Annex J Three Rivers Levee Improvement Authority

J.1 Introduction

This Annex details the hazard mitigation planning elements specific to the Three Rivers Levee Improvement Authority (TRLIA or District), a new participating jurisdiction to the 2021 Yuba 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 District. This Annex provides additional information specific to TRLIA, with a focus on providing additional details on the risk assessment and mitigation strategy for this District.

J.2 Planning Process

As described above, the District followed the planning process detailed in Chapter 3 of the Base Plan. In addition to providing representation on the Yuba County Hazard Mitigation Planning Committee (HMPC), the District 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 J-1. Additional details on plan participation and District representatives are included in Appendix A.

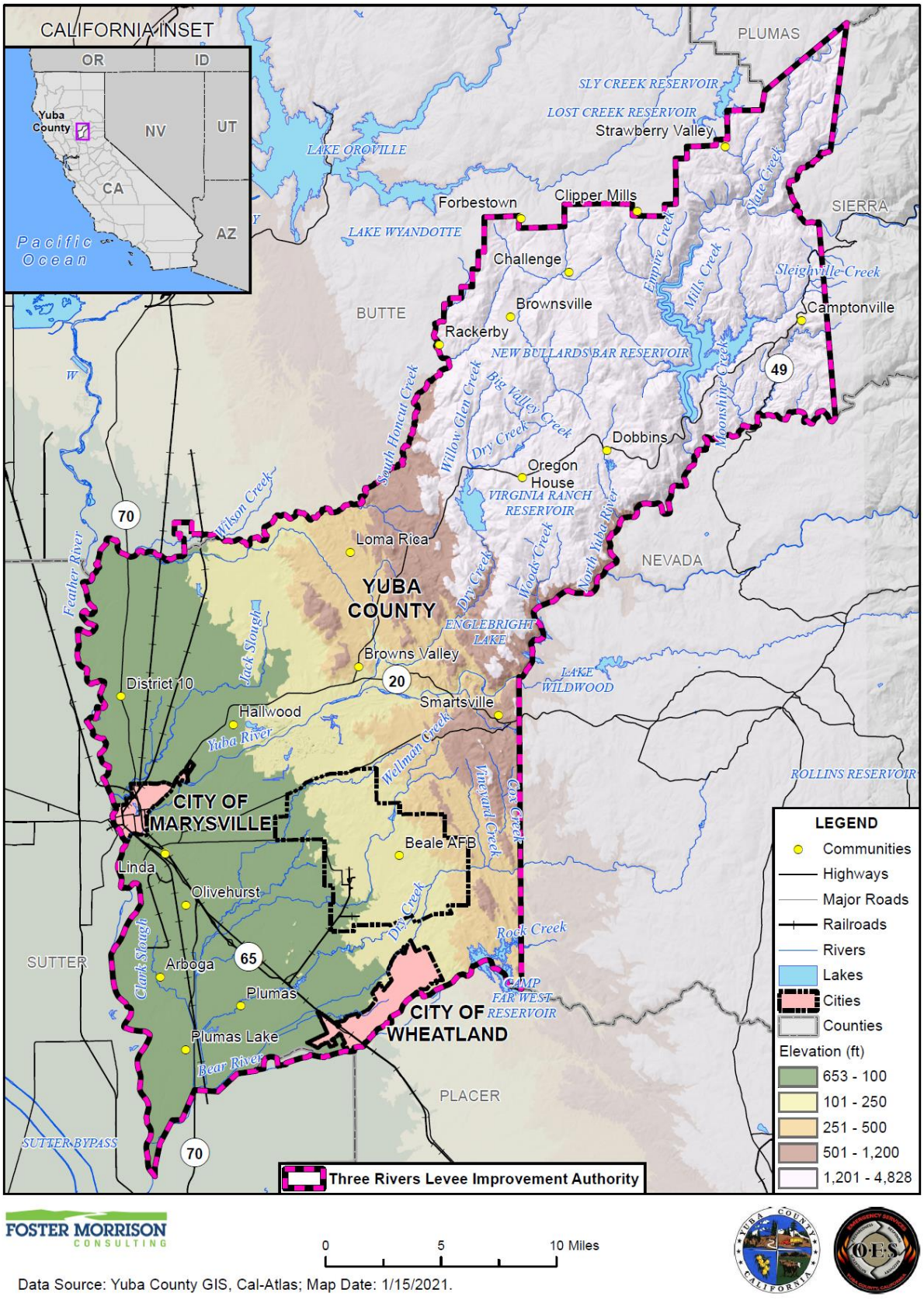
Table J-1 TRLIA – Planning Team

Name	Position/Title	How Participated
Paul Brunner	Executive Director	Document Review
Ric Reinhardt	TRLIA Consulting Engineer	Meeting participation, document review, hazard determination
Tony Deus	TRLIA Consulting Engineer	Meeting participation, document review, hazard determination

J.3 District Profile

The District profile for the TRLIA is detailed in the following sections. Figure J-1 displays a map and the location of the District within Yuba County.

Figure J-1 TRLIA



J.3.1. Overview and Background

TRILIA, a joint powers agency, was established in May 2004 by the County of Yuba and Reclamation District 784 to finance and construct levee improvements in south Yuba County.

The Authority's mission is to provide 200-year flood protection for south Yuba County. Four work phases were identified to achieve that goal, with the Feather River Levee Improvements representing the bulk of the fourth phase. In 2011, the Yuba Goldfields area was added to Phase 4 work due to flood issues being identified by the USACE. The Yuba Goldfields 100-Year Interim project was completed in 2016 and a new setback levee, the Yuba Goldfields 200 Year Levee Project, is beginning construction this year and due to be finished in 2021. This new project will meet the 200 Year Urban Levee Design Criteria (ULDC). In total, more than $500 million is being invested in flood protection improvements, approximately half of which is being paid for by the State. Additionally, TRLIA has begun design and construction of a flood risk reduction project for the Community of Hallwood which focuses on the Yuba River North Training Wall (NTW). When completed, the NTW project will seek FEMA 100yr certification for the Community of Hallwood.

TRILIA operates under a five-member Board of Directors and serves the entirety of Yuba County.

J.4 Hazard Identification

TRLIA identified the hazards that affect the District and summarized their location, extent, frequency of occurrence, potential magnitude, and significance specific to District (see Table J-2).

Table J-2 TRLIA—Hazard Identification Assessment

Hazard	Geographic Extent	Likelihood of Future Occurrences	Magnitude/ Severity	Significance	Climate Change Influence
Climate Change	–	–	–	–	–
Dam Failure	–	–	–	–	Medium
Drought & Water Shortage	–	–	–	–	High
Earthquake	–	–	–	–	Low
Floods: 1%/0.5%/0.2% annual chance	Extensive	Unlikely	Catastrophic	High	Medium
Floods: Localized Stormwater	–	–	–	–	Medium
Levee Failure	Extensive	Unlikely	Catastrophic	High	Medium
Pandemic	–	–	–	–	Medium
Severe Weather: Extreme Cold and Freeze	–	–	–	–	Medium
Severe Weather: Extreme Heat	–	–	–	–	High
Severe Weather: Heavy Rains and Storms	–	–	–	–	Medium
Severe Weather: High Winds and Tornadoes	–	–	–	–	Low
Wildfire	–	–	–	–	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

J.5 Hazard Profile and Vulnerability Assessment

The intent of this section is to profile the District's hazards and assess the District's vulnerability separate from that of the Yuba 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 Yuba 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 District is included in this Annex. This vulnerability assessment analyzes the property and other assets at risk to hazards ranked of medium or high significance specific to the District. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the Base Plan.

J.5.1. Hazard Profiles

Each hazard vulnerability assessment in Section J.5.3, includes a hazard profile/problem description as to how each medium or high significant hazard (as shown in Table J-2) affects the District 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 Yuba County Planning Area.

J.5.2. Vulnerability Assessment and Assets at Risk

This section identifies the District'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 District. This data is not hazard specific, but is representative of total assets at risk within the District.

Assets at Risk and Critical Facilities

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

> ***Critical Infrastructure describes the physical and cyber systems and assets that are so vital to the County of Yuba that their incapacity or destruction would have a debilitating impact on our physical or economic security or public health or safety. Critical infrastructure includes any location, facility, or infrastructure that are necessary to maintain normalcy in daily life, and that are essential for the delivery of vital services and for the protection of the community. Critical Facilities are further broken out into three Categories: 1) Essential Services Facilities, 2) Large Group and Vulnerable Populations Facilities, and 3) Infrastructure Facilities.***

Table J-3 lists critical facilities and other District assets identified by the District Planning Team as important to protect in the event of a disaster. A damageable property assessment was completed in 2018

which encompassed the entirety of Yuba County, which is consistent with the area where TRLIA can legally operate. The quantified damages to structures (residential, commercial, life safety), vehicle inventories, and agricultural lands which may be damaged. In total, for the entire area, the value of damageable assets totaled $3.9B.

Table J-3 TRLIA Critical Facilities, Infrastructure, and Other District Assets

Name of Asset	Facility Type	Replacement Value	Which Hazards Pose Risk
Leased Agricultural Lands	Lands – 533 acres	$40,000/ac	Levee Failure, Floods 1%/0.2%
Total		**$ 0**	

Source: TRLIA

TRLIA leases lands to private citizens for agricultural production throughout Yuba County totaling approximately 533 acres. More detailed specific lease information is available on TRLIA's website: https://www.trlia.org/i_want_to/download_view/documents/agricultural_leases.php#outer-1457

Natural Resources

TRLIA has a variety of natural resources of value to the District. These natural resources parallels that of Yuba County as a whole. Information can be found in Section 4.3.1 of the Base Plan.

Historic and Cultural Resources

TRLIA has a variety of historic and cultural resources of value to the District. These historic and cultural resources parallels that of Yuba County as a whole. Information can be found in Section 4.3.1 of the Base Plan.

Populations Served

Also potentially at risk should the District be affected by natural hazard events are the populations served by the District. TRLIA provides services to the entirety of the County.

Growth and Development Trends

General growth in the District parallels that of the Yuba County Planning Area as a whole. Information can be found in Section 4.3.1 of the Base Plan.

Future Development

The District has no control over future development in areas the District services. Future development in these areas parallels that of the Yuba County Planning Area. More general information on growth and development in Yuba County as a whole can be found in "Growth and Development Trends" in Section 4.3.1 Yuba County Vulnerability and Assets at Risk of the Base Plan.

J.5.3. Vulnerability to Specific Hazards

This section provides the vulnerability assessment, including any quantifiable loss estimates, for those hazards identified above in Table J-2 as high or medium significance hazards. Impacts of past events and vulnerability of the District 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 Yuba 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 District 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, critical facilities and infrastructure, populations at risk, and future development.

Power Outage/Power Failure

An impact of almost all hazards below relates to power outage and/or power failures. The US power grid crisscrosses the country, bringing electricity to homes, offices, factories, warehouses, farms, traffic lights and even campgrounds. According to statistics gathered by the Department of Energy, major blackouts are on the upswing. Incredibly, over the past two decades, blackouts impacting at least 50,000 customers have increased 124 percent. The electric power industry does not have a universal agreement for classifying disruptions. Nevertheless, it is important to recognize that different types of outages are possible so that plans may be made to handle them effectively. In addition to blackouts, brownouts can occur. A brownout is an intentional or unintentional drop in voltage in an electrical power supply system. Intentional brownouts are used for load reduction in an emergency. Electric power disruptions can be generally grouped into two categories: intentional and unintentional. More information on types of power disruptions can be found in Section 4.3.3 of the Base Plan.

Public Safety Power Shutoff (PSPS)

A new intentional disruption type of power outage/failure event has recently occurred in California. In recent years, several wildfires have started as a result of downed power lines or electrical equipment. This was the case for the Camp Fire in 2018. As a result, California's three largest energy companies (including PG&E), at the direction of the California Public Utilities Commission (CPUC), are coordinating to prepare all Californians for the threat of wildfires and power outages during times of extreme weather. To help protect customers and communities during extreme weather events, electric power may be shut off for public safety in an effort to prevent a wildfire. This is called a PSPS. More information on PSPS criteria can be found in Section 4.3.3 of the Base Plan.

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 District, and have caused damages in the past. Flooding is a significant problem in Yuba County and the District. Historically, the District 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. As previously described in Section 4.3.10 of the Base Plan, the Yuba County Planning Area and the TRLIA have been subject to historical flooding.

Location and Extent

TRLIA has areas located in the 1% and 0.2% annual chance floodplain. This is seen in Figure J-2.

Figure J-2 TRLIA – FEMA DFIRM Flood Zones

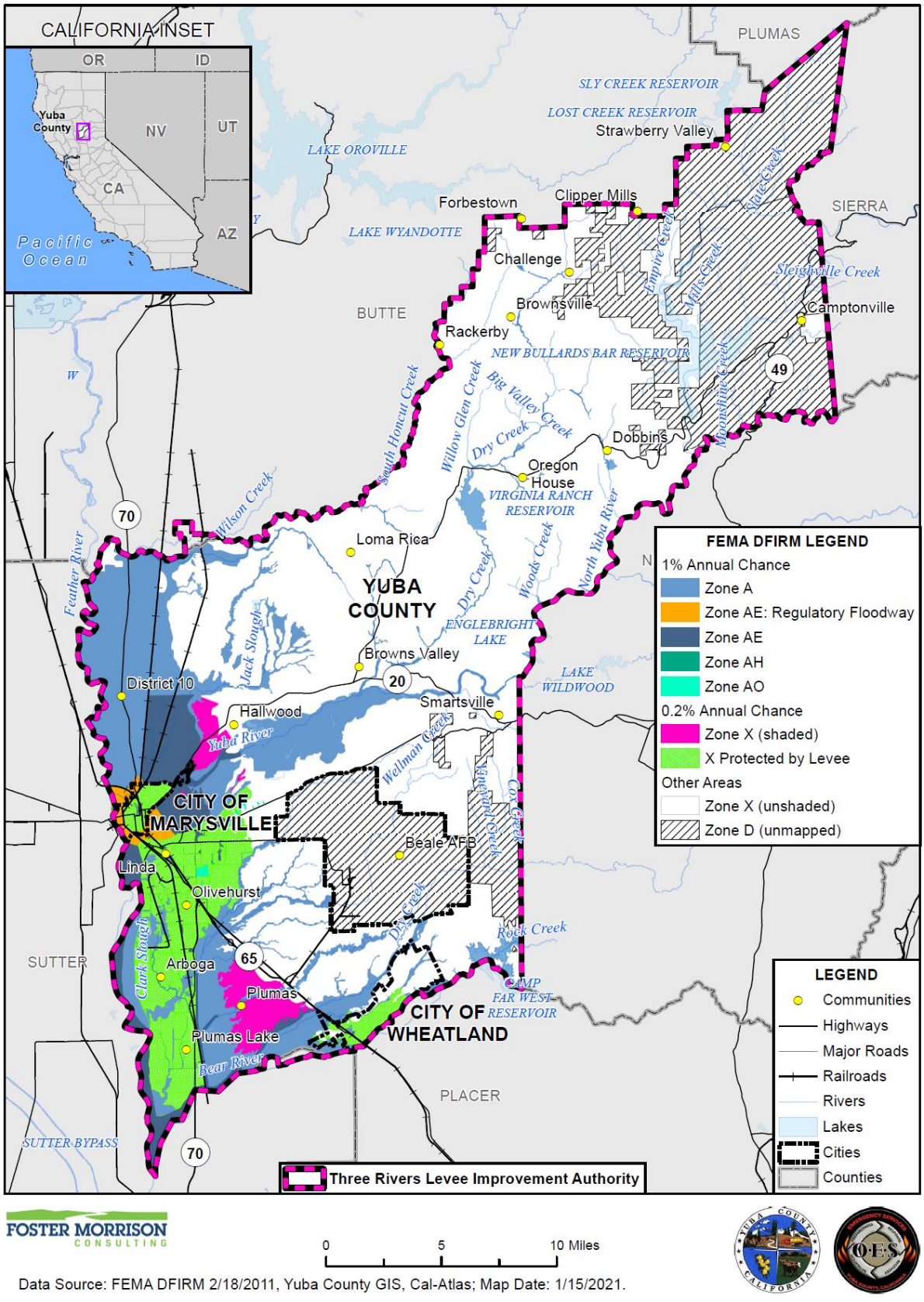


Table J-4 details the DFIRM mapped flood zones within the 1% annual chance flood zone as well as other flood zones located within the District.

Table J-4 TRLIA– DFIRM Flood Hazard Zones

Flood Zone	Description	Flood Zone Present in the District
A	1% annual chance flooding: No base flood elevations provided	X
AE	1% annual chance flooding: Base flood elevations provided	X
AE Floodway	1% annual chance flood: Regulatory floodway; Base flood elevations provided	X
AH	1% annual chance flood areas of shallow flooding between one to three feet deep. Regulatory floodway; Base flood elevations provided	X
AO	1% annual chance flooding: sheet flow areas. BFEs derived from detailed hydraulic analyses are shown in this zone.	X
D	Areas with a potentially moderate to high risk of flooding, but the probability has not been determined.	X
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	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.	X
X (unshaded)	No flood hazard	X

Source: FEMA

Additionally, flood extents can generally be measured in volume, velocity, and depths of flooding. Expected flood depths in the District vary, depending on the nature and extent of a flood event; specific depths are unknown. Flood durations in the District 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 District tends to have a shorter speed of onset, due to the amount of water that flows through the District.

Past Occurrences

A list of state and federal disaster declarations for Yuba County from flooding is shown on Table J-5. These events also likely affected the District to some degree.

Table J-5 Yuba 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)	16	1950, 1955, 1958, 1962, 1963 (twice), 1969, 1973, 1982, 1983, 1986, 1995 (twice), 1997, 2008, 2017	15	1955, 1962, 1963, 1964, 1969, 1970, 1983, 1986, 1995 (twice), 1997, 1998, 2006, 2017 (twice)

Source: Cal OES, FEMA

Vulnerability to and Impacts from Flood

Floods have been a part of the District'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. 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. 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.

Assets at Risk

A damageable property assessment was completed in 2018 which encompassed the entirety of Yuba County, which is consistent with the area where TRLIA can legally operate. The quantified damages to structures (residential, commercial, life safety), vehicle inventories, and agricultural lands which may be damaged. In total, for the entire area, the value of damageable assets totaled $3.9B.

Levee Failure

Likelihood of Future Occurrence–Unlikely
Vulnerability–Extremely 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 stream channel. 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.

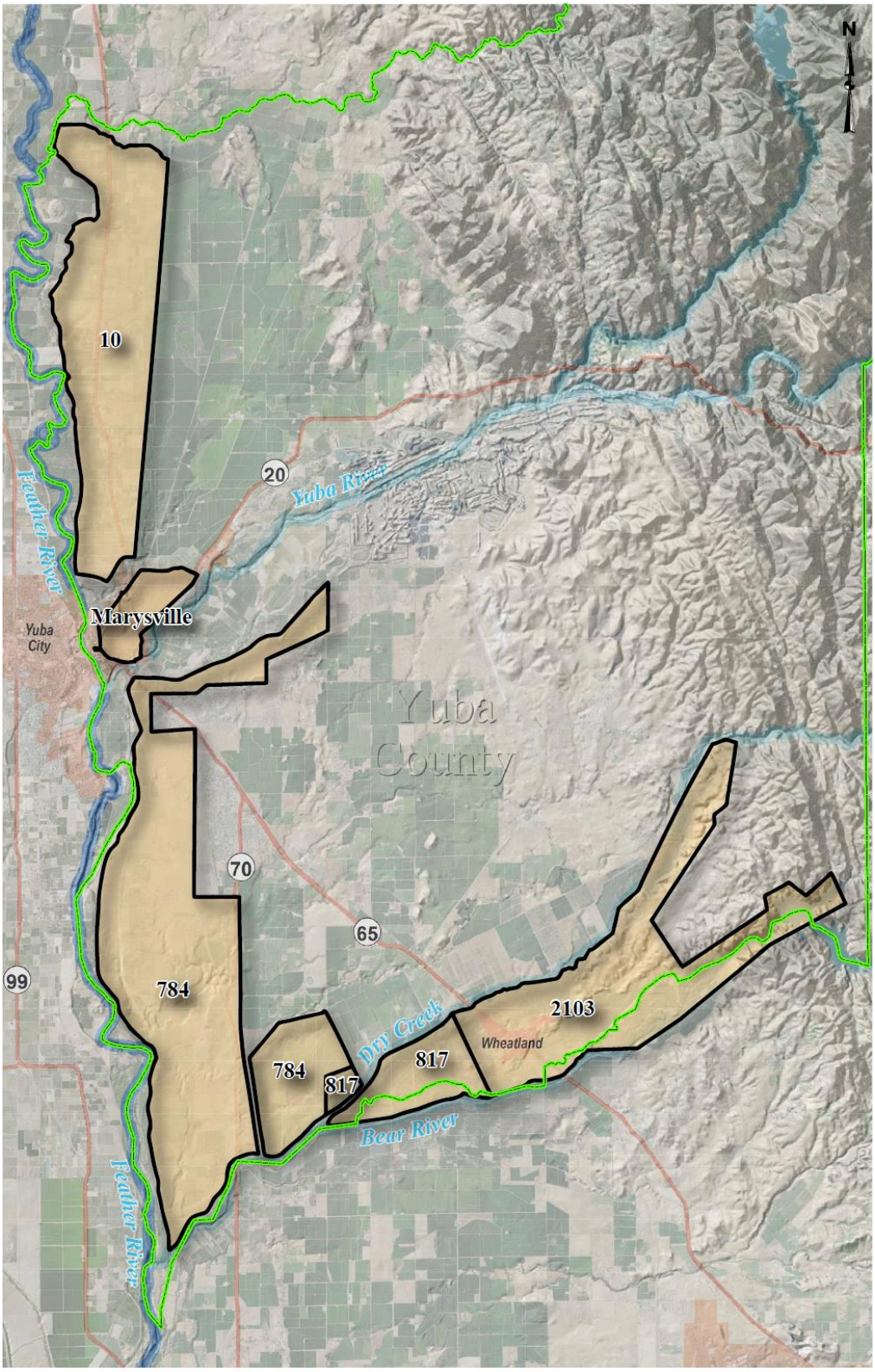
Levees provide strong flood protection, but they are not failsafe. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events or dam failure. For example,

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 District vary by event and location. 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. When northern California dams and reservoirs are nearing maximum capacity, they release water through the river systems, causing additional burdens on County levees. Levees in the District are shown on Figure J-3.

Figure J-3 TRLIA – Levee Protected Areas



Source: TRLIA

Level of protection through TRLIA's jurisdiction varies. Some urban areas such as Marysville and Plumas Lakes have or are currently working towards 200yr or greater level of protection consistent with the CA DWR Urban Level of Protection (ULOP) guidance. More rural areas in the northern and eastern portions of Yuba County are not yet at a 100yr level of protection.

Past Occurrences

TRLIA operates throughout the entirety of Yuba County as a joint powers authority. Specific information regarding past occurrences of levee failures are available in adjoining participating agencies Annexes to this Plan Update (such as Reclamation Districts: 10, 784, 817, 2103 and the Marysville Levee District).

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.

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

A damageable property assessment was completed in 2018 which encompassed the entirety of Yuba County, which is consistent with the area where TRLIA can legally operate. The quantified damages to structures (residential, commercial, life safety), vehicle inventories, and agricultural lands which may be damaged. In total, for the entire area, the value of damageable assets totaled $3.9B.

J.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.

J.6.1. Regulatory Mitigation Capabilities

Table J-6 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 TRLIA.

Table J-6 TRLIA 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	TRLIA participates in the Feather River Regional Flood Management Plan (RFMP)along with adjoining local agencies in the Feather River Basin. The RFMP identified projects and developed implementation costs to achieve a long-term vision for flood risk reduction. This program is funded by CA DWR A list of projects and associated costs are located here: https://www.trlia.org/CVFPP_2017-Collection_Feather_2020-10-30_Preliminary%20List%20of%20Projects.pdf
Capital Improvements Plan	Y	State of California – Urban Flood Risk Reduction Grant Program – Yuba River Goldfields Project addresses flood hazards and levee failures, provided alternatives to mitigate these risks and is currently being implemented.
Economic Development Plan	N	
Local Emergency Operations Plan	N	
Continuity of Operations Plan	N	
Transportation Plan	N	
Stormwater Management Plan/Program	N	
Engineering Studies for Streams	N	
Community Wildfire Protection Plan	N	
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	N	
Building Code, Permitting, and Inspections	**Y/N**	**Are codes adequately enforced?**
Building Code	N/A	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score	N/A	Score:
Fire department ISO rating:	N/A	Rating:
Site plan review requirements	N/A	
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	N/A	
Subdivision ordinance	N/A	
Floodplain ordinance	N/A	
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N/A	
Flood insurance rate maps	N/A	
Elevation Certificates	N/A	

Acquisition of land for open space and public recreation uses	N/A	
Erosion or sediment control program	N/A	
Other	N	Any District project implemented should be consistent with the Yuba County Development Code noting requirements for Grading, Drainage, and Erosion Control (Chapter 11.23 – Grading, Drainage, and Erosion Control) which includes guidance for levees and flood control features. Guidance is also included for sediment control within Chapter 11.23. The ordinance is implemented/administered and/or enforced at the county level.
How can these capabilities be expanded and improved to reduce risk?		
The District has no direct regulatory capabilities. It depends on the County for regulatory functions. That being said, local flood operations plans should be coordinated with neighboring agencies including Yuba and Sutter Counties to allow for coordinated evacuations and flood operations to avoid evacuation chaos as was experienced in the Oroville Spillway Incident. State of California – Urban Flood Risk Reduction Grant Program – Yuba River Goldfields Project addresses flood hazards and levee failures, provided alternatives to mitigate these risks and is currently being implemented, which will expand capabilities and reduce risk.		

Source: TRLIA

J.6.2. Administrative/Technical Mitigation Capabilities

Table J-7 identifies the District department(s) responsible for activities related to mitigation and loss prevention in TRLIA.

Table J-7 TRLIA's Administrative and Technical Mitigation Capabilities

Administration	Y/N	Describe capability Is coordination effective?
Planning Commission	Y	TRLIA has the ability to coordinate with the Yuba County Planning Commission
Mitigation Planning Committee	Y	Through this Yuba County LHMP Project
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	N	TRLIA does not perform O&M or have staff to do so. RD 784 performs O&M of features within TRLIA
Mutual aid agreements	N/A	
Other	N	
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	N/A	
Floodplain Administrator	N/A	
Emergency Manager	N/A	
Community Planner	N/A	
Civil Engineer	Y	MBK Engineers provides District Engineering services that are adequate. MBK staff is trained on hazards and mitigation.
GIS Coordinator	N/A	

Other	Y	Executive Officer; TRLIA has an executive officer who coordinates with state, federal, and local agencies regarding project implementation. The Executive Officer also evaluates and coordinates applications for federal grant opportunities. Outside of the executive officer, TRLIA does not employ in house technical staff.
Technical		
Warning systems/services (Reverse 911, outdoor warning signals)	Y	Through Yuba County
Hazard data and information	Y	Through DWR and NOAA websites. Also through this LHMP
Grant writing	Y	TRLIA has a number of consulting engineers under contract to support grant writing. Additionally, TRLIA coordinates with other agencies (Yuba Water Agency) to prepare grant applications.
Hazus analysis	N/A	
Other	N	
How can these capabilities be expanded and improved to reduce risk?		
Outside of the executive officer, TRLIA does not employ in house technical staff, making it difficult to expand capabilities. TRLIA may consider an improvement to be greater alignment between public agencies for coordinated, programmatic funding requests to support evaluation of rural levee systems and subsequent implementation of recommended flood risk reduction actions. These efforts support maintenance programs for other Districts.		

Source: TRLIA

J.6.3. Fiscal Mitigation Capabilities

Table J-8 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

Table J-8 TRLIA'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	State and Federal grant programs with local funding assistance through Yuba Water
Authority to levy taxes for specific purposes	Y	Authority exists, but is not currently used
Fees for water, sewer, gas, or electric services	N	
Impact fees for new development	Y	Through Yuba County
Storm water utility fee	N	
Incur debt through general obligation bonds and/or special tax bonds	Y	Yuba Levee Finance Authority incurred bond debt for Capital Improvements
Incur debt through private activities	N	
Community Development Block Grant	N	
Other federal funding programs	N	

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?
State funding programs	Y	DWR and CDFW grants for flood control and restoration work. Grants previously used include FSRP, CVT, And SCFRR
Other	Y	USACE Civil Works Program, FEMA PDM, HMGP, and or BRIC programs
How can these capabilities be expanded and improved to reduce risk?		
Outside funding is necessary for TRLIA to be capable of completing costly mitigation projects. TRILIA may seek FEMA, Cal OES, and CA DWR funding, as well as other possible sources. Additional revenue could help the District bring more levees to 200-year level of protection.		

Source: TRLIA

J.6.4. Mitigation Education, Outreach, and Partnerships

Table J-9 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 J-9 TRLIA's Mitigation Education, Outreach, and Partnerships

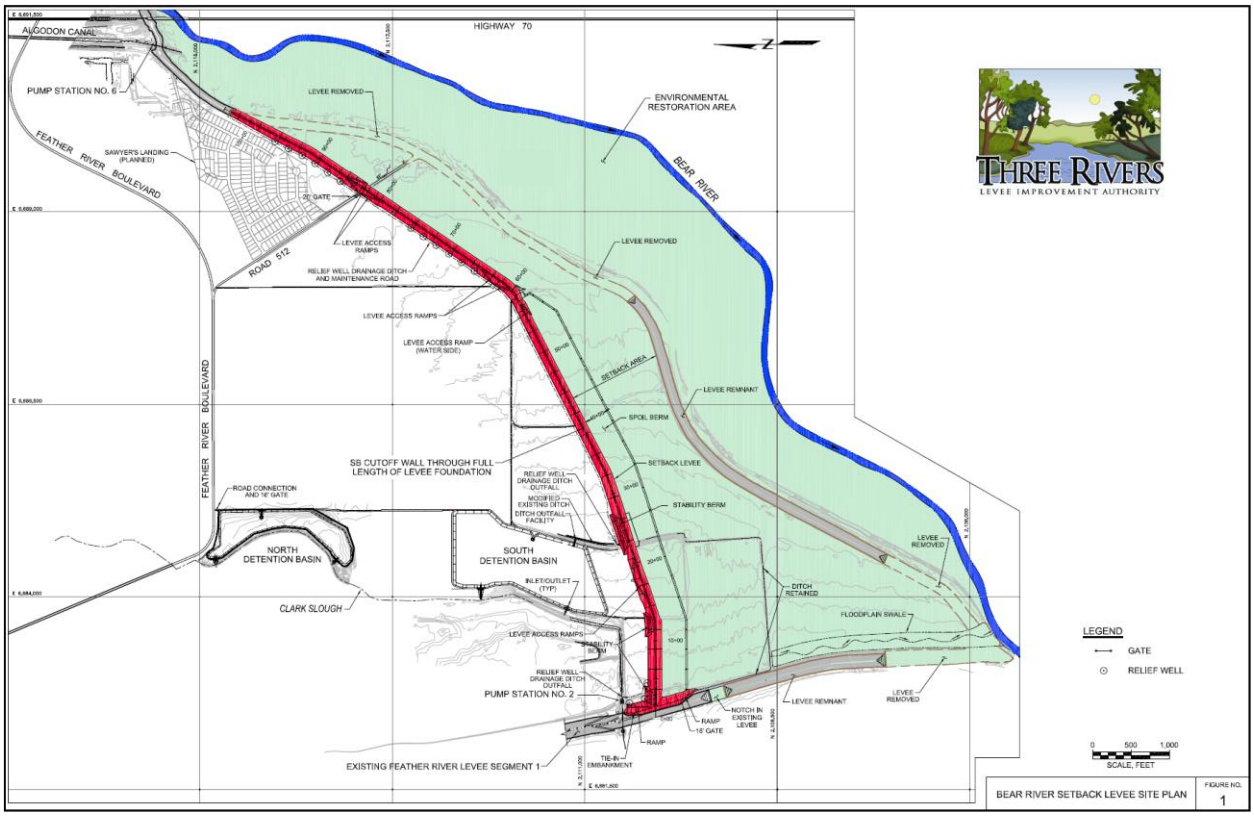
Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	N	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Y	Yuba Water has education programs that benefit TRLIA
Natural disaster or safety related school programs	Y	Yuba Water has education programs that benefit TRLIA
StormReady certification	N	
Firewise Communities certification	N	
Public-private partnership initiatives addressing disaster-related issues	N	
Other	Y	Be Prepared Yuba; As TRLIA operates throughout Yuba County, the Be Prepared Yuba Program allows outreach during emergencies via public alert systems and directly to Yuba and Sutter County residents via cell phone provide emergency alerts.
How can these capabilities be expanded and improved to reduce risk?		
TRLIA utilizes direct mailing to inform its residents of risks and mitigation activities (coordinated through a consultant). TRLIA also relies on County, State, and Federal risk notification programs for public education. With additional revenue, these outreach efforts could be expanded.		

Source: TRLIA

J.6.5. Other Mitigation Efforts

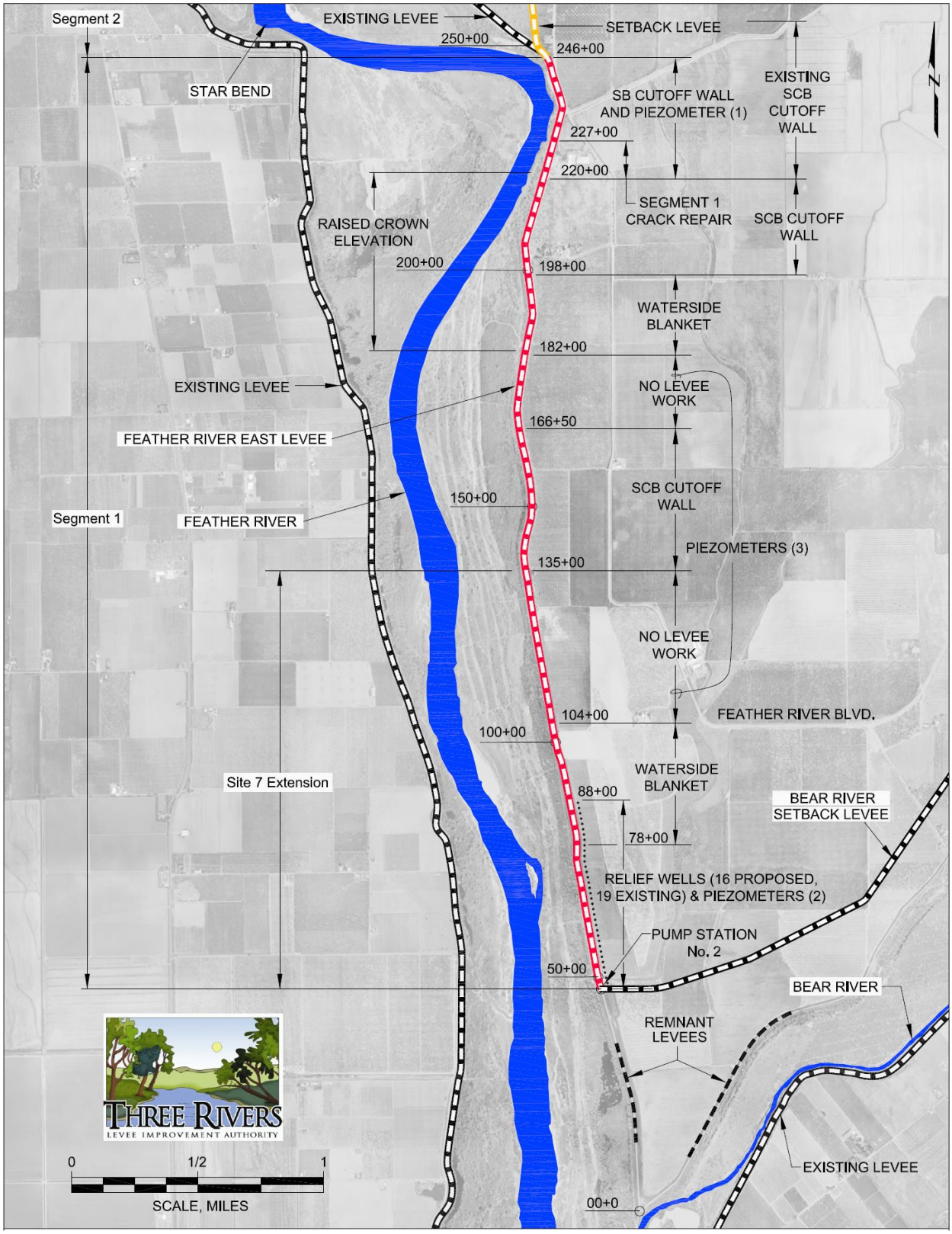
The District has many other completed or ongoing mitigation efforts that include the following:

Figure J-4 Bear River Levee Setback



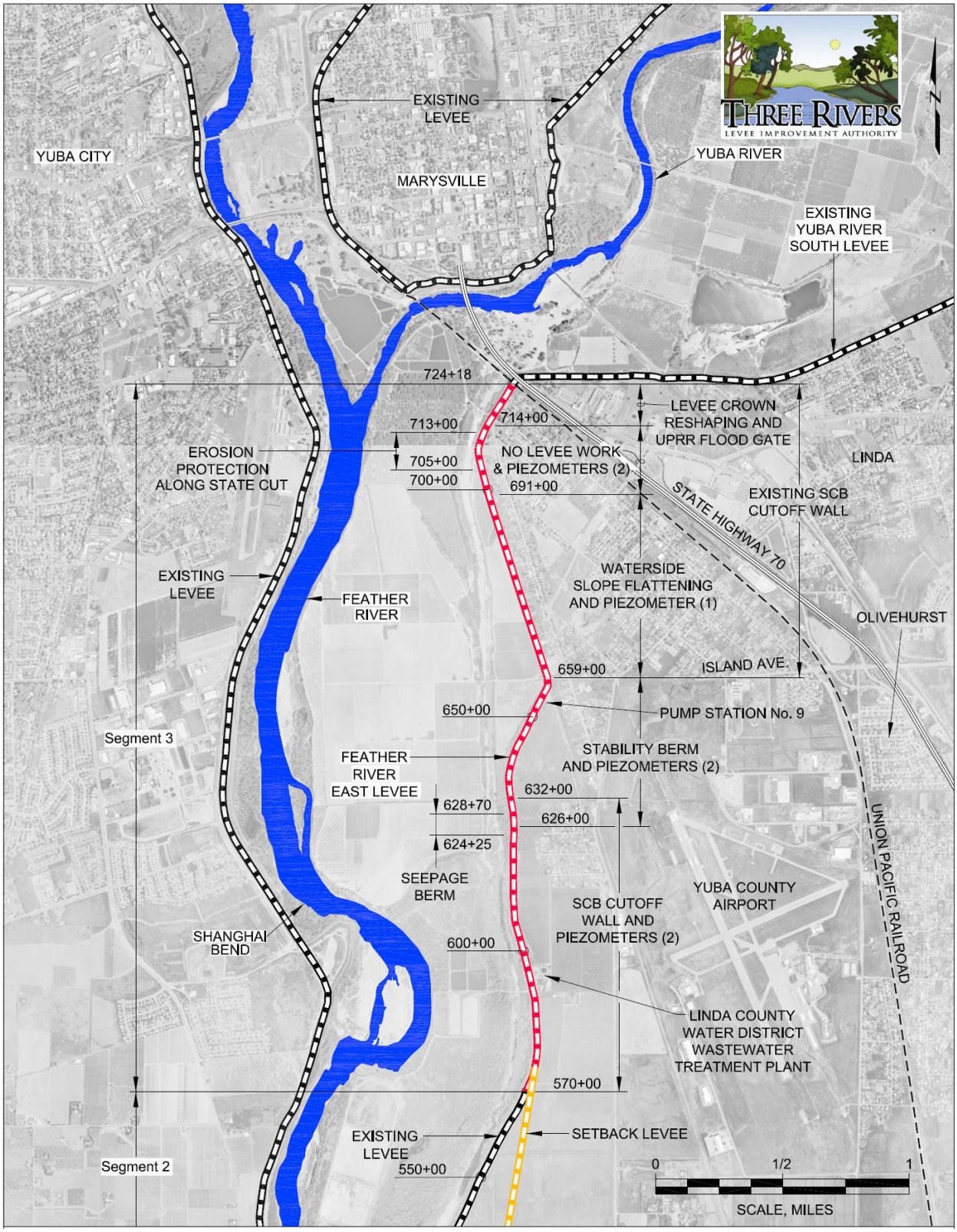
Source: TRLIA

Figure J-5 Feather River Segment 1



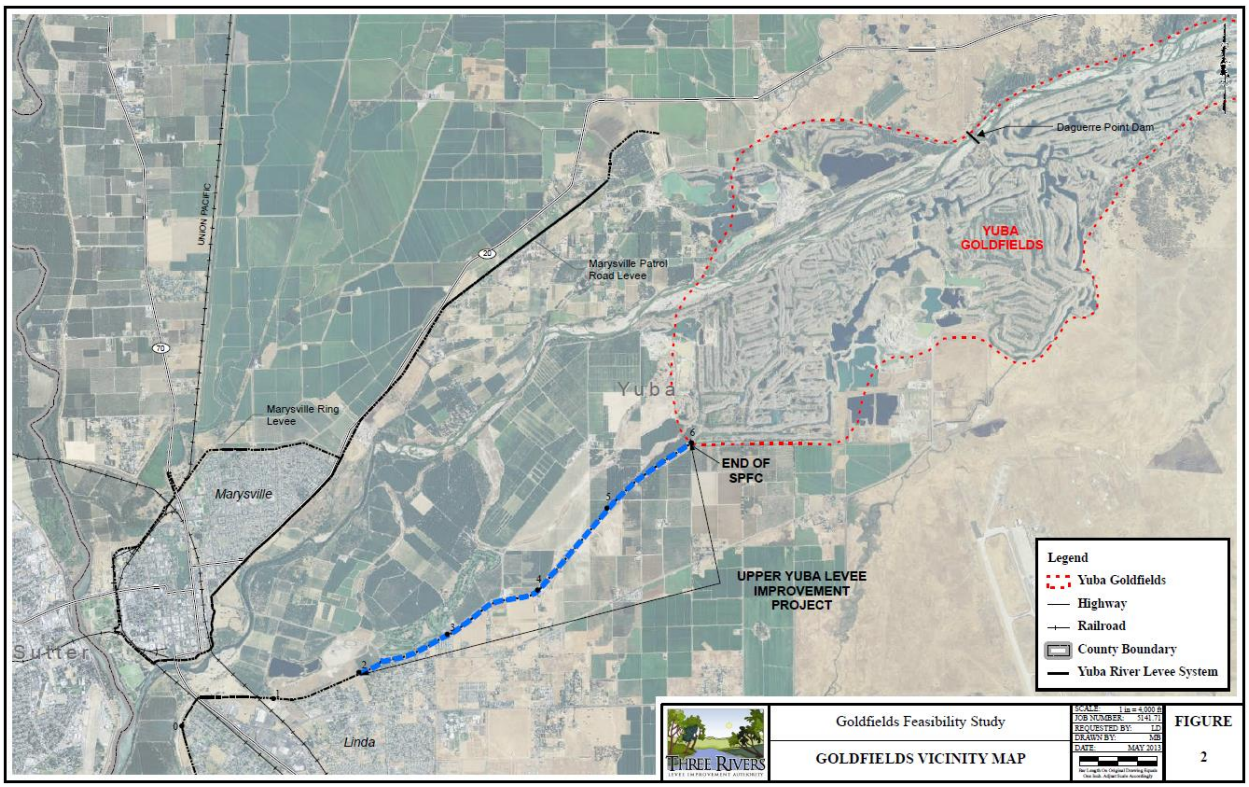
Source: TRLIA

Figure J-6 Feather River Segment 2 Setback



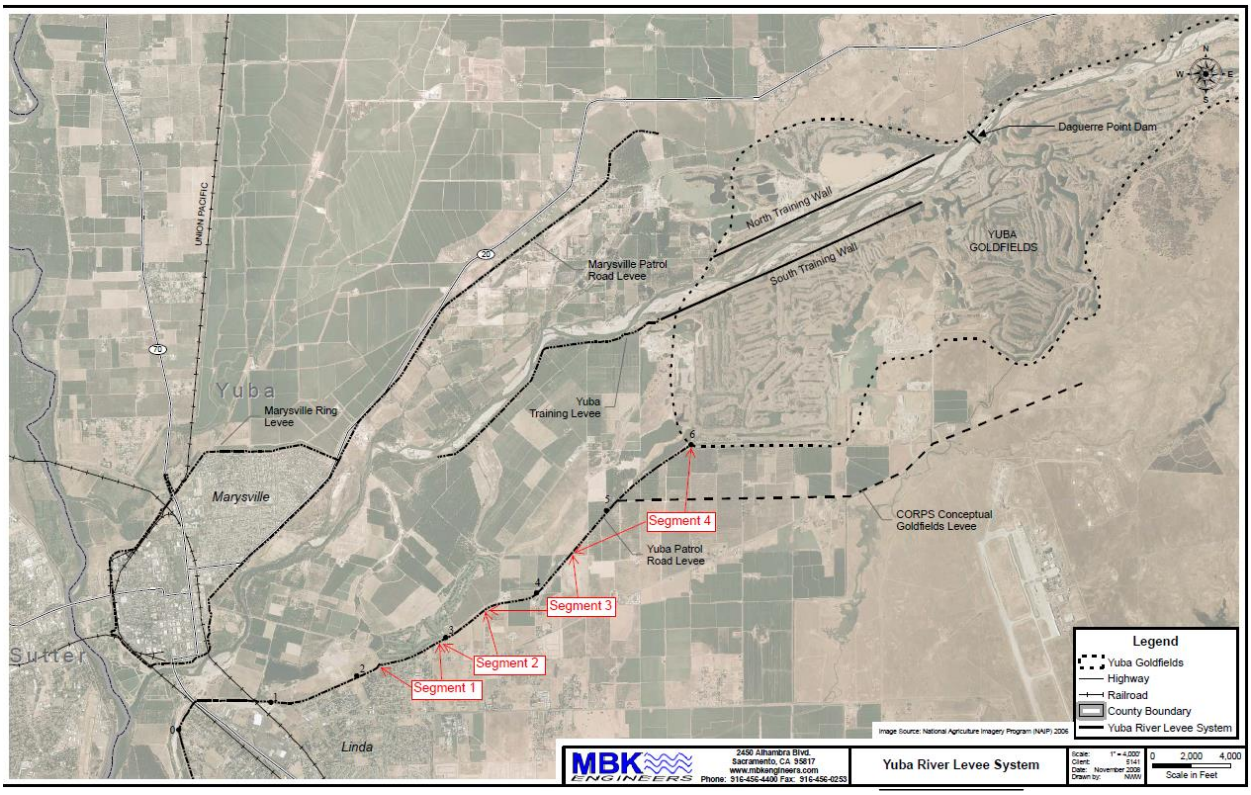
Source: TRLIA

Figure J-7 Goldfields 100 Year Interim Project and 200-Year Project



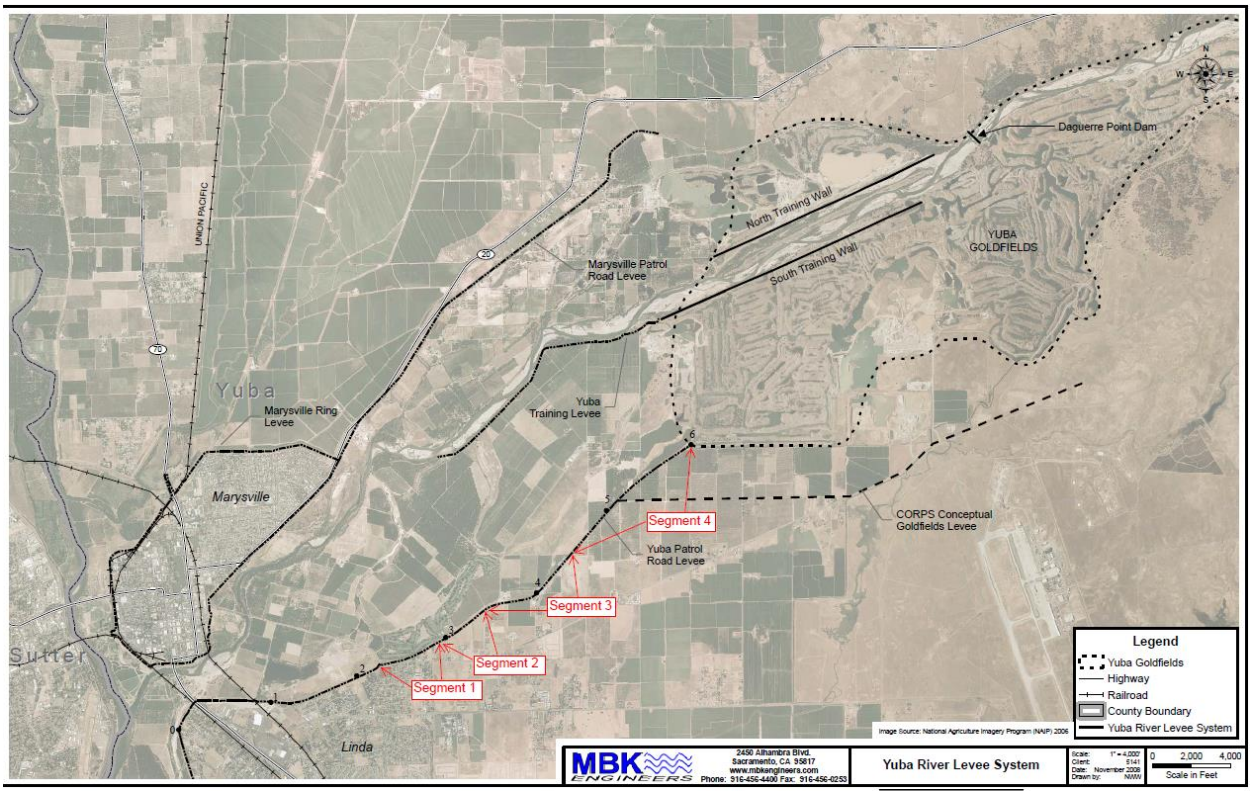
Source: TRLIA

Figure J-8 Upper Yuba Levee Project



Source: TRLIA

Figure J-9 Yuba River North Training Wall Project



Source: TRLIA

J.7 Mitigation Strategy

J.7.1. Mitigation Goals and Objectives

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

J.7.2. Mitigation Actions

The planning team for the TRLIA 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:

- Floods: 1%/0.2% annual chance
- Levee Failure

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. Yuba River North Training Wall Project

Hazards Addressed: Levee Failure; Floods: 1%/0.2% annual chance

Goals Addressed: Flood Risk Reduction

Issue/Background: The North Training Wall (NTW) in the Yuba River is shown on Figure J-9. If the NTW were to breach, flooding would occur in the community of Hallwood and flood stages would increase on the Patrol Road levee. TRLIA is working with Yuba County and the Yuba Water Agency (YWA) to improve the NTW. The proposed project by TRLIA will transform the existing NTW into an engineered embankment that provides flood risk reduction to the community of Hallwood and lowers flood stages on the downstream SPFC levees that protect the City of Marysville and Reclamation District 10 (D-10).

During the 2017-2018 flood season, the NTW embankment experience slope stability issues and erosion weakening the structure and leading to shallow flooding within the Community of Hallwood. Critical sections of the NTW are being repair currently but the need to establish a contiguous line of protection exists in the upstream area of the project. The would be accomplished by constructing an embankment to tie into high ground preventing outflanking of flows within the Yuba River.

Project Description: Following implementation, TRLIA will seek to obtain 100-year accreditation from FEMA for the project and avoid the Community of Hallwood being mapped into the 100-year floodplain.

Other Alternatives: N/A

Existing Planning Mechanisms through which Action will be Implemented: N/A

Responsible Office: TRLIA will be the implementing agency and agency responsible for operating and maintaining the project post construction.

Priority (H, M, L): H

Cost Estimate: $7M

Potential Funding: CA DWR Prop 1E Grant, CA DWR Prop 68 Grant, FEMA HMGP, Other Public Agency Grants (Yuba Water Agency)

Benefits (avoided Losses): Approximately 200 residential structures, numerous agricultural structures including active farmland within the Community of Hallwood. Benefits have not been quantified in dollars yet.

Schedule: 5-7 years

Action 2. Yuba River Goldfields 500yr Project

Hazards Addressed: Levee Failure; Floods: 1%/0.2% annual chance

Goals Addressed: 1, 2, 3, 4, 5, 6

Issue/Background: TRLIA has been working to improve the Reclamation District 784 (RD 784) levee system to meet State Urban Levee Design Criteria (ULDC), 200-year, as well as FEMA 100-year requirements. TRLIA has submitted the certification package to FEMA and the levee system should be accredited later this year. Construction of the final element of the 200-year project is nearly complete and ULDC certification is scheduled to be complete in 2022. As outlined in the ULDC, 200-year certification is the minimum standard for Urban Flood protection.

Project Description: With Yuba Water Agency's (YWA) decision to build the New Bullard's Bar Secondary Spillway (NBB SS), the urban areas in Yuba County are progressing towards YWA's goal of providing 500-year protection. In reviewing the change in performance with the NBB SS, staff performed an initial look at what it would take to build on the NBB SS achievements to improve the RD 784 levee system to pass the 500-year event. With updated hydrology that has reduced the flows for the 500-year flood and the benefits of the NBB SS, modest improvements are needed to upgrade the levee system to be able to pass the 500-year flood event.

Other Alternatives: N/A

Existing Planning Mechanisms through which Action will be Implemented: N/A

Responsible Office: TRLIA will be the implementing agency and RD 784 responsible for operating and maintaining the project post construction.

Priority (H, M, L): H

Cost Estimate: $2.9M to reach 65% Design, Complete 500yr Hydrologic Analysis, Complete CEQA and permitting, Develop Program Cost Estimate, and Identify ROW needed to construct. Final Design and construction cost $30-80M.

Potential Funding: CA DWR UFRR. Additional funding will be pursued in the form of grants through CA DWR and the Federal Government.

Benefits (avoided Losses): TBD – TRLIA is currently completing the design process. A benefit cost analysis will be performed as part of this effort. At this time a benefit amount has not been determined

Schedule: 1-3 years (Design) Construction timeline - TBD