affected by the pandemic, and by number who die from complications from the pandemic.

Past Occurrences

There has been one state and federal disaster declaration due to pandemic, as shown in Table B-43.

Table B-43 Sacramento County – State and Federal Pandemic Disaster Declarations 1950-2020

Disaster Type	Federal Declarations		State Declarations	
	Count	Years	Count	Years
Pandemic	1	2020	1	2020

Source: Cal OES, FEMA

The 20th century saw three outbreaks of pandemic flu.

- The **1918-1919 Influenza Pandemic (H1N1)**
- The **February 1957-1958 Influenza Pandemic (H2N2)**
- The **1968 Influenza Pandemic (H3N2)**

To date, the 21st century has seen two acknowledged pandemics.

- **2009 Swine Flu (H1N1**)
- **2019/2020 COVID 19**

With the COVID-19 pandemic, the city saw major shutdowns as a result of the State stay-at-home order and County public health orders. Non-essential businesses were closed for various periods or were required to operate at limited capacity. Many businesses implemented employee COVID-19 testing measures. The unemployment rate for the City went from 4.0% before the pandemic to 12.7% in June 2020. The hospitality industry was particularly impacted by the pandemic. Occupancy rates declined by as much as 60% from the previous year in April 2020, with the negative rates lasting through March 2021. The overall occupancy rate for 2020 was down by 15% from the previous year. In addition, local schools were closed or on distance learning only operations from on March 7, 2020, to March 30, 2021.

Vulnerability to and Impacts from Pandemic

Pandemic has and will continue to have impacts on human health in the region. A pandemic occurs when a new virus emerges for which there is little or no immunity in the human population; the virus causes serious illness and spreads easily from person-to-person worldwide. There are several strategies that public health officials can use to combat a pandemic. Constant surveillance regarding current pandemic, use of infection control techniques, and administration of vaccines once they become available. Citizens can help prevent spread of a pandemic by staying home, or "self-quarantining," if they suspect they are infected. A pandemic does not affect the buildings, critical facilities, and infrastructure in the City. A pandemic can have varying levels of impact to the citizens of the City and greater County, depending on the nature of the pandemic.

Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines. Hospitalizations and deaths can occur, especially to the elderly or those with pre-existing underlying conditions. As seen with Covid-19, multiple businesses were forced to close temporarily (some permanently) an unemployment rose significantly. Supply chains for food can be interrupted. Prisons may need to release prisoners to comply with social distance standards.

There were numerous impacts to the City from the COVID-19 pandemic, including related to City finances and transit services.

City finances were significantly impacted. In March 2020, to help mitigate the impacts of the anticipated $7 million revenue decrease in projected General Fund revenues for fiscal year 2020-21, staff made efforts to implement reductions to the fiscal year 2020-21 budget. This included adding no new staff positions for proposed fiscal year 2020-21. Also not included in the fiscal year 2020-21 budget was an advance prepayment of the City's PERS unfunded accrued liabilities (UAL) in the amount of $915 thousand. Sales tax assumptions and forecasts a $4.7 million decline in sales for fiscal year 2020-2021 resulting from the pandemic.

In terms of transit services, following Sacramento County's stay-at-home order that was issued in mid-March 2020 the City's fixed-route transit service (e-tran) and Americans with Disabilities Act (ADA) paratransit service (e-van) immediately experienced a significant loss in transit demand and ridership. Additionally, the pandemic negatively impacted the staff personnel available to operate the City's transit services. Both of these factors led the City to temporarily reduce the daily scheduled e-tran commuter route trips by 50%. The e-tran local route services were not reduced in order to continue providing the necessary coverage within the City's jurisdictional boundaries and immediate service area for essential employment and lifeline service needs. The e-van service, which provides on demand, saw lower ridership and demand during the pandemic.

Future Development

Future development is not expected to be significantly impacted by this hazard, though population growth in the City could increase exposure to a pandemic, and increase the ability of each disease to be transmitted among the population of the City. If the median age of City residents continues to increase, vulnerability to pandemic diseases may increase, due to the fact that these diseases are often more deadly to senior citizens.

Severe Weather: Extreme Cold and Freeze

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile and Problem Description

According to the National Weather Service), extreme cold often accompanies a winter storm or is left in its wake. Freezing temperatures can also occur without the accompanying winter storm.

Location and Extent

Extreme cold and freeze are regional issues, meaning the entire City is at risk to cold weather and freeze events. While there is no scale (i.e. Richter, Enhanced Fujita) to measure the effects of extreme cold and freeze, temperature data from the County from the WRCC indicates minimum temperatures fall below 32°F on 8.3 days with no days falling below 0°F. Freeze has a slow onset and can generally be predicted in advance for the County. Freeze events can last for hours (in a cold overnight), or for days to weeks at a time.

Past Occurrences

There has been no federal or state disaster declarations in the County for extreme cold and freeze. The City noted that cold and freeze is a regional phenomenon; events that affected the County also affected the City. Those past occurrences were shown in the Base Plan in Section 4.3.3.

Vulnerability to and Impacts from Severe Weather: Extreme Cold and Freeze

The City experiences temperatures below 32 degrees during the winter months. The temperature moves to the teens in rather extreme situations. Freeze can cause injury or in extreme situations, loss of life to residents of the City. While it is rare for buildings to be affected directly by freeze, damages to pipes that feed building can be damaged during periods of extreme cold.

Extreme cold and freeze can affect critical facilities and infrastructure, down trees, break pipes, and can be a life safety issue. When extreme cold is coupled with high winds or ice storms, power lines may be downed, resulting in an interruption of utilities and critical services. Transportation networks, communications, and utilities infrastructure are the most vulnerable physical assets in the City. The elderly and young population is most vulnerable to temperature extremes. The residents of nursing homes and elder care facilities, as well as transient and homeless populations are especially vulnerable to extreme cold events.

Future Development

Future development built to code should be able to withstand issues associated with extreme cold and freeze events. Pipes at risk of freezing should be buried or insulated from freeze as new facilities are improved or added. Vulnerability to extreme cold will increase as the average age of the population in the County shifts and homelessness becomes more of an issue.

Ultra-efficient homes are being incorporated into the community with state-of-the-art energy-efficient construction, appliances, and lighting with commercially available renewable energy systems, such as solar water heating and solar electricity. Energy saving and water-wise drought tolerant landscapes are also being incorporated into future landscape development.

Severe Weather: Extreme Heat

Likelihood of Future Occurrence–Highly Likely
Vulnerability–Medium

Hazard Profile and Problem Description

According to FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and lasts for several weeks. Heat kills by taxing the human body beyond its abilities. In extreme heat and high humidity, evaporation is slowed, and the body must work extra hard to maintain a normal temperature." Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Older adults, young children, and those who are sick or overweight are more likely to succumb to extreme heat.

In addition to the risks faced by citizens of the City, there are risks to the built environment from extreme heat. While extreme heat on its own does not usually affect structures, extreme heat during times of drought can cause wildfire risk to heighten. Extreme heat can lead to power outages and when combined with high winds, to Public Safety Power Shutdown (PSPS) events, creating significant issues in the City. However, PSPS events in the City have been declining with PG&E's refined system for shutting power off in high wildfire risk areas.

Location and Extent

Heat is a regional phenomenon and affects the whole of the City. Heat emergencies are often slower to develop, taking several days of continuous, oppressive heat before a significant or quantifiable impact is seen. Heat waves do not strike victims immediately, but rather their cumulative effects slowly affect vulnerable populations and communities. Heat waves do not generally cause damage or elicit the immediate response of floods, fires, earthquakes, or other more "typical" disaster scenarios.

The NWS has in place a system to initiate alert procedures (advisories or warnings) when extreme heat is expected to have a significant impact on public safety. The expected severity of the heat event determines whether advisories or warnings are issued. The NWS HeatRisk forecast provides a quick view of heat risk potential over the upcoming seven days. The heat risk is portrayed in a numeric (0-4) and color (green/yellow/orange/red/magenta) scale which is similar in approach to the Air Quality Index (AQI) or the UV Index. This can be seen in Section 4.3.3 of the Base Plan.

Past Occurrences

The City Planning Team noted that since extreme heat is a regional phenomenon, events that affected the County also affected the City. Those past occurrences were shown in the Base Plan in Section 4.3.3.

There have been no previous reported heat-related damages, injuries or deaths.

Vulnerability to and Impacts from Extreme Heat

The City experiences temperatures in excess of 100°F during the summer and fall months. The temperature moves to 105-115°F in rather extreme situations. During these times, drought conditions may worsen and the City may see an increase in dry fuels. Also, power outages and PSPS events may occur during these times as well. Health issues are the primary concern with this hazard, although economic impacts can also be an issue.

The elderly and individuals below the poverty level are the most vulnerable to extreme temperatures. Nursing homes and elder care facilities are especially vulnerable to extreme heat events if power outages occur and air conditioning is not available. In addition, individuals below the poverty level may be at increased risk to extreme heat if use of air conditioning is not affordable. This is especially true of homeless people and the transient population.

Days of extreme heat have been known to result in medical emergencies, and unpredictable human behavior. Periods of extended heat and dryness (droughts) can have major economic, agricultural, and water resources impacts. Extreme heat can also dry out vegetations, making it more vulnerable to wildfire ignitions.

The City opens "Cooling centers" during the occasional periods of extreme heat. In the past, the cooling centers were opened an average of 5 times per year and have had very low attendance. Churches and schools can be opened in the event there is a need to expand the cooling centers throughout the City. If long term or widespread heat conditions continue, County Emergency Operation Services would declare a local emergency or the possibility of a state emergency would be activated. Those being served at the City cooling centers could be transferred to larger Red Cross centers opened within the County.

Expected increases in extreme heat, with average annual temperatures increasing in addition to the duration and frequency of heat wave events, are a concern for the City. These conditions are intensified due to urban heat island effects. Of paramount concern is resident health and wellbeing during heat related events, particularly vulnerable populations. In addition, impacts on infrastructure due to extreme heat is also a concern.

Future Development

Future development of new buildings in the City will likely not be affected by extreme heat. Extreme heat is more likely to affect vulnerable populations. Vulnerability to extreme heat will increase as the average age of the population in each City shifts. It is encouraged that nursing homes and elder care facilities have emergency plans or backup power to address power failure during times of extreme heat and in the event of a PSPS. Low income residents and homeless populations are also vulnerable. Cooling centers for these populations should be utilized when necessary.

Ultra-efficient homes are being incorporated into the community with state-of-the-art energy-efficient construction, appliances, and lighting with commercially available renewable energy systems, such as solar water heating and solar electricity. Energy saving and water-wise drought tolerant landscapes are also being incorporated into future landscape development.

Severe Weather: Heavy Rains and Storms

Likelihood of Future Occurrence–Highly Likely
Vulnerability–Medium

Hazard Profile and Problem Description

Storms in the City occur annually and are generally characterized by heavy rain often accompanied by strong winds and sometimes lightning and hail. Approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is classified as severe when it contains one or more of the following phenomena: hail that is three-quarters of an inch or greater, winds in excess of 50 knots (57.5 mph), or a tornado. Heavy precipitation in the City falls mainly in the fall, winter, and spring months. Wind often accompanies these storms; hail and lightning are rare in the City.

Location and Extent

Heavy rain events occur on a regional basis. Rains and storms can occur in any location of the City. All portions of the City are at risk to heavy rains. Most of the severe rains occur during the fall, winter, and spring months. There is no scale by which heavy rains and severe storms are measured. Magnitude of storms is measured often in rainfall and damages. The speed of onset of heavy rains can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Hail and lightning are rare in the City and Sacramento County. Duration of severe storms in California, Sacramento County, and the City can range from minutes to hours to days. Information on precipitation extremes can be found in Section 4.3.4 of the Base Plan.

Past Occurrences

According to historical hazard data, severe weather, including heavy rains and storms, is an annual occurrence in the City. This is the cause of many of the federal disaster declarations related to flooding. Heavy rains and storms occur during the winter and spring months causing occasional localized street flooding. The flooding section above includes information on impacts from past events.

Vulnerability to and Impacts from Heavy Rain and Storms

Heavy rain and severe storms are an annual occurrence in the City. These events can cause significant and localized flooding. Elongated events, or events that occur during times where the ground is already saturated can cause 1% and 0.2% annual chance flooding. Wind often accompanies these storms and has caused damage in the past. Hail and lightning are rare in the City, but also can cause damage, with lightning occasionally igniting wildfires.

Actual damage associated with the effects of severe weather include impacts to property, critical facilities (such as utilities), and life safety. Power outages may also occur. Heavy rains and storms often result in flooding creating significant issues. Roads can become impassable and ground saturation can result in instability, collapse, or other damage to trees, structures, roadways and other critical infrastructure. Floodwaters and downed trees can break utilities and interrupt services.

There have been heavy rain or storm events effecting the City within the past few years, usually resulting in localized flooding. These have occurred primarily during the winter and spring months, with areas of concern largely near waterways and creek systems that swell during heavy rainfall events. Roadway flooding has also occurred in specific locations during heavy rainfall events due to inadequate drainage or blockages of the drainage system. With climate change, the City is expected to see increased average annual precipitation which is largely anticipated to happen during heavy rainfall events. This could place increased stress on stormwater drainage systems.

Future Development

The City has a Storm Drainage Master Plan, which identifies improvements necessary as part of new development to address storm and flood risk. Additionally, the City has adopted General Plan policy discouraging fill in floodplains and has adopted new flood damage prevention regulations in its Municipal Code. Future development in the City is subject to these requirements. New critical facilities should be built to withstand hail damage, lightning, and heavy rains.

Wildfire

Likelihood of Future Occurrence–Highly Likely
Vulnerability–High

Hazard Profile and Problem Description

Wildland fire and the risk of a conflagration is an ongoing concern for the City of Elk Grove. Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas and subsequent fire control practices have affected the natural cycle of the ecosystem. Wildland fires affect grass, forest, and brushlands, as well as any structures located within them. Where there is human access to wildland areas the risk of fire increases due to a greater chance for human carelessness and historical fire management practices. Historically, the fire season extends from early spring through late fall of each year during the hotter, dryer months; however, in recent years, the risk of wildfire has become a year around concern. Fire conditions arise from a combination of high temperatures, low moisture content in the air and fuel, accumulation of vegetation, and high winds. These high winds can result in red flag days, and can result in PSPS events in the City. While wildfire risk has predominantly been associated with more remote forested areas and wildland urban interface (WUI) areas, significant wildfires can also occur in more populated, urban areas.

Location and Extent

Wildfire can affect all areas of the City. CAL FIRE has estimated that the risk varies across the City and has created maps showing risk variance. Following the methodology described in Section 4.3.19 of the Base Plan, wildfire maps for the City of Elk Grove were created. Figure B-26 shows the CAL FIRE Hazard Severity Zones (FHSZs) in the City. As shown on the maps, FHSZs within the City range from urban unzoned to moderate. Figure B-27 shows the CAL FIRE Threat Areas in the City. As shown on the maps, fire threat within the City ranges from low to moderate.

Figure B-26 City of Elk Grove – Fire Hazard Severity Zones

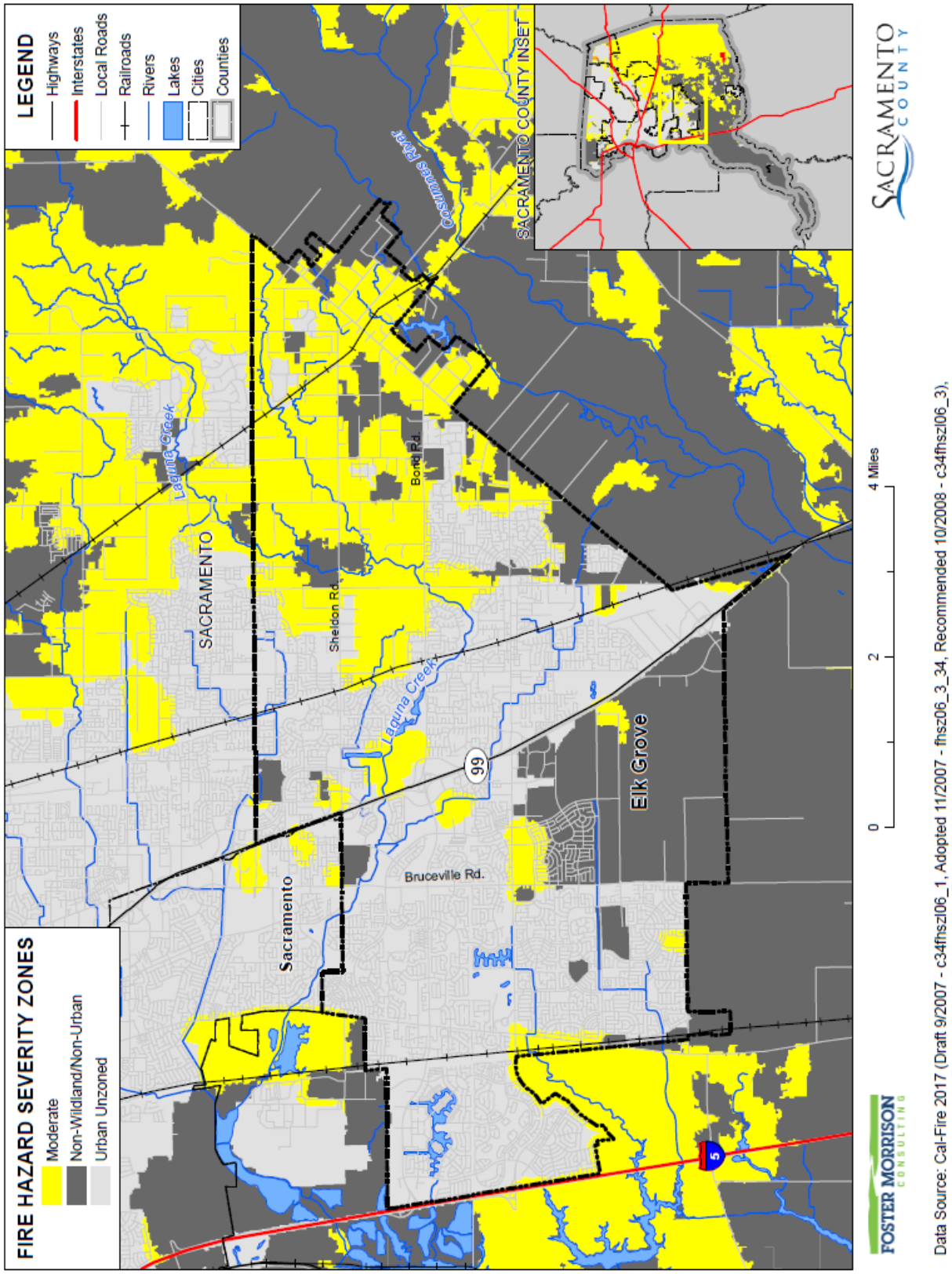
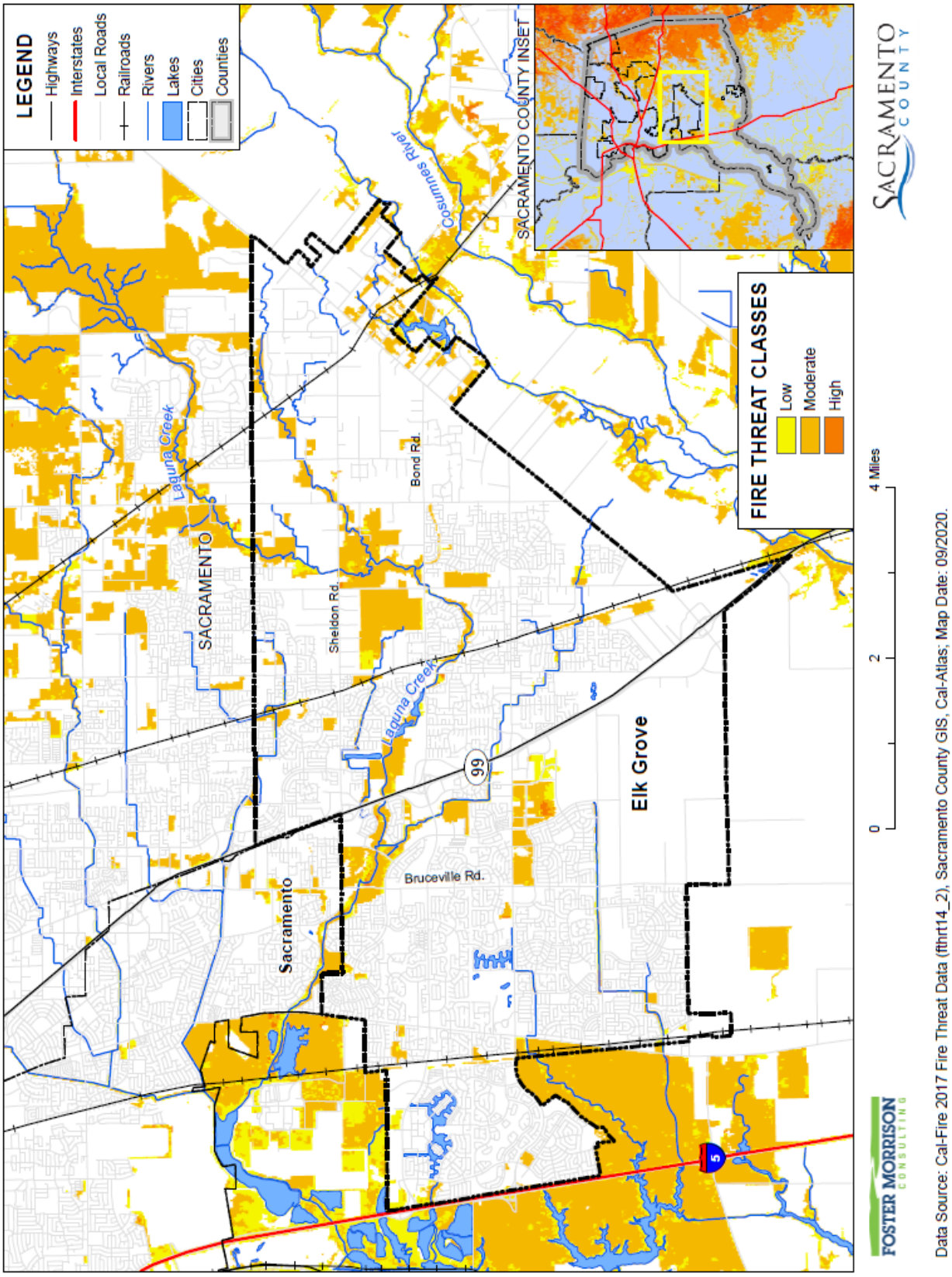


Figure B-27 City of Elk Grove – Fire Threat Areas



Wildfires tend to be measured in structure damages, injuries, and loss of life as well as on acres burned. Fires can have a quick speed of onset, especially during periods of drought or during hot dry summer months. Fires can burn for a short period of time, or may have durations lasting for a week or more. Geographical FHSZ extent from CAL FIRE is shown in Table B-44. Geographical Fire Threat Area extents from CAL FIRE are shown on Table B-45.

Table B-44 City of Elk Grove – Geographical FHSZ Extents

Fire Hazard Severity Zone	Total Acres	% of Total Acres*	Improved Acres	% of Total Improved Acres*	Unimproved Acres	% of Total Unimproved Acres*
Very High	0	0.00%	0	0.00%	0	0.00%
High	0	0.00%	0	0.00%	0	0.00%
Moderate	6,421.2	24.18%	4,424.6	23.29%	1,996.6	26.41%
Non-Wildland/non-Urban	5,208.0	19.61%	2,532.8	13.33%	2,675.2	35.39%
Urban Unzoned	14,926.6	56.21%	12,038.6	63.37%	2,888.1	38.20%
Total	**26,555.9**	**100.00%**	**18,996.0**	**100.00%**	**7,559.9**	**100.00%**

Source: CAL FIRE

Table B-45 City of Elk Grove – Geographical Fire Threat Area Extents

Fire Hazard Severity Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Very High	0	0.00%	0	0.00%	0	0.00%
High	18.3	0.07%	1.3	0.01%	17.0	0.23%
Moderate	2,201.0	8.29%	574.9	3.03%	1,626.0	21.51%
Low	408.8	1.54%	126.7	0.67%	282.1	3.73%
No Threat	23,927.8	90.10%	18,293.1	96.30%	5,634.7	74.53%
Total	**26,555.9**	**100.00%**	**18,996.0**	**100.00%**	**7,559.9**	**100.00%**

Source: CAL FIRE

Past Occurrences

There has been no state and one federal disaster declaration due to fire, as shown in Table B-46. It should be noted that this fire disaster was from an explosion in Roseville, and not from an actual wildfire.

Table B-46 Sacramento County – State and Federal Wildfire Disaster Declarations 1950-2020

Disaster Type	Federal Declarations		State Declarations	
	Count	Years	Count	Years
Fire	1	1973	0	–

Source: Cal OES, FEMA

The City Planning Team noted that occasionally, open field brush fires have occurred in the City:

- A 25-acre fire that occurred on June 9 of 2015. A grass fire that started about 1:30 p.m. at Bond and Waterman roads was driven by high, shifting winds. It quickly spread toward homes that border the field to the east and south. The fire damaged one Elk Grove home and prompted evacuation of several other residences before it was contained.
- On June 6, 2016, a small grass fire broke out in an Elk Grove residential area. The fire was first reported near Sundance Lane and Auberry Drive in an empty grass field. Though no injuries were reported, the half-acre blaze did damage a backyard fence and some gardening equipment.
- On July 12, 2016, a grass fire burned 10 acres at a vacant lot that bordered a neighborhood, a shopping center, and an elementary school. No injuries, deaths, or building damages were reported. This fire occurred around 12:45 p.m. near Dandelion Drive in north Elk Grove.

No major fires have occurred since the City was incorporated. The police department provided mutual aid resources for several large fires in California from 2016 to present. The Cosumnes Fire Department also provided staff through strike team deployments during this period. These events included:

- Cascade Fire, Yuba County (CA), October 2017. Elk Grove Police Department sent police officers to assist with evacuation area security as mutual aid.
- Tubbs Fire, Sonoma County (CA), October 2017. Elk Grove Police Department sent police officers for evacuations and evacuation area security, tactical dispatchers for field deployments, and tactical dispatchers who provided Public Safety Answering Point mutual aid.
- Atlas Fire, Napa and Solano Counties (CA), November 2017. Elk Grove Police Department sent public safety dispatchers who provided Public Safety Answering Point mutual aid.
- Camp Fire, Butte County (CA), November 2018. Elk Grove Police Department sent police officers for evacuations and evacuation area security, tactical dispatchers for immediate field command post setup and incident command consulting, animal control officers for field deployments, and provided logistical assistance in coordinating Public Safety Dispatcher mutual aid for several months.
- Kincade Fire, Sonoma County (CA), November 2019. Elk Grove Police Department sent police officers for evacuations and evacuation area security, and tactical dispatchers for Public Safety Answering Point mutual aid.
- Moccasin Fire, Tuolumne County (CA), August 2020. Elk Grove Police Department sent police officers for evacuation area security as mutual aid.
- Lake Napa Unit (LNU) Lightning Complex Fires, Lake and Napa Counties (CA), August 2020. Elk Grove Police Department sent police officers for evacuations and evacuation area security as mutual aid.
- North Complex Fire, Plumas and Butte Counties (CA), September 2020. Elk Grove Police Department sent police officers for evacuation area security as mutual aid.
- Thomas Fire, Santa Barbara (CA), 2017, Cosumnes Fire Department sent firefighters to assist with the extinguishment of the fire as mutual aid.
- Carr Fire, Shasta County (CA), 2018, Cosumnes Fire Department sent firefighters to assist with the extinguishment of the fire as mutual aid.
- Mendocino Fire, Colusa County, (CA), 2018, Cosumnes Fire Department sent firefighters to assist with extinguishment of the fire as mutual aid.
- Glass Fire, Santa Clara (CA), 2020, Cosumnes Fire Department sent firefighters to assist with the extinguishment of the fire as mutual aid.
- Creek Fire, Fresno County, (CA), 2020, Cosumnes Fire Department sent firefighters to assist with the extinguishment of the fire as mutual aid.

The eight Police Department mutual aid events listed above resulted in a total cost of $262,567.86 to the City of Elk Grove, with $178,886.98 being reimbursed. The Cosumnes Fire Department (CFD) receives almost 100% reimbursement from the state for strike team deployments, of which there were five during the period. The impact to CFD staff during the summer months due to these deployments are largely physical and mental fatigue. Throughout Camp Fire, Kincade Fire, and LNU Lightning Complex Fire, air quality was affected by smoke within the City and Police Department buildings, including within the 9-1-1 dispatch center. Over multiple weeks during these events the general public was instructed to remain indoors due to poor air quality.

Vulnerability to and Impacts from Wildfire

Fuel loads in the County and Cities, along with geographical and topographical features, create the potential for both natural and human-caused fires that can result in loss of life and property. These factors, combined with natural weather conditions common to the area, including periods of drought, high temperatures, low relative humidity, and periodic winds, can result in frequent and sometimes catastrophic fires. The more urbanized areas within the County are not immune from fire. The dry vegetation and hot and sometimes windy weather, combined with continued growth in the WUI areas, results in an increase in the number of ignitions. Any fire, once ignited, has the potential to quickly become a large, out-of-control fire. As development continues throughout the County and City, especially in these interface areas, the risk and vulnerability to wildfires will likely increase.

Elk Grove is not immune to numerous types of grass and brush fires and any one of them may accelerate into an urban interface wildfire. Such a situation could lead to evacuation of large portions of the population and the potential for significant loss of personal property, structures, and rangeland. The natural fuels available in or near the City vary greatly in the rate and intensity of burning. Fires in heavy brush and stands of trees burn with great intensity but more slowly than in dry grass and leaves. Dense fuels will propagate fire better than sparse fuels. There are several eucalyptus groves that exist in the Wilton area, at the south-east boundary with the City, that could pose a significant fire threat.

Potential impacts from wildfire include loss of life and injuries; damage to structures and other improvements, natural and cultural resources, croplands, and timber; and loss of recreational opportunities. Wildfires can cause short-term and long-term disruption to the City. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the City by changing runoff patterns, increasing sedimentation, reducing natural and reservoir water storage capacity, and degrading water quality. Fires can also affect air quality in the City; smoke and air pollution from wildfires can be a severe health hazard.

Although the physical damages and casualties arising from wildland-urban interface fires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings and infrastructure. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Schools and businesses can be forced to close for extended periods of time. Recently, the threat of wildfire, combined with the potential for high winds, heat, and low humidity, has caused PG&E to initiate a PSPS which can also significantly impact a community through loss of services, business closures, and other impacts associated with loss of power for an extended period. In addition, catastrophic

wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season.

The largest impact from fires in the City would be poor air quality.

Assets at Risk

Based on the vulnerability of Elk Grove to the wildfire hazard, the sections that follow describes significant assets at risk in the City of Elk Grove. This section includes the values at risk, population at risk, and critical facilities at risk.

Values at Risk in Fire Hazard Severity Zones

GIS was used to determine the possible impacts of wildfire within the City of Elk Grove. The methodology described in Section 4.3.19 of the Base Plan was followed in determining structures and values at risk in fire hazard severity zones. Summary analysis results for Elk Grove are shown in Table B-47, which summarizes total parcel counts, improved parcel counts and their structure values by fire hazard severity zone. Table B-48 breaks out the Table B-47 by adding the property use details by fire hazard severity zone for the City.

Table B-47 City of Elk Grove – Count and Value of Parcels by Fire Hazard Severity Zone

Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Moderate	4,626	4,096	$706,051,086	$1,660,424,981	$1,009,598,054	$3,376,074,109
Non-Wildland/Non-Urban	5,579	4,199	$824,296,197	$1,706,112,600	$931,174,201	$3,461,583,045
Urban Unzoned	45,379	43,514	$4,732,164,010	$12,988,437,567	$7,499,238,222	$25,219,839,740
Elk Grove Total	**55,584**	**51,809**	**$6,262,511,293**	**$16,354,975,148**	**$9,440,010,477**	**$32,057,496,894**

Source: Sacramento County 2020 Parcel/Assessor's Data, CAL FIRE

Table B-48 City of Elk Grove – Count and Value of Parcels by Fire Hazard Severity Zone and Property Use

Fire Hazard Severity Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Moderate						
Agricultural	4	2	$342,002	$81,932	$81,932	$505,866
Care/Health	7	3	$5,907,909	$10,620,008	$10,620,008	$27,147,925
Church/Welfare	13	12	$8,633,553	$46,514,661	$46,514,661	$101,662,875
Industrial	8	6	$5,440,287	$1,802,168	$2,703,253	$9,945,707
Miscellaneous	191	0	$462,407	$0	$0	$462,407

Fire Hazard Severity Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Office	20	17	$15,499,494	$131,196,332	$131,196,332	$277,892,158
Public/Utilities	17	0	$54	$0	$0	$54
Recreational	2	2	$3,479,933	$13,940,482	$13,940,482	$31,360,897
Residential	4,041	3,991	$516,222,244	$1,298,636,452	$649,318,235	$2,464,176,920
Retail / Commercial	64	48	$62,108,660	$155,223,151	$155,223,151	$372,554,962
Unknown	0	0	$0	$0	$0	$0
Vacant	259	15	$87,954,543	$2,409,795	$0	$90,364,338
Moderate Total	**4,626**	**4,096**	**$706,051,086**	**$1,660,424,981**	**$1,009,598,054**	**$3,376,074,109**
Non-Wildland/Non-Urban						
Agricultural	14	5	$1,034,336	$1,157,380	$1,157,380	$3,349,096
Care/Health	1	0	$0	$0	$0	$0
Church/Welfare	0	0	$0	$0	$0	$0
Industrial	1	0	$10	$0	$0	$10
Miscellaneous	251	0	$323,953	$0	$0	$323,953
Office	1	1	$2,767,116	$27,162,130	$27,162,130	$57,091,376
Public/Utilities	7	0	$9	$0	$0	$9
Recreational	3	0	$27	$0	$0	$27
Residential	4,181	4,144	$490,808,073	$1,537,341,350	$768,670,663	$2,796,820,133
Retail / Commercial	26	25	$56,502,262	$134,184,028	$134,184,028	$324,870,318
Unknown	0	0	$0	$0	$0	$0
Vacant	1,094	24	$272,860,411	$6,267,712	$0	$279,128,123
Non-Wildland/Non-Urban Total	**5,579**	**4,199**	**$824,296,197**	**$1,706,112,600**	**$931,174,201**	**$3,461,583,045**
Urban Unzoned						
Agricultural	1	0	$9	$0	$0	$9
Care/Health	28	24	$32,032,149	$142,344,099	$142,344,099	$316,720,347
Church/Welfare	38	35	$23,993,953	$84,569,665	$84,569,665	$193,133,283
Industrial	197	169	$94,985,848	$327,809,631	$491,714,438	$914,509,929
Miscellaneous	1,146	1	$579,504	$1,100	$1,100	$581,704
Office	305	278	$82,883,620	$372,875,747	$372,875,747	$828,635,114
Public/Utilities	48	0	$47	$0	$0	$47
Recreational	15	14	$10,341,358	$41,034,359	$41,034,359	$92,410,076
Residential	42,786	42,644	$4,105,644,216	$11,298,654,499	$5,649,327,372	$21,053,626,016

Fire Hazard Severity Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Retail / Commercial	343	327	$270,744,417	$717,371,442	$717,371,442	$1,705,487,301
Unknown	1	1	$0	$127,600	$0	$127,600
Vacant	471	21	$110,958,889	$3,649,425	$0	$114,608,314
Urban Unzoned Total	**45,379**	**43,514**	**$4,732,164,010**	**$12,988,437,567**	**$7,499,238,222**	**$25,219,839,740**
Elk Grove Total	**55,584**	**51,809**	**$6,262,511,293**	**$16,354,975,148**	**$9,440,010,477**	**$32,057,496,894**

Source: Sacramento County 2020 Parcel/Assessor's Data, CAL FIRE

Values at Risk in Fire Threat Areas

GIS was used to determine the possible impacts of wildfire within the City of Elk Grove. The methodology described in Section 4.3.19 of the Base Plan was followed in determining structures and values at risk in fire threat areas. Summary analysis results for Elk Grove are shown in Table B-49, which summarizes total parcel counts, improved parcel counts and their structure values by fire threat area. Table B-50 breaks out the Table B-49 by adding the property use details by threats areas for the City.

Table B-49 City of Elk Grove – Count and Value of Parcels by Fire Threat Area

Fire Threat Class	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Very High	0	0	$0	$0	$0	$0
High	3	1	$64,995	$154,762	$77,381	$297,138
Moderate	552	275	$164,149,216	$255,300,118	$194,070,862	$613,520,201
Low	192	113	$38,024,306	$74,113,140	$55,684,179	$167,821,621
No Threat	54,837	51,420	$6,060,272,776	$16,025,407,128	$9,190,178,055	$31,275,857,934
Elk Grove Total	**55,584**	**51,809**	**$6,262,511,293**	**$16,354,975,148**	**$9,440,010,477**	**$32,057,496,894**

Source: Sacramento County 2020 Parcel/Assessor's Data, CAL FIRE

Table B-50 City of Elk Grove – Count and Value of Parcels by Fire Threat Area and Property Use

Fire Threat Class / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
High						
Agricultural	0	0	$0	$0	$0	$0
Care/Health	0	0	$0	$0	$0	$0
Church/Welfare	0	0	$0	$0	$0	$0
Industrial	0	0	$0	$0	$0	$0

Fire Threat Class / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Miscellaneous	2	0	$10	$0	$0	$10
Office	0	0	$0	$0	$0	$0
Public/Utilities	0	0	$0	$0	$0	$0
Recreational	0	0	$0	$0	$0	$0
Residential	1	1	$64,985	$154,762	$77,381	$297,128
Retail/ Commercial	0	0	$0	$0	$0	$0
Unknown	0	0	$0	$0	$0	$0
Vacant	0	0	$0	$0	$0	$0
High Total	**3**	**1**	**$64,995**	**$154,762**	**$77,381**	**$297,138**
Moderate						
Agricultural	0	0	$0	$0	$0	$0
Care/Health	6	1	$10,587,857	$19,884,890	$19,884,890	$50,357,637
Church/Welfare	1	0	$29	$0	$0	$29
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	105	0	$152,914	$0	$0	$152,914
Office	4	4	$1,849,968	$81,946,711	$81,946,711	$165,743,390
Public/Utilities	7	0	$0	$0	$0	$0
Recreational	0	0	$0	$0	$0	$0
Residential	271	260	$40,081,105	$121,758,517	$60,879,261	$222,718,888
Retail/ Commercial	23	9	$25,752,605	$31,360,000	$31,360,000	$88,472,605
Unknown	0	0	$0	$0	$0	$0
Vacant	135	1	$85,724,738	$350,000	$0	$86,074,738
Moderate Total	**552**	**275**	**$164,149,216**	**$255,300,118**	**$194,070,862**	**$613,520,201**
Low						
Agricultural	0	0	$0	$0	$0	$0
Care/Health	1	1	$2,863,080	$5,652,593	$5,652,593	$14,168,266
Church/Welfare	1	1	$568,160	$4,054,589	$4,054,589	$8,677,338
Industrial	2	2	$496,453	$471,525	$707,288	$1,675,266
Miscellaneous	44	0	$388	$0	$0	$388
Office	5	4	$2,672,416	$8,994,543	$8,994,543	$20,661,502
Public/Utilities	2	0	$0	$0	$0	$0
Recreational	0	0	$0	$0	$0	$0
Residential	99	99	$12,691,537	$36,043,454	$18,021,730	$66,756,717
Retail/ Commercial	4	4	$3,233,690	$18,253,436	$18,253,436	$39,740,562

Fire Threat Class / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Unknown	0	0	$0	$0	$0	$0
Vacant	34	2	$15,498,582	$643,000	$0	$16,141,582
Low Total	**192**	**113**	**$38,024,306**	**$74,113,140**	**$55,684,179**	**$167,821,621**
No Threat						
Agricultural	19	7	$1,376,347	$1,239,312	$1,239,312	$3,854,971
Care/Health	29	25	$24,489,121	$127,426,624	$127,426,624	$279,342,369
Church/Welfare	49	46	$32,059,317	$127,029,737	$127,029,737	$286,118,791
Industrial	204	173	$99,929,692	$329,140,274	$493,710,403	$922,780,380
Miscellaneous	1,437	1	$1,212,552	$1,100	$1,100	$1,214,752
Office	317	288	$96,627,846	$440,292,955	$440,292,955	$977,213,756
Public/Utilities	63	0	$110	$0	$0	$110
Recreational	20	16	$13,821,318	$54,974,841	$54,974,841	$123,771,000
Residential	50,637	50,419	$5,059,836,906	$13,976,675,568	$6,988,337,898	$26,024,850,336
Retail/ Commercial	406	387	$360,369,044	$957,165,185	$957,165,185	$2,274,699,414
Unknown	1	1	$0	$127,600	$0	$127,600
Vacant	1,655	57	$370,550,523	$11,333,932	$0	$381,884,455
No Threat Total	**54,837**	**51,420**	**$6,060,272,776**	**$16,025,407,128**	**$9,190,178,055**	**$31,275,857,934**
Elk Grove Total	**55,584**	**51,809**	**$6,262,511,293**	**$16,354,975,148**	**$9,440,010,477**	**$32,057,496,894**

Source: Sacramento County 2020 Parcel/Assessor's Data, CAL FIRE

Population at Risk

The FHSZ and Fire Threat dataset was overlayed on the parcel layer. Those residential parcel centroids that intersect the FHSZs and Fire Threat Areas were counted and multiplied by the 2010 Census Bureau average household factors for the City of Elk Grove – 3.20. According to this analysis, there is a total population of 12,771 residents of Elk Grove at risk to moderate or higher FHSZs, while there is a total of 833 in the moderate or higher fire threat areas. This is shown in Table B-51 and Table B-52, respectively.

Table B-51 City of Elk Grove – Count of Improved Residential Parcels and Population by Fire Hazard Severity Zone

Jurisdiction	Very High		High		Moderate	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Elk Grove	0	0	0	0	3,991	12,771

Source: CAL FIRE, US Census Bureau Average Household Sizes: Citrus Heights (2.54); Sacramento City (2.66); Elk Grove (3.20); Folsom (2.63), Galt (3.16); Isleton (2.7), Rancho Cordova (2.14): and unincorporated Sacramento County (2.76)

Table B-52 City of Elk Grove – Count of Improved Residential Parcels and Population by Fire Threat Area

Jurisdiction	Very High		High		Moderate	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Elk Grove	0	0	1	3	260	832

Source: CAL FIRE, US Census Bureau Average Household Sizes

Critical Facilities at Risk

An analysis was performed on the critical facility inventory in Elk Grove in identified FHSZs. Critical facilities in a FHSZ in the City of Elk Grove are shown in Figure B-28 and detailed in Table B-53. Critical facilities in a fire threat area in the City of Elk Grove are shown in Figure B-29 and detailed in Table B-54. Details of critical facility definition, type, name and address and jurisdiction by fire hazard severity zone are listed in Appendix F.

Figure B-28 City of Elk Grove – Critical Facilities in Fire Hazard Severity Zones

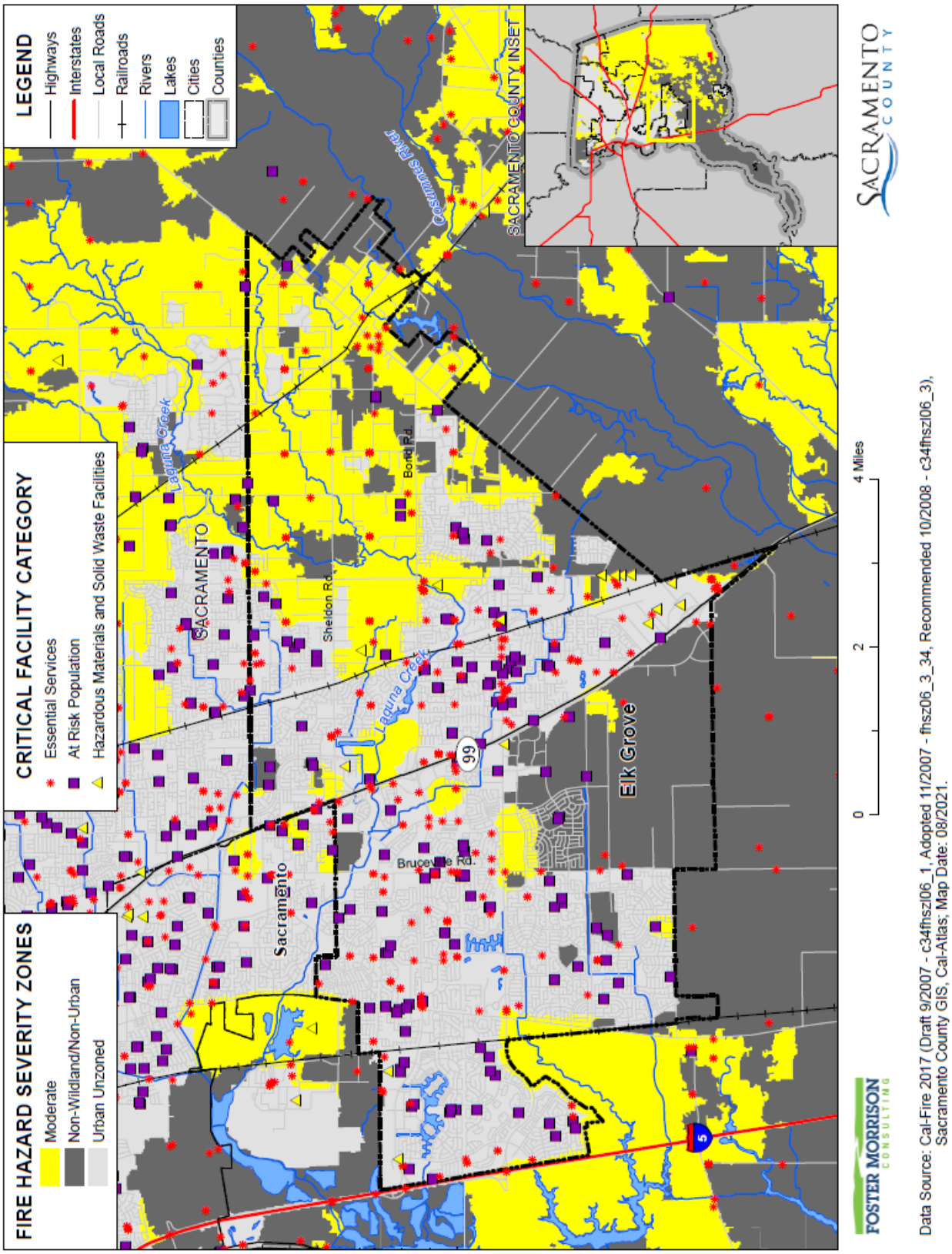


Table B-53 City of Elk Grove – Critical Facilities in Fire Hazard Severity Zones by Category and Type

Fire Hazard Severity Zone/Critical Facility Category	Critical Facility Type	Facility Count
Moderate		
Essential Services Facilities	Cellular Tower	2
	EMS Stations	1
	FDIC Insured Banks	4
	Fire Station	1
	Microwave Service Towers	13
	Water Well	61
	Total	**82**
At Risk Population Facilities	Day Care Center	2
	Places of Worship	1
	School	5
	Total	**8**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	2
	EPA ER TSCA Facility	2
	Solid Waste Facility	2
	Total	**6**
Moderate Total		**96**
Non-Wildland/Non-Urban		
Essential Services Facilities	Water Well	17
	Total	**17**
At Risk Population Facilities	Day Care Center	4
	Places of Worship	2
	School	9
	Total	**15**
Non-Wildland/Non-Urban Total		**32**
Urban Unzoned		
Essential Services Facilities	Emergency Evacuation Center	8
	EMS Stations	6
	FDIC Insured Banks	22
	Fire Station	5
	Hospital or Urgent Care	1
	Law Enforcement	2
	Microwave Service Towers	94
	Sewage Treatment Plant	1

Fire Hazard Severity Zone/Critical Facility Category	Critical Facility Type	Facility Count
	Water Well	80
	Total	**219**
At Risk Population Facilities	Day Care Center	30
	Mobile Home Parks	1
	Places of Worship	86
	School	31
	Total	**148**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	4
	EPA ER TSCA Facility	1
	Leaky Underground Storage Tank	4
	Solid Waste Facility	2
	Waste Transfer Station	1
	Total	12
Urban Unzoned Total		**379**
Elk Grove Total		**507**

Source: CAL FIRE, Sacramento County

Figure B-29 City of Elk Grove – Critical Facilities in Fire Threat Areas

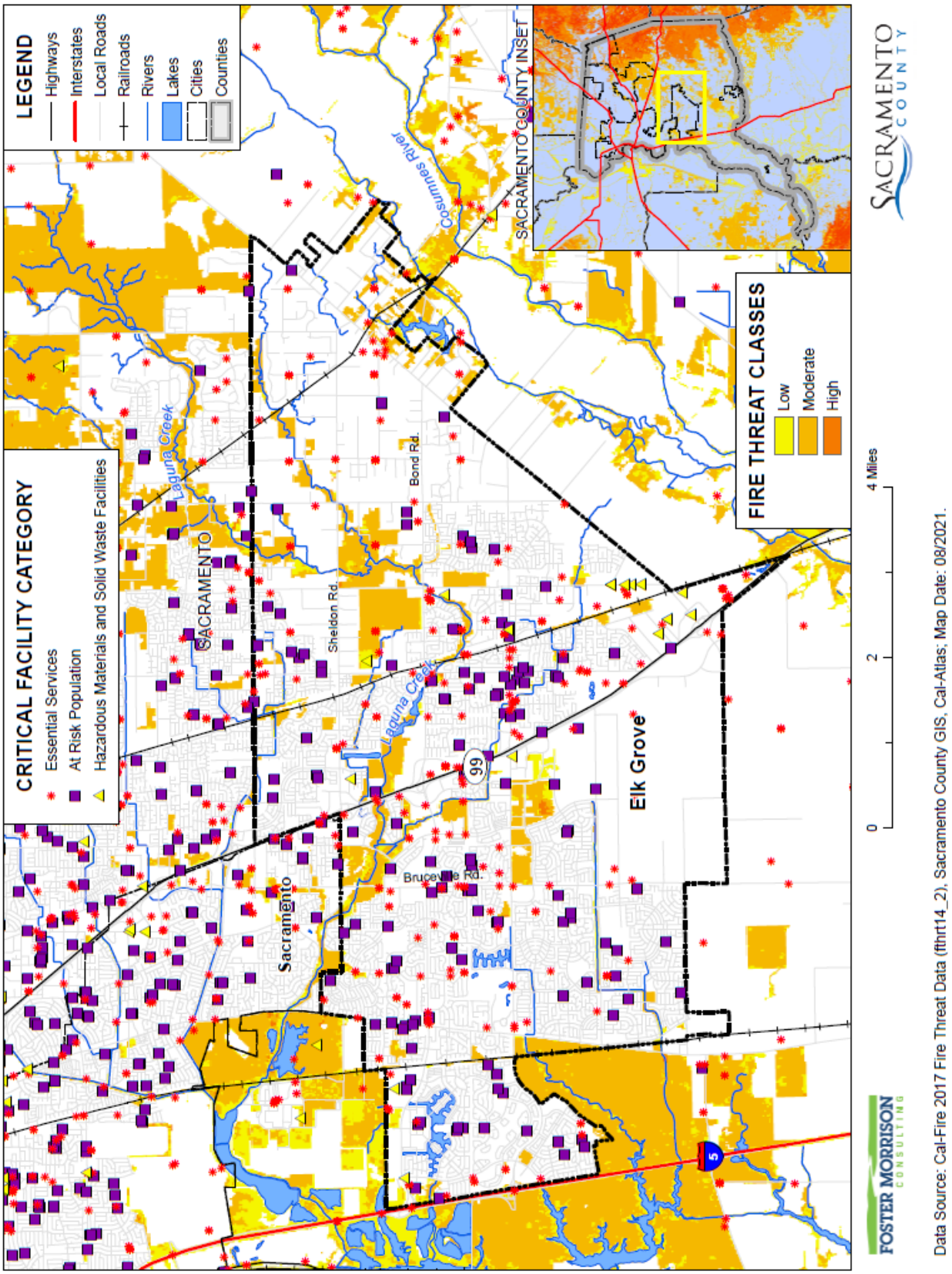


Table B-54 City of Elk Grove – Critical Facilities in Fire Threat Areas by Category and Type

Fire Threat/ Critical Facility Category	Critical Facility Type	Facility Count
Low		
Essential Services Facilities	Microwave Service Towers	2
	Water Well	1
	Total	**3**
Hazardous Materials and Solid Waste Facilities	Solid Waste Facility	1
	Total	**1**
Low Total		**4**
Moderate		
Essential Services Facilities	Water Well	24
	Total	**24**
At Risk Population Facilities	School	1
	Total	**1**
Moderate Total		**25**
No Threat		
Essential Services Facilities	Cellular Tower	2
	Emergency Evacuation Center	8
	EMS Stations	7
	FDIC Insured Banks	26
	Fire Station	6
	Hospital or Urgent Care	1
	Law Enforcement	2
	Microwave Service Towers	105
	Sewage Treatment Plant	1
	Water Well	133
	Total	**291**
At Risk Population Facilities	Day Care Center	36
	Mobile Home Parks	1
	Places of Worship	89
	School	44
	Total	**170**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	6
	EPA ER TSCA Facility	3
	Leaky Underground Storage Tank	4
	Solid Waste Facility	3
	Waste Transfer Station	1
	Total	**17**

Fire Threat/ Critical Facility Category	Critical Facility Type	Facility Count
No Threat Total		**478**
Elk Grove Total		**507**

Source: CAL FIRE, Sacramento County

Future Development

Additional growth and development within moderate or higher fire hazard severity zones in the City would place additional values at risk to wildfire. City building codes are in effect and should continue to be updated as appropriate to reduce this risk. While there is additional growth and development within the City, none of this is in a moderate or high fire zone

GIS Analysis

The City provided future development areas were used as the basis for the inventory of future development areas for the City. Using the GIS parcel spatial file for each of these areas, the areas and parcels associated with future development projects for which the analysis was to be performed were identified. Utilizing the future development project spatial layer, the parcel centroid data was intersected to determine the parcel counts within each area. Figure B-30 shows the locations of future development areas the City is planning to develop on the FHSZs. Table B-55 shows the parcels and acreages of each future development area in the City in each FHSZ. Figure B-31 shows the locations of future development areas the City is planning to develop on the Fire Threat Area. Table B-56 shows the parcels and acreages of each future development area in the City in each Fire Threat Area.

Figure B-30 City of Elk Grove – FHSZs and Future Development Areas

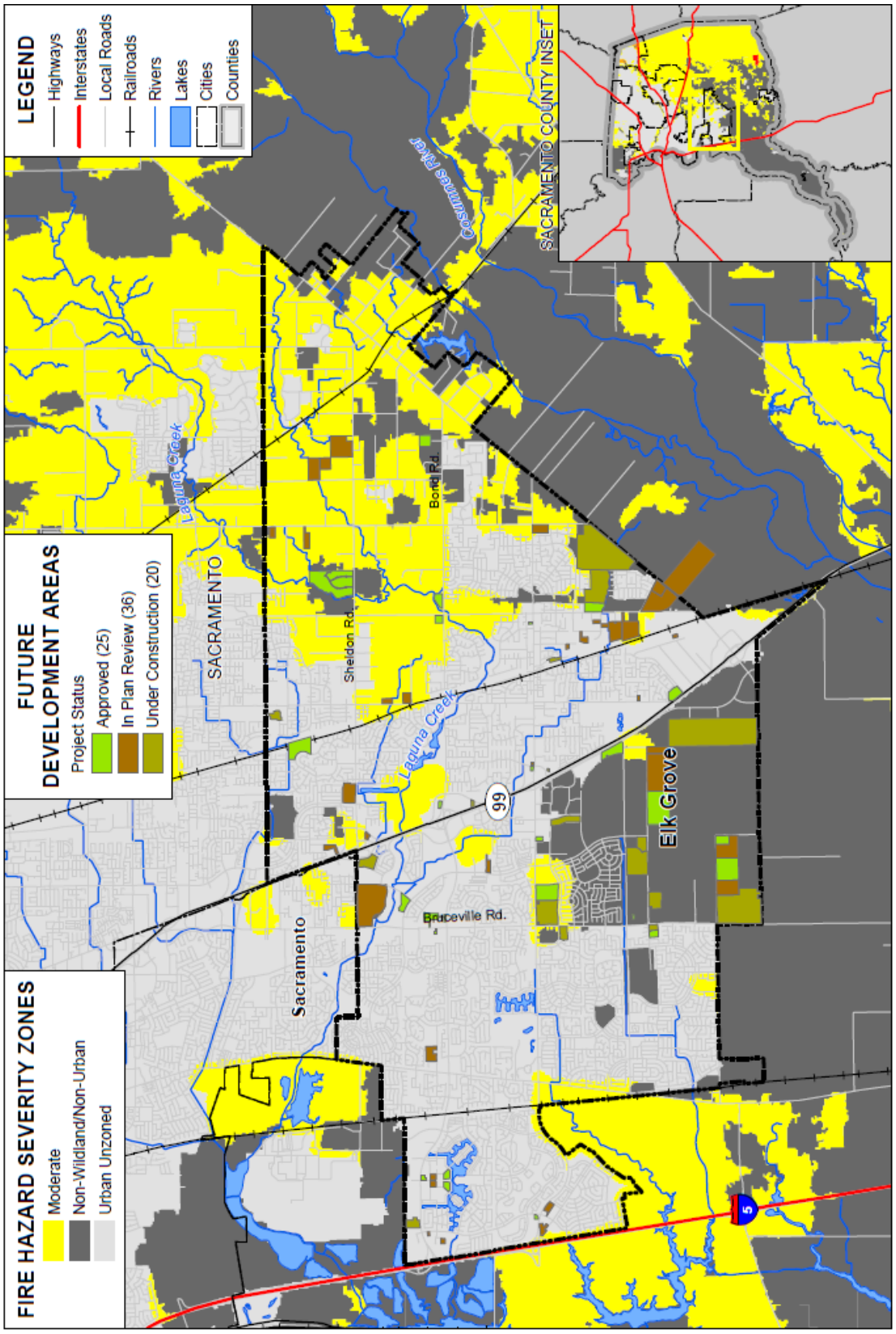


Table B-55 City of Elk Grove – FHSZs and Future Development Areas

Fire Hazard Severity Zone / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Moderate			
Approved			
Buffalo Wild Wings	1	0	1.0
Creekside Estates	1	0	7.0
Dignity Health Medical Campus	7	1	28.0
Sheldon Park Estates North Gated Community	1	1	1.8
Shell with 7-Eleven & Storage Facility	4	0	4.5
Approved Total	**14**	**2**	**42.4**
In Plan Review			
10075 Sheldon Road Tentative Parcel Map	1	1	35.3
8580 Bradshaw Road	1	0	8.3
8633 Bader Road Map	1	1	20.3
8651 Bader Road TPM and Rezone	1	1	10.0
Eden Gardens Banquet Hall	1	1	5.2
Elk Grove Muslim Center	2	1	6.9
In-N-Out Burger - The Ridge Pad 14	1	0	0.9
S&J Storage	1	0	4.3
In Plan Review Total	**9**	**5**	**91.3**
Under Construction			
Bruceville Point	1	1	4.8
Fieldstone North and South	1	0	0.2
The Ridge Shopping Center	20	8	39.6
Under Construction Total	22	9	44.7
Moderate Total	**45**	**16**	**178.4**
Non-Wildland/Non-Urban			
Approved			
Bond Road Rezone and Tentative Map	2	2	10.1
Crooked Creek Industrial Park	2	1	14.2
New Faze Skilled Nursing	1	0	15.1
Poppy Keys Southwest	3	0	60.2
Seasons at Stonebrook Master Home Plan	3	0	79.5
Sheldon Park Estates North Gated Community	27	8	70.0
Vineyard at Madeira Pad E	1	0	0.7
Approved Total	**39**	**11**	**250.0**
In Plan Review			

Fire Hazard Severity Zone / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Grant Line Construction Aggregate Production and Recycling Facility	1	0	24.8
Kubota Tractor Corporation	1	1	101.6
Mendes Villages 2 & 3	1	0	30.6
Mountain Elk Villas	1	0	12.1
Poppy Keys Southeast	4	0	66.5
Sheldon Farms MHP	2	0	80.9
Telos Greens TSM and Rezone	1	0	26.4
Tractor Supply Company	1	0	67.4
Triangle Point TSM Phase 2	1	0	67.4
In Plan Review Total	**13**	**1**	**477.8**
Under Construction			
Bruceville Meadows Residential	253	0	96.5
Fieldstone North and South	513	234	113.4
Fortune School	2	0	40.0
Madeira South (Poppy Lane)	221	92	35.1
Madeira South Lot A Master House Plans	1	0	10.6
McGeary Ranch	84	3	13.3
Mendes Subdivision	1	0	39.5
Milestone	126	29	45.5
Sheldon Farms North	1	0	43.8
Sterling Meadows	623	444	172.2
Under Construction Total	**1,825**	**802**	**609.8**
Non-Wildland/Non-Urban Total	**1,877**	**814**	**1,337.5**
Urban Unzoned			
Approved			
AAA Services Building	1	0	0.7
Arco AM/PM Car Wash Expansion	1	1	1.2
Elk Grove Masonic Lodge	1	0	0.7
GreenSpace Self Storage Facility	1	0	3.0
Laguna West Plaza Pads 1 & 2	2	0	1.6
Quail Run II	1	0	4.8
Raising Cane's Restaurant	1	1	1.7
Shell Gas Station	1	0	1.0
Target Exterior Remodel	1	1	10.1
T-Mobile Evergreen Springs	1	1	2.3
T-Mobile Jones Family Park	1	0	26.7

Fire Hazard Severity Zone / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Toscano Apartments	2	0	7.9
Trojan Storage II	1	0	8.9
U-Haul	4	0	10.2
Approved Total	**19**	**4**	**80.8**
In Plan Review			
10069 Elk Grove Florin Road TPM	1	1	1.1
9730 Kent Street Addition	1	0	1.3
Bartholomew Vineyard Amendment	1	1	10.3
Bow Stockton Apartments	2	1	5.6
Burger King Remodel	1	1	0.7
California Northstate University Medical Center	6	5	5.3
Candlewood Hotel	1	0	1.9
Elk Grove Food Bank	1	1	2.0
Elk Grove Independent Senior Housing	2	0	5.2
Hotel at Sheldon Place	1	0	2.3
Laguna Main Street Apartments	4	0	5.8
Laguna Springs Corporate Center - Building A	1	0	4.9
Life Storage Expansion	1	0	4.6
Sheldon Grove Subdivision	1	0	19.8
Tegan Estates	3	3	11.9
Warda Warehouse 3	1	0	1.5
Waterman Brinkman Logistics Center	3	1	21.6
Wendy's Remodel	1	1	0.8
In Plan Review Total	32	15	106.4
Under Construction			
Bruceville Point	1	0	3.5
Cafeteria Expansion	1	1	9.2
Calvine Pointe	1	0	7.1
Railroad Street	4	1	3.2
Sheldon Terrace	204	74	14.3
The Gardens at Quail Run	1	0	4.4
The Park Senior Housing	3	0	15.1
Towneplace Suites	1	1	1.7
Wienerschnitzel	1	0	0.4
Under Construction Total	**217**	**77**	**59.0**
Urban Unzoned Total	**268**	**96**	**246.2**

Fire Hazard Severity Zone / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Grand Total	**2,190**	**926**	**1,762.1**

Source: City of Elk Grove GIS, CAL FIRE

Figure B-31 City of Elk Grove – Fire Threat Areas and Future Development Areas

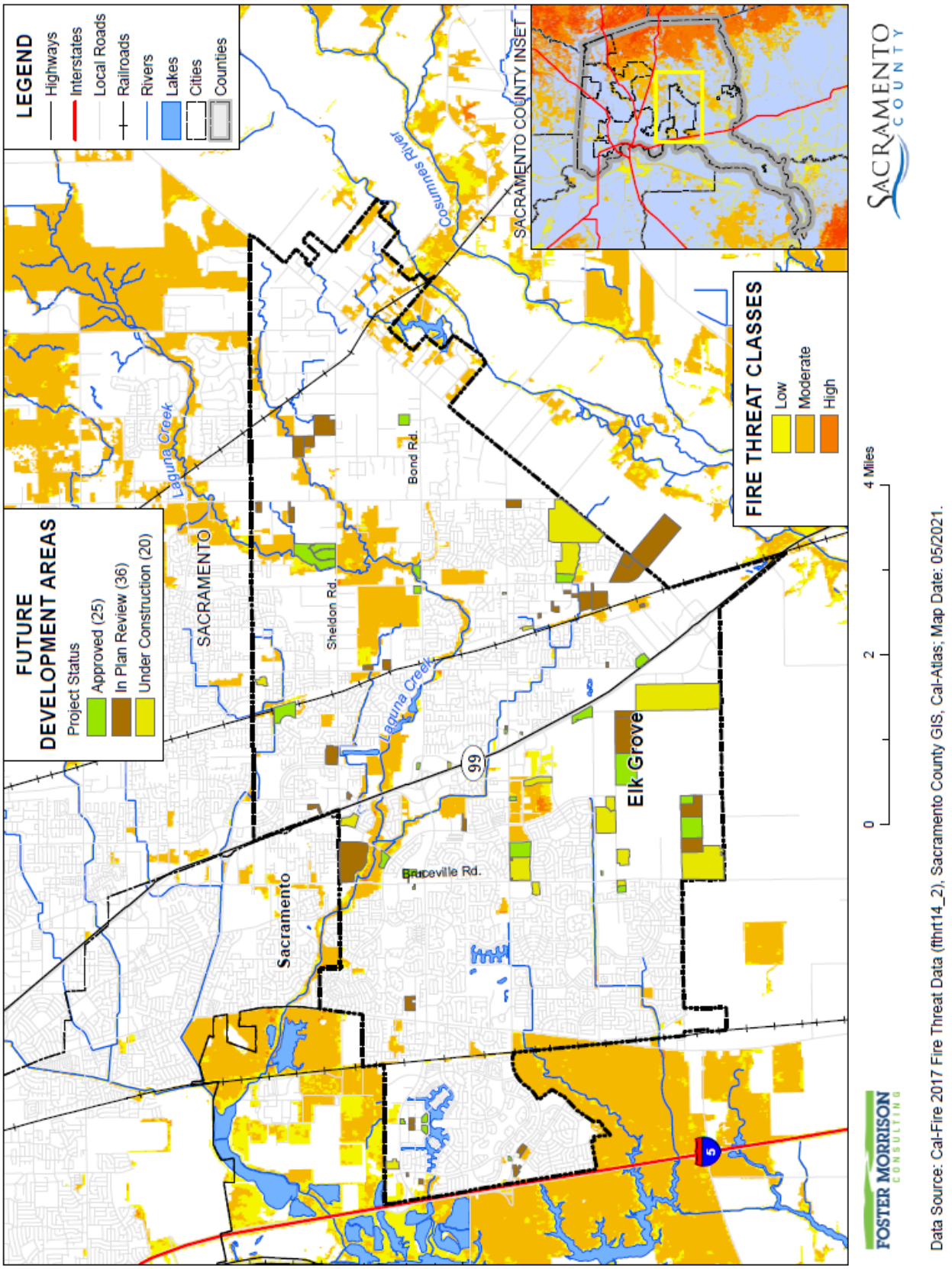


Table B-56 City of Elk Grove – Fire Threat Areas and Future Development Areas

Fire Threat / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Moderate			
Approved			
Buffalo Wild Wings	1	0	1.0
Creekside Estates	1	0	7.0
Dignity Health Medical Campus	3	0	21.5
T-Mobile Jones Family Park	1	0	26.7
Trojan Storage II	1	0	8.9
Approved Total	**7**	**0**	**65.1**
In Plan Review			
8651 Bader Road TPM and Rezone	1	1	10.0
Candlewood Hotel	1	0	1.9
Elk Grove Independent Senior Housing	2	0	5.2
In-N-Out Burger - The Ridge Pad 14	1	0	0.9
Laguna Springs Corporate Center - Building A	1	0	4.9
Sheldon Farms MHP	2	0	80.9
Warda Warehouse 3	1	0	1.5
In Plan Review Total	**9**	**1**	**105.3**
Under Construction			
Milestone	1	0	4.5
Sheldon Farms North	1	0	43.8
The Park Senior Housing	2	0	11.4
The Ridge Shopping Center	20	8	39.6
Under Construction Total	**24**	**8**	**99.3**
Moderate Total	**40**	**9**	**269.6**
Low			
Under Construction			
Milestone	7	1	2.7
The Park Senior Housing	1	0	3.8
Under Construction Total	**8**	**1**	**6.5**
Low Total	**8**	**1**	**6.5**
No Threat			
Approved			
AAA Services Building	1	0	0.7
Arco AM/PM Car Wash Expansion	1	1	1.2
Bond Road Rezone and Tentative Map	2	2	10.1

Fire Threat / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Crooked Creek Industrial Park	2	1	14.2
Dignity Health Medical Campus	4	1	6.5
Elk Grove Masonic Lodge	1	0	0.7
GreenSpace Self Storage Facility	1	0	3.0
Laguna West Plaza Pads 1 & 2	2	0	1.6
New Faze Skilled Nursing	1	0	15.1
Poppy Keys Southwest	3	0	60.2
Quail Run II	1	0	4.8
Raising Cane's Restaurant	1	1	1.7
Seasons at Stonebrook Master Home Plan	3	0	79.5
Sheldon Park Estates North Gated Community	28	9	71.9
Shell Gas Station	1	0	1.0
Shell with 7-Eleven & Storage Facility	4	0	4.5
Target Exterior Remodel	1	1	10.1
T-Mobile Evergreen Springs	1	1	2.3
Toscano Apartments	2	0	7.9
U-Haul	4	0	10.2
Vineyard at Madeira Pad E	1		0.7
Approved Total	**65**	**17**	**308.1**
In Plan Review			
10069 Elk Grove Florin Road TPM	1	1	1.1
10075 Sheldon Road Tentative Parcel Map	1	1	35.3
8580 Bradshaw Road	1	0	8.3
8633 Bader Road Map	1	1	20.3
9730 Kent Street Addition	1	0	1.3
Bartholomew Vineyard Amendment	1	1	10.3
Bow Stockton Apartments	2	1	5.6
Burger King Remodel	1	1	0.7
California Northstate University Medical Center	6	5	5.3
Eden Gardens Banquet Hall	1	1	5.2
Elk Grove Food Bank	1	1	2.0
Elk Grove Muslim Center	2	1	6.9
Grant Line Construction Aggregate Production and Recycling Facility	1	0	24.8
Hotel at Sheldon Place	1	0	2.3
Kubota Tractor Corporation	1	1	101.6
Laguna Main Street Apartments	4	0	5.8

Fire Threat / Future Development Status / Title	Total Parcel Count	Improved Parcel Count	Total Acres
Life Storage Expansion	1	0	4.6
Mendes Villages 2 & 3	1	0	30.6
Mountain Elk Villas	1	0	12.1
Poppy Keys Southeast	4	0	66.5
S&J Storage	1	0	4.3
Sheldon Grove Subdivision	1	0	19.8
Tegan Estates	3	3	11.9
Telos Greens TSM and Rezone	1	0	26.4
Tractor Supply Company	1	0	67.4
Triangle Point TSM Phase 2	1	0	67.4
Waterman Brinkman Logistics Center	3	1	21.6
Wendy's Remodel	1	1	0.8
In Plan Review Total	**45**	**20**	**570.2**
Under Construction			
Bruceville Meadows Residential	253	0	96.5
Bruceville Point	2	1	8.3
Cafeteria Expansion	1	1	9.2
Calvine Pointe	1	0	7.1
Fieldstone North and South	514	234	113.6
Fortune School	2	0	40.0
Madeira South (Poppy Lane)	221	92	35.1
Madeira South Lot A Master House Plans	1	0	10.6
McGeary Ranch	84	3	13.3
Mendes Subdivision	1	0	39.5
Milestone	118	28	38.3
Railroad Street	4	1	3.2
Sheldon Terrace	204	74	14.3
Sterling Meadows	623	444	172.2
The Gardens at Quail Run	1	0	4.4
Towneplace Suites	1	1	1.7
Wienerschnitzel	1	0	0.4
Under Construction Total	**2,032**	**879**	**607.7**
No Threat Total	**2,142**	**916**	**1,486.0**
Grand Total	**2,190**	**926**	**1,762.1**

Source: City of Elk Grove GIS, CAL FIRE

B.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.

B.6.1. Regulatory Mitigation Capabilities

Table B-57 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 City of Elk Grove.

Table B-57 City of Elk Grove 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/General Plan	Y	General Plan The City's General Plan was first adopted in 2003 and was most recently updated in 2019. The Plan as currently adopted identifies a number of safety issues and concerns for the community and includes policies for addressing these issues. Implementation of the policies is deferred to subsequent plans. Storm Drainage Master Plan The City also has a Storm Drainage Master Plan, adopted in 2011 with a minor update completed in 2019, which identifies candidate stormwater drainage projects to address the existing deficiencies and future growth impacts on area drainage. These projects implement the mitigation strategy identified in this LHMP.
Capital Improvements Plan	Y	Capital Improvement Program The Capital Improvement Program is adopted annually by the City Council and identifies capital construction projects to be completed by the City over the coming five years. Many of the projects identified in the plan address potential hazards, such as flooding, heat, and air pollution. The Plan is an excellent approach to implementing mitigation actions. Title 21 Plans/Capital Improvement Program
Economic Development Plan	N	The City Council reviewed the Economic Development Work Plan at its regular meeting on June 22, 2016. Annually, an Economic Development report is presented to City Council. The Work Plan and the annual reports do not address hazards and are not an appropriate location to address mitigation actions.

Local Emergency Operations Plan	Y	The Emergency Operations Plan adopted in 2018 contains a hazard analysis summary and capability assessment. Six products from the capability assessment emerged which were: Participation in County Evacuation Planning, Investment in the Disaster Information Management System (WebEOC), Training and Exercises for Staff, Emergency Operations Center Annex, Recovery Guidance, and Debris removal. The first priority listed in the operational goals section of this plan is to mitigate hazards.
Continuity of Operations Plan	Y	The Emergency Operations Plan adopted in 2018 contains section 2.4 (Continuity of Government (COG) Operations, and 2.5 (Continuity of Operations (COOP). Both sections contain comprehensive information related to COG and COOP to ensure operations are continued during and after a disaster.
Transportation Plan	Y	The City's transportation plan is comprised of the maps and policies in the General Plan, along with other planning documents in the Bicycle, Pedestrian, and Trails, Master Plan, the ADA Transition Plan, and services plans for the City's transit service, e-Tran. Most of these plans do not address hazards as they are focused on the delivery of transportation infrastructure for the movement of goods, services, and people around and through the City. However, as this infrastructure is designed, best planning and engineering practices are applied to ensure that the improvements do not impact drainage ways, increase fire severity, or otherwise create a hazard to persons and property.
Stormwater Management Plan/Program	Y	The City's Storm Drainage Master Plan explains the City's Stormwater Management program, stormwater regulations and it includes flood mitigation projects Chapter 15.12 Stormwater Management and Discharge Control Storm Drainage Master Plan
Engineering Studies for Streams	Y	See Stormwater Management Plan/Program
Community Wildfire Protection Plan	N	The City is not in a wildfire hazard area; therefore no plan is required.
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	Y 2013	The City adopted the most recent Climate Action Plan in 2019 to identify steps the City will take to address climate change. In addition, the City adopted a Community Mobility Resilience Plan in 2021 to provide a comprehensive set of strategies to mitigate and adapt to the impacts of climate change on our transportation network.
Building Code, Permitting, and Inspections	**Y/N**	**Are codes adequately enforced?**
Building Code	Y	2016/2019 Yes, codes are enforced by the City's Building Division.
Building Code Effectiveness Grading Schedule (BCEGS) Score	Y	Score: 2
Fire department ISO rating:	Y	Rating: 3/9 (urban/rural)

Site plan review requirements	Y	Since 2005 the City has had a discretional design review requirement for all new non-residential and multifamily construction over 1,000 square feet. Master home plans (track subdivisions) are also subject to design review.
Land Use Planning and Ordinances	**Y/N**	**Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?**
Zoning ordinance	Y 2006	The City's Zoning regulations are included in Title 23 of the Municipal Code. A comprehensive update was completed in 2006. The code is regularly reviewed and updated. Title 23 Zoning
Subdivision ordinance	Y	Title 22 Land Development The City recently adopted Flood Damage Prevention regulations as part of its Municipal Code. The regulations are modeled after the State's model ordinance for non-coastal communities. The regulation will implement policies in the General Plan relative to limiting development in the floodplain.
Floodplain ordinance	Y	The City adopted Chapter 16.50 - Flood Damage Prevention regulations as part of its Municipal Code. The regulations are modeled after the State's model ordinance for non-coastal communities. The regulation implements policies in the General Plan relative to limiting development in the floodplain.
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Y	Chapter 15.12 Stormwater Management and Discharge Control Chapter 16.44 Land Grading and Erosion Control Chapter 16.50 Flood Damage Prevention Title 23 Zoning – Division III-Chapter 23.42
Flood insurance rate maps	Y	FEMA, recorded parcel maps and the City's GIS data.
Elevation Certificates	Y	Various sites throughout the City. During review of improvement plans, the Development Engineering team review and approve.
Acquisition of land for open space and public recreation uses	Y	General Plan EGMC 22.40 Bicycle, Pedestrian, and Trail Master Plan Storm Drainage Master Plan Laguna Ridge Specific Plan Southeast Policy Area
Erosion or sediment control program	Y	Chapter 16.44 Land Grading and Erosion Control
Other	Y	Chapter 17.04 Uniform Fire Code was adopted in 2019 which in turn adopts the California Fire Code.
How can these capabilities be expanded and improved to reduce risk?		
Continue to implement programs and update/enforce regulations.		

Source: City of Elk Grove

City of Elk Grove General Plan (2019)

The City of Elk Grove General Plan Program serves as the blueprint for future growth and development and provides comprehensive planning for the future. It encompasses what the City is now, and what it

intends to be, and provides the overall framework of how to achieve this future condition (see the discussion in Section 4.3.1 Growth and Development Trends).

The General Plan includes a Safety Element that focuses on safety issues to be considered in planning for the present and future development of the City Planning Area. Identified hazards include wildfire, geologic/seismic, flooding, and other natural and man-made hazards (such as hazardous materials).

The Services, Health, and Safety chapter contains goals and policies addressing the nine topics listed below, which are each assigned a one-, two-, or three-letter acronym. Within each topic, the following goals further the Community Vision and Supporting Principles. Mitigation-related goals are as follows:

- Disaster and Emergency Management (EM)
  - ✓ GOAL EM-1: Coordinated Disaster and Emergency Management3
- Disaster and Emergency Risk Reduction (ER)
  - ✓ GOAL ER-1: Minimal Risk from Accidental Release of Hazardous Materials
  - ✓ GOAL ER-2: Minimal Damage from Flooding and Drainage
  - ✓ GOAL ER-3: Minimal Risk from Geologic and Seismic Hazards
  - ✓ GOAL ER-4: Minimal Risk from Fire Hazards
  - ✓ GOAL ER-5: Safe Crossings and Goods Movement on Railroads
  - ✓ GOAL ER-6: An Adaptable and Resilient Community
- Disaster and Emergency Response and Public Safety (SAF)
  - ✓ GOAL SAF-1: A Safe Community
- Urban Infrastructure (INF)
  - ✓ GOAL INF-1: An Efficient Water Delivery and Storage System
  - ✓ GOAL INF-2: An Efficient Wastewater Collection and Treatment System
- Community Infrastructure and Facilities (CIF)
  - ✓ GOAL CIF-1: Minimal Solid Waste Generation
  - ✓ GOAL CIF-2: Coordinated Utility Infrastructure and Improvements
  - ✓ GOAL CIF-3: Elk Grove is a Leader in Innovative Technology Infrastructure
  - ✓ GOAL CIF-4: Schools Are an Integral Part of the Community
  - ✓ GOAL CIF-5: Community Facilities that Serve the Needs of the Community
- Infrastructure Financing and Phasing (IFP)
  - ✓ GOAL IFP-1: Infrastructure Improvement Costs Are Secured Prior to Development
- Community Health (HTH)
  - ✓ GOAL HTH-1: Healthy Living Options for Residents
- Community Services (CS)
  - ✓ GOAL CS-1: A Library System That Empowers Public Learning for Residents
  - ✓ GOAL CS-2: Services and Programs Support and Are Accessible to Children, Youth, and Seniors
- Noise (N)

- ✓ GOAL N-1: Sensitive Uses Are Protected from Noise Intrusion
- ✓ GOAL N-2: Community Noise Exposure is Minimized

Elk Grove Climate Action Plan (2019)

In December 2009, the City was awarded an Energy Efficiency and Conservation Block Grant (EECBG) from the United States Department of Energy. The City dedicated a portion of its EECBG funds to prepare the City's first CAP which was adopted by the City Council on March 27, 2013.

This document serves as the first update to the City's CAP and will support the current CAP implementation work being done at the City while providing new information and strategies to reduce the City's GHG emissions.

The purpose of the CAP is to identify how the City will achieve State-recommended targets of reducing GHG emissions to 1990 levels by 2020 and 40 percent below 1990 levels by 2030 pursuant to Assembly Bill (AB) 32 and Senate Bill (SB) 32. The CAP also demonstrates initial progress towards meeting the State's long-term 2050 goal of reducing emissions to 80 percent below 1990 levels as stated in Executive Order S-03-05. The CAP provides goals and associated measures, also referred to as GHG reduction strategies, in the sectors of energy use, transportation, land use, and solid waste.

City of Elk Grove Storm Drainage Master Plan

The City has developed a comprehensive Storm Drainage Master Plan (SDMP) to provide a variety of drainage concepts for upgrading the existing storm drainage and flood control collection system. The SDMP identifies and analyzes the existing drainage deficiencies throughout the City to provide a range of drainage concepts for the construction of future facilities required to serve the City at buildout of the General Plan; to establish criteria for selecting and prioritizing projects; and to utilize the SDMP for the potential development of a capital drainage financing program. The SDMP combines the demands of flood-risk reduction with ecosystem enhancements while incorporating urban development and rural residential land uses to provide an effective plan that will meet both the City's and community's vision. The SDMP was recently updated in 2019.

City of Elk Grove Capital Improvement Program

The Capital Improvement Program (CIP) includes all active projects and those expected to be undertaken during the coming five fiscal years. Specific projects and their scheduled completions were selected based on:

- Implementation of the City's General Plan;
- Existing traffic patterns and associated improvement needs;
- Projected traffic patterns, based on assumptions regarding the quantity and location of expected development;
- The need to establish a coherent roadway network, with strategic connections that distribute traffic flows efficiently;
- Minimizing disruptions associated with construction activity;
- Availability of funding; and
- City Council direction.

City of Elk Grove Emergency Operations Plan

The City's Emergency Operations Plan (EOP) establishes an Emergency Management Organization (EMO) and assigns functions and tasks consistent with California's Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS). It provides for the integration and coordination of planning efforts of multiple jurisdictions. This Plan was reviewed and approved by representatives from each City department, local special districts with emergency services responsibilities in the City, and the Sacramento Operational Area Office of Emergency Services. The content is based upon guidance approved and provided by the State of California, the Federal Emergency Management Agency and the federal Department of Homeland Security (DHS). The intent of the EOP is to provide direction on how to respond to an emergency from the initial onset, through an extended response, and into the recovery process.

City of Elk Grove Bicycle, Pedestrian and Trail Master Plan

The Bicycle, Pedestrian and Trails Master Plan (BPTMP or Master Plan) is intended to guide and influence pedestrian, bicycle, and trail policies, programs, and development standards to make biking and walking in the City of Elk Grove (City) more safe, comfortable, convenient, and enjoyable for all community members. The ultimate goal of the BPTMP is to increase the number of persons who walk and bicycle for transportation to work, school, and errands, and for recreation. The City seeks to have exemplary bicycle, pedestrian, and trail facilities that provide connectivity throughout the City and the wider Sacramento region in order to offer recreational opportunities and an alternative method for transportation for City residents.

B.6.2. Administrative/Technical Mitigation Capabilities

Table B-58 identifies the City department(s) responsible for activities related to mitigation and loss prevention in Elk Grove.

Table B-58 City of Elk Grove'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	There are maintenance programs in place to reduce risks.
Mutual aid agreements	Y	California Master Mutual Aid Agreement, Law Enforcement Mutual Aid Agreement, Fire and Rescue Mutual Aid Agreement (via Cosumnes Fire District), Public Works Mutual Aid Agreement, County of Sacramento Operational Area Council, U.S. Army Corps of Engineers Rehabilitation Inspection PL84-99 Program, NFIP, County of Sacramento OES, County of Sacramento EMD
Other		Flood training, January 2016

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	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigations. There is coordination between agencies and staff and it is effective.
Floodplain Administrator	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigations. There is coordination between agencies and staff and it is effective.
Emergency Manager	Y PT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigations. There is coordination between agencies and staff and it is effective.
Community Planner	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigations. There is coordination between agencies and staff and it is effective.
Civil Engineer	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigations. There is coordination between agencies and staff and it is effective.
GIS Coordinator	Y FT	Staff is adequate to enforce regulations. Staff is trained on hazards and mitigations. There is coordination between agencies and staff and it is effective.
Other		
Technical		
Warning systems/services (Reverse 911, outdoor warning signals)	Y	Reverse 911, pump station alarms, Local Hazard Mitigation Plan, Debris Management Plan
Hazard data and information	Y	FEMA Floodplain maps, localized flooding maps
Grant writing	Y	Various departments provide grant writing efforts.
Hazus analysis	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		
The City's Public Works Department is converting eight positions, currently filled by consultants, to full-time City employees in the Engineering Services Division. This includes positions in the Traffic and Drainage Engineering Sections. Conversion to full-time City employees will ensure consistency and improved institutional knowledge for understanding and mitigating potential flooding and traffic hazards.		

Source: City of Elk Grove

B.6.3. Fiscal Mitigation Capabilities

Table B-59 identifies financial tools or resources that the City could potentially use to help fund mitigation activities.

Table B-59 City of Elk Grove'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	There are funding resources that have been used in the past and can be used in the future.
Authority to levy taxes for specific purposes	Y	There are funding resources that have been used in the past and can be used in the future.
Fees for water, sewer, gas, or electric services	N	
Impact fees for new development	Y	There are funding resources that have been used in the past and can be used in the future.
Storm water utility fee	Y	There are funding resources that have been used in the past and can be used in the future.
Incur debt through general obligation bonds and/or special tax bonds	N	
Incur debt through private activities	N	
Community Development Block Grant	Y	There are funding resources that have been used in the past and can be used in the future.
Other federal funding programs	Y	FEMA, U.S. Army Corps of Engineers Rehabilitation Inspection PL84-99 Program
State funding programs	Y	Stormwater grant
Other		
How can these capabilities be expanded and improved to reduce risk?		
Continue to train staff, implement programs and enforce regulations.		

Source: City of Elk Grove

B.6.4. Mitigation Education, Outreach, and Partnerships

Table B-60 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 B-60 City of Elk Grove'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.	Y	Emergency preparedness and disaster education information provided at local neighborhood meetings and via social media
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Y	Public meetings to address emergency preparedness and flood control operations. Information is also provided at local outreach events and via social media.

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Natural disaster or safety related school programs	Y	Earthquake and fire drills.
StormReady certification	N	
Firewise Communities certification	N	
Public-private partnership initiatives addressing disaster-related issues	Y	Frequent training with regional partners such as SMUD, PG&E, County of Operational Emergency Services, Sacramento County Water Agency, CSD Fire and Department of Homeland Security
Other		
How can these capabilities be expanded and improved to reduce risk?		
Continue to train staff, implement programs and enforce regulations.		

Source: City of Elk Grove

B.6.5. Other Mitigation Efforts

The City has many other completed or ongoing mitigation projects/efforts that include the following:

- The City has participated in FEMA's Map Modernization Project and the requirements of Title 44 of the Federal Code of Regulations (CFR), Section 65.10 of the National Flood Insurance Program (NFIP) regulations to certify the Laguna West levee system. The Laguna West levee system meets the design, operation and maintenance criteria set forth 44 CFR Section 65.10. The City also participates in the U.S. Army Corps of Engineers Rehabilitation Inspection PL84-99 Program for non-federal levees and non-project levees.
- The City implements levee operation and maintenance activities, which provide maintenance recommendations and requirements for specific levee inspections and maintenance operations. Levee inspections and maintenance activities include vegetation control, rutting/depressions, erosion control, slope stability, cracking, rodent control, encroachments/excavation, riprap revetments/banks, closure structures, underseepage relief wells/toe drainage system, seepage/sandboils, debris removal, roadway crown, utilities, minor structures, and mosquito abatement.
- Certified the Laguna West levees to participate in the Map Moderation Program and to be in compliance with FEMA's 44 CFR Section 65.10 of the National Flood Insurance Program so that the federally subsidized flood insurance is available to the residents of the City;
- Adoption of resolution (#2007-189) that includes the City as an active member of the Sacramento Operational Area Council;
- Adoption of resolution (#25-2010) for compliance with SEMS/NIMS and certifies us as an "Accredited Disaster Council" to comply with the requirements of Cal OES;
- Mutual Aid Agreements with the following:
  - ✓ California Master Mutual Aid Agreement
  - ✓ Law Enforcement Mutual Aid Agreement
  - ✓ Fire and Rescue Mutual Aid Agreement (via Cosumnes Fire District)
  - ✓ Public Works Mutual Aid Agreement
  - ✓ Sacramento Operational Plan
- Social Media updates to inform the public of dangers and preventative steps to consider to mitigate any threats to their safety;

- Activated cooling and warming centers during extreme weather, as necessary;
- The Police Department's Problem Oriented Police Unit provides disaster education through neighborhood meetings or the Citizens Academy;
- Police Officers receive annual training on emergency response, including responses to local hazards or naturally created hazards;
- Disaster responses from the Police Department to Suburban Propane or the Sacramento Wastewater Treatment Plant;
- Development of a Disaster Debris Management Plan;
- Levee inspections through the U.S. Army Corps of Engineers Rehabilitation Inspection PL84-99 Program to ensure the City's levees are being properly maintained;
- Floodplain studies and LOMRs for new development projects and existing properties to be removed from the FEMA 100-year floodplain;
- Replacement of pump and electrical equipment for pump stations D50, D51, and D53 to protect public safety;
- Inspect and clean storm drainpipe on an annual basis to ensure system is operating in an efficient manner;
- Annual update of Storm Response and Flood Fighting Operation Plan to provide emergency information and support to City staff responding to both forecasted and actual storm events, and emergency information;
- Beaver Management Program to effectively address the challenges presented by beaver activity within the City's network of creeks, channels and storm drainage infrastructure to help prevent flooding;
- Requests and inquiries from the City's residents, businesses and insurance agents for flood zone information;
- Maintaining asset data in GIS to assist the City with planning, design, operation and maintenance efforts;
- Sandbag distribution during severe events to assist residents to protect their properties from flooding
- Drainage and floodplain easement information maintained in a GIS to assist the City with planning, design, operation and maintenance efforts;
- Public outreach efforts and education on emergency preparedness;
- Development of a comprehensive Storm Drainage Master Plan to provide a variety of drainage concepts for upgrading the existing storm drainage and flood control collection system to accommodate future development to serve the City at buildout of the General Plan; updated the SDMP in 2019.
- Identification of new and existing programs and activities that lay out a program level approach to holistically address vital function and values of drainage conveyance, flood control, aquatic resources and water quality that benefit public health and safety, minimize property damage and protect the environment; and
- The following flood mitigation projects were completed:
  - ✓ Emerald Vista Drive Storm Drain Improvements
  - ✓ Bradshaw/Sheldon Road Intersection Improvements
  - ✓ Blakemore Court and Hartwell Court Drainage Improvements
  - ✓ Storm Drain Pump Station Improvement Project
  - ✓ North Camden Drive Storm Drain Improvements
  - ✓ Sleepy Hollow Detention Basin Retrofit Project

B.7 Mitigation Strategy

B.7.1. Mitigation Goals and Objectives

The City of Elk Grove adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

B.7.2. NFIP Mitigation Strategy

The City of Elk Grove joined the National Flood Insurance Program (NFIP) on October 15, 2001. As a participant of the NFIP, the City of Elk Grove has administered floodplain management regulations that meet the minimum requirements of the NFIP. The management program objective is to protect people and property within the City. The City of Elk Grove will continue to comply with the requirements of the NFIP in the future.

In addition, the City of Elk Grove actively participates with Sacramento County to address local NFIP issues through a regional approach. Many of the program activities are the same for the City of Elk Grove as for Sacramento County since participation at the County level includes all local jurisdictions.

The City of Elk Grove Public Works Department provides public outreach activities, which include map information services, public awareness, public hazard disclosure, and flood protection information. This information is readily available to the public and consists of current flood mapping. In addition, the Public Works Department provides information about the stormwater management program and up-to-date information related to the maintenance of the City's drainage system.

The NFIP's Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS which are to reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance. The City of Elk Grove is not a current participant in the CRS program.

More information about the floodplain administration in the City of Elk Grove can be found in Table B-61.

Table B-61 City of Elk Grove Compliance with NFIP

NFIP Topic	Comments
Insurance Summary	
How many NFIP policies are in the community? What is the total premium and coverage?	1,002 policies $426,259 in premiums $337,426,500 in coverage
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	5 claims $103,027.75 in claims paid 0 substantial damage claims
How many structures are exposed to flood risk within the community?	269 in 1% annual chance 6,737 in 0.2% annual chance

NFIP Topic	Comments
Repetitive Loss (RL) and Severe Repetitive Loss Properties (SRL)	0 RL properties 0 SRL properties
Describe any areas of flood risk with limited NFIP policy coverage	No known areas.
Staff Resources	
Is the Community Floodplain Administrator or NFIP Coordinator certified?	Yes, CFM certification has been attained
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	New development applications are routed to drainage staff for review. Staff reviews plans and also confirms that proposed developments are not located within SFHAs. FEMA floodplain information has been incorporated into the City's GIS database in addition to floodplain easement information. The City manages the flood control and flood preparedness webpages, which include a variety of flood related information. In addition, outreach information is provided at various events in the City.
What are the barriers to running an effective NFIP program in the community, if any?	There are minimal barriers to running an effective NFIP program. The community is fairly informed and educated regarding flooding concerns and the City has conducted various neighborhood workshops in the past. Education is key and the City will continue to educate the community regarding existing and potential flooding concerns.
Compliance History	
Is the community in good standing with the NFIP?	Y
Are there any outstanding compliance issues (i.e., current violations)?	N
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	CAV 7/27/2010
Is a CAV or CAC scheduled or needed?	Not scheduled
Regulation	
When did the community enter the NFIP?	10/15/2001
Are the FIRMs digital or paper?	Digital
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Yes, the regulations are modeled after the State's model ordinance for non-coastal communities. The regulation implements policies in the General Plan relative to limiting development in the floodplain. In addition, habitable structures are not allowed to be constructed in the SFHA.

NFIP Topic	Comments
Provide an explanation of the permitting process.	New development applications are submitted to the Development Services Division and applications are then routed to various Divisions in the City, including Public Works. PW staff reviews plans, confirms that proposed developments are not located within SFHAs and provides comments as necessary. Staff also tracks these reviews.
Community Rating System	
Does the community participate in CRS?	N
What is the community's CRS Class Ranking?	N/A
What categories and activities provide CRS points and how can the class be improved?	N/A
Does the plan include CRS planning requirements?	N/A

B.7.3. Mitigation Actions

The planning team for the City of Elk Grove 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. The following hazards were considered a priority for purposes of mitigation action planning:

- Climate Change
- Dam Failure
- Drought & Water Shortage
- Earthquake
- Floods: 1%/0.2% annual chance
- Floods: Localized Stormwater
- Levee Failure
- Pandemic
- Severe Weather: Extreme Cold and Freeze
- Severe Weather: Extreme Heat
- Severe Weather: Heavy Rains and Storms
- Wildfire

After a review of capabilities and mitigation action alternatives, the following hazards were move to a low priority significance for mitigation action purposes:

- Earthquake
- Severe Weather: Extreme Cold and Freeze

It should be noted that many of the projects submitted by each jurisdiction in Table 5-4 in the Base Plan benefit all jurisdictions whether or not they are the lead agency. Further, many of these mitigation efforts

are collaborative efforts among multiple local, state, and federal agencies. In addition, the countywide public outreach action, as well as many of the emergency services actions, apply to all hazards regardless of hazard priority. Collectively, this multi-jurisdictional mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of each jurisdiction to implement over the next 5-years covered by this plan. It should further be noted, that although a jurisdiction may not have specific projects identified for each priority hazard for the five year coverage of this planning process, each jurisdiction has focused on identifying those projects which are realistic and reasonable for them to implement and would like to preserve their hazard priorities should future projects be identified where the implementing jurisdiction has the future capacity to implement.

Multi-Hazard Actions

Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

Hazards Addressed: Multi-hazard (Climate Change, Dam Failure, Drought & Water Shortage, Earthquake, Floods: 1%/0.2% annual chance, Floods: Localized Stormwater, Levee Failure, Pandemic, Severe Weather: Extreme Cold and Freeze, Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms, Wildfire)

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: Local jurisdictional reimbursement for mitigation projects and cost recovery after a disaster is guided by Government Code Section 8685.9 (AB 2140). Specifically, this section requires that each jurisdiction adopt a local hazard mitigation plan (LHMP) in accordance with the federal Disaster Mitigation Act of 2000 as part of the Safety Element of its General Plan. Adoption of the LHMP into the Safety Element of the General Plan may be by reference or incorporation.

Other Alternatives: No action

Existing Planning Mechanisms through which Action will be Implemented: Safety Element of General Plan

Responsible Office: City of Elk Grove Planning Department

Priority (H, M, L): High

Cost Estimate: Jurisdictional board/staff time

Potential Funding: Local budgets

Benefits (avoided Losses): Incorporation of an adopted LHMP into the Safety Element of the General Plan will help jurisdictions maximize the cost recovery potential following a disaster.

Schedule: As soon as possible

Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

Hazards Addressed: Multi-hazard (Climate Change, Dam Failure, Drought & Water Shortage, Floods: 1%/0.2% annual chance, Floods: Localized Stormwater, Levee Failure, Pandemic, Severe Weather: Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms, Wildfire)

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: The City and County play a key role in public outreach/education efforts to communicate the potential risk and vulnerability of their community to the effects of natural hazards. A comprehensive multi-hazard public education program will better inform the community of natural hazards of concern and actions the public can take to be better prepared for the next natural disaster event.

Project Description: A comprehensive multi-hazard outreach program will ascertain both broad and targeted educational needs throughout the community. The City will work with the County and other agencies as appropriate to develop timely and consistent annual outreach messages in order to communicate the risk and vulnerability of natural hazards of concern to the community. This includes measures the public can take to be better prepared and to reduce the damages and other impacts from a hazard event. The public outreach effort will leverage and build upon existing mechanisms.

Other Alternatives: Continue public information activities currently in place.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Existing County outreach programs will be reviewed for effectiveness and leveraged and expanded upon to reach the broader region.

Responsible Office: City of Elk Grove in partnership with the County

Participating Jurisdictions: County and all cities.

Priority (H, M, L): High

Cost Estimate: Annual costs to be determined, and will depend on the scope and frequency of activities and events as well as volunteer participation

Benefits (Losses Avoided): Increase residents' knowledge of potential hazards and activities required to mitigate hazards and be better prepared. Protect lives and reduce damages, relatively low cost to implement.

Potential Funding: Local budgets, grant funds

Timeline: Ongoing/Annual public awareness campaign

Action 3. Elk Grove Green Street Project: Repurposing Urban Runoff with Green Instructure Technologies

Hazards Addressed: Flood protection, Severe Weather: Heavy Rains and Storms, drainage deficiencies, water quality, habitat protection, education and outreach, and awareness and stewardship

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background:

- Reduce pollutant loads entering Elk Grove Creek and ultimately discharging into Stone Lakes National Wildlife Refuge and the Sacramento River - San Joaquin River Delta.
- Use pre-treated urban runoff for groundwater recharge.
- Protect riparian areas from further degradation.
- Reduce the risk of flooding by reducing runoff volumes and peak flows.

Project Description: The City prioritized a ½ mile section of major roadway for retrofit to repurpose stormwater as groundwater and provide other high-quality benefits in an impaired urbanized watershed. The Project will replace an outdated drainage system and impervious pavement with pervious materials and linear biofiltration planters connected to dry wells along the street frontage. The proposed green infrastructure will: 1) reduce pollutant loads entering Elk Grove Creek, which outfalls into the Stone Lakes National Wildlife Refuge and the Delta, 2) use pretreated urban runoff for groundwater recharge, and 3) provide flood protection. Assuming an average annual rainfall of 18", the 5.56 acre watershed will generate 6.84 acre-feet of stormwater for capture and infiltration. The Project, located on a major arterial that connects elementary, middle, and high schools will provide safer, enhanced pedestrian and bicycle access, traffic calming measures, and will enhance the City's Safe Routes to Schools Program

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: The Green Street Project was identified in the Storm Drainage Master Plan.

Responsible Agency/ Department/Partners: City of Elk Grove, Public Works Department - Drainage

Cost Estimate: $5 million

Benefits (Losses Avoided): Reduce pollutant loads, impacts on groundwater supplies, riparian areas degradation, and reduce peak flows.

Potential Funding: Storm Drainage Utility Fee (Drainage Fund) and Grants

Timeline: Unknown

Project Priority (H, M, L): M

Action 4. Mutual Aid Agreements

Hazards Addressed: Multi-hazard (Climate Change, Dam Failure, Drought & Water Shortage, Floods: 1%/0.2% annual chance, Floods: Localized Stormwater, Levee Failure, Pandemic, Severe Weather: Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms, Wildfire)

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background: Mutual aid agreements are necessary to be in place if a disaster occurs to provide integration and coordination of planning efforts for multiple jurisdictions. The intent of these agreements is to provide direction on how to respond to an emergency from the initial onset, through to extended response, and into the recovery process. Disasters know no boundaries and other emergency agencies are needed to help with emergency response.

Project Description: Ensure that Mutual Aid Agreements are in place such as: California Master Mutual Aid Agreement, Law Enforcement Mutual Aid Agreement, Fire and Rescue Mutual Aid Agreement (via Cosumnes Fire District), Public Works Mutual Aid Agreement, County of Sacramento Operational Area Council, U.S. Army Corps of Engineers Rehabilitation Inspection PL84-99 Program, NFIP, County of Sacramento OES, and County of Sacramento EMD.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: General Plan (Safety Element), Emergency Operation Plan, Storm Drainage Master Plan

Responsible Agency/ Department/Partners: City of Elk Grove, Public Works Department - Drainage; City of Elk Grove Police Department

Cost Estimate: Unknown

Benefits (Losses Avoided): Assistance with emergency response from other agencies.

Potential Funding: No funding is necessary to establish Mutual Aid Agreements. However, funding sources related to mutual aid responses, associated with Mutual Aid Agreements typically come from the requesting agency or from funds at the State or Federal level.

Timeline: On-going

Project Priority (H, M, L): High

Action 5. City of Elk Grove's Storm Drainage Master Plan (SDMP)

Hazards Addressed: Drought and Water Shortage, Flood protection, Severe Weather: Heavy Rains and Storms, drainage deficiencies, water quality, habitat protection, education and outreach, and awareness and stewardship

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background:

- Protect the value and function of the public storm drainage and flood control systems infrastructure and extend its useful life.
- Improve the storm drainage and flood control systems by incorporating features that promote water quality, groundwater recharge, and habitat protection, whenever feasible.
- Foster awareness and stewardship of water quality and aquatic ecosystems.
- Comply with applicable local, state and federal laws and regulations.

Project Description: The SDMP was developed to provide a variety of drainage concepts for upgrading the existing storm drainage and flood control collection system (Drainage System). The SDMP identifies and analyzes the existing drainage deficiencies throughout the City; provides a range of drainage concepts for the construction of future facilities required to serve the City at buildout of the General Plan; and establishes criteria for selecting and prioritizing projects. Furthermore, the SDMP may be utilized for the development of a capital drainage financing program. The SDMP combines the demands of flood-risk reduction with ecosystem enhancements while incorporating urban development and rural residential land uses to provide an effective plan that will meet both the City's and community's vision. A Minor Update to the SDMP was completed in 2019; the main purpose of the update was to provide a summary of projects completed since 2011, provide details regarding remaining projects, including implementation costs and schedules (if available), and provide information regarding new regulatory requirements related to stormwater management and flood control.

Other Alternatives:

Existing Planning Mechanism(s) through which Action Will Be Implemented: Implement the programs and projects identified in the SDMP

Responsible Agency/ Department/Partners: City of Elk Grove, Public Works Department - Drainage

Cost Estimate: Unknown

Benefits (Losses Avoided): Avoids flooding, degradation of water quality, and impacts on groundwater supplies.

Potential Funding: Storm Drainage Utility Fee (Drainage Fund), Sacramento County Zone 11A fee (Drainage Impact Fee Program), and Grants

Timeline: None

Project Priority (H, M, L): H

Action 6. Create a Climate-Smart Stormwater Management System

Hazards Addressed: Climate Change, Flood protection, drainage deficiencies, water quality, Levee Failure, Severe Weather: Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background:

- Increase stormwater infrastructure capacity
- Climate change is likely to result in changes in precipitation patterns, with increases in the intensity of large storm events
- Atmospheric river phenomenon, and other events that bring significant fractions of annual average precipitation over a brief period of time, are likely to increase
- Current infrastructure standards are not updated with modeling to take into consideration these more intense storm events

Project Description: This work would include several items. 1) Work with Sacramento County to conduct appropriate analysis and begin the process to update the intensity, duration, and frequency curves used in stormwater infrastructure standards used for managing localized runoff and precipitation events. Incorporate updated modeling in standards for new development in the City, including capital improvement projects and the City's Storm Drainage Master Plan. 2) Develop a comprehensive list of existing stormwater and drainage facilities that are at increased risk from failure or loss of performance from increases in the intensity of storm events. 3) Explore opportunities to add redundancy to the City's existing stormwater and flood management systems (e.g., additional detention basins) to mitigate impacts from increased storm intensities as needed. 4) Explore and identify feasible strategies (e.g., riprap, hardening) to mitigate scour for bridges. Identify critical bridges (e.g., high-volume roadways) and prioritize improvements to these bridges to prevent scour and asset failure.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Storm Drainage Master Plan, City Construction Specifications and Improvement Standards, Sacramento County Hydrology Standards

Responsible Agency/ Department/Partners: City of Elk Grove, Development Services and Public Works Departments

Cost Estimate: $300,000 (for the study)

Benefits (Losses Avoided): Increase preparedness for large flood events

Potential Funding: Storm Drainage Utility Fee (Drainage Fund), Sacramento County Zone 11A fee (Drainage Impact Fee Program), and Grants

Timeline: None

Project Priority (H, M, L): M

Action 7. Implement a Comprehensive and Climate-Smart Green Infrastructure Strategy

Hazards Addressed: Climate Change, Drought and Water Shortage, Extreme heat, Flooding, Drainage, Severe Weather: Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background:

- Climate change is likely to result in changes in precipitation patterns and increases in extreme heat events.
- Current infrastructure standards are not sufficient to mitigate the impacts of climate change and need to be updated to adapt to the realities of climate change.
- Climate-smart green infrastructure will improve the City's ability to reduce the impact of climate change (extreme heat and flooding) and recover following hazard events.

Project Description: Implement a climate-smart green infrastructure to mitigate and adapt to the impacts of climate change. This project would include several actions, including: 1) updating City Standards to require larger land development projects to incorporate principles of green infrastructure (e.g., bioswales, permeable pavements, rain gardens, linear parks, green roofs), which help mitigate the UHI effect in the City; 2) increase tree planting with a focus on carbon sequestration and environmental justice; and 3) update the City's Municipal Code and other design guidelines to incorporate strategies to mitigate future increases in temperature and extreme heat events and mitigate the UHI effect in new development.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Municipal Code, Design Standards and Protocols

Responsible Agency/ Department/Partners: City of Elk Grove, Development Services and City Managers Departments

Cost Estimate: $7.4 million

Benefits (Losses Avoided): Increase evapotranspiration and reduce heat-absorbing surfaces

Potential Funding: General Funds, Measure A Transportation sales tax and mitigation fee and Grants

Timeline: None

Project Priority (H, M, L): M

Action 8. Upgrade the City's Laguna West Levee System to Mitigate Climate-Related Flood Impacts

Hazards Addressed: Climate Change, Flood, Levee Failure, Severe Weather: Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background:

- California requires the 200-year floodplain to be considered in zoning and development regulations.

- The current Laguna West levee system can meet the FEMA 100-year floodplain but would need upgrades to provide full protection for the 200-year floodplain.
- Comply with applicable local, state, and federal laws and regulations.

Project Description: This project would work to develop policies to finance, plan, and construct infrastructure improvements to the Laguna West levee system to increase the City's resilience to large-scale flooding events. The Laguna West levee system is accredited by FEMA as meeting 100-year storm event standards and provides protection to the Laguna West and Lakeside areas. However, the system would need to be raised an average of 3.5 feet to comply with the State 200-year flood protection standard and relieve new development of addition development obligations.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Agency/ Department/Partners: City of Elk Grove, Public Works Department

Cost Estimate: $30.8 million

Benefits (Losses Avoided): Increase preparedness for large flood events

Potential Funding: Storm Drainage Utility Fee (Drainage Fund), Sacramento County Zone 11A fee (Drainage Impact Fee Program), and Grants

Timeline: None

Project Priority (H, M, L): H

Action 9. Establish a Resilient Pedestrian and Bicycle Infrastructure Network

Hazards Addressed: Climate Change, Extreme heat

Goals Addressed: 1, 2, 3, 4, 5

Issue/Background:

- Climate change is likely to result in changes in precipitation patterns and increases in extreme heat events.
- The current infrastructure network for pedestrians and cyclists is not sufficient to mitigate the impacts of climate change, in particular for extreme heat.
- Pedestrians and cyclists are particularly vulnerable during extreme heat and providing a network that is able to adapt to extreme heat would allow the network to continue to be utilized during heat events.
- The pedestrian and bicycle network could be used to assist in mitigating the impact of extreme heat through increasing tree canopy and high-albedo surfaces throughout the network.

Project Description: Incorporate projections of future extreme heat impacts into the design and development of pedestrian and bicycle infrastructure in the City. Identify opportunities to upgrade existing

bicycle and pedestrian infrastructure to mitigate future extreme heat impacts and ensure comfort for users (e.g., tree canopy, high-albedo surfaces).

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Bicycle, Pedestrian, and Trails Master Plan: Design Standards and Protocols

Responsible Agency/ Department/Partners: City of Elk Grove, Development Services and Public Works Departments

Cost Estimate: $9.4 million

Benefits (Losses Avoided): Increase resilience of pedestrian and bicycle infrastructure, ensure continued ability to use pedestrian and bicycle infrastructure during heat events

Potential Funding: Active Transportation Fee, Local Transportation Funds, Measure A Transportation sales tax and mitigation fee and Grants

Timeline: None

Project Priority (H, M, L): M