

Nevada Hazard Mitigation Working Group Meeting

October 12, 2022



Robert Fellows, P.E., Floodplain Manager
& Chief Stormwater Engineer

Carson City Maxwell Detention Basin

\$2,050,764.71

- The basin provides 100-year flood mitigation for approximately 30 downstream residential and commercial structures in the Goni Watershed.
- The basin will be located on City property and can be modified in the future in response to climate change.
- The basin will provide flood protection to a 24" water line in Goni Road which is a critical city infrastructure.
- There is no repetitive loss properties in the Goni Watershed.
- The application does provide a detailed breakdown of costs.
- The project can be completed within the required 3-years.
- The project was submitted for a BRIC grant in 2020 but was not selected.



Carson City Alert Sites

\$33,497

- The alert sites provide advance flood warning to the city.
- The 9 existing alert sites will be upgraded with one new site added in the Goni Watershed.
- The alert sites are an important component in the protection of city critical infrastructure, like the city's water treatment plant and intake facilities.
- There 2 repetitive loss properties in the Kings & Ash Canyon Watersheds affected by the alert sites.
- The application does provide a detailed breakdown of costs.
- The project can be completed within the required 3-years.
- The project was not submitted for a prior grant.



Carson City Water Resource Recovery Facility Flood Protection \$2,150,971

- The floodwall provides 100 & 500-year flood mitigation for WRRF.
- The floodwall will exceed the minimum freeboard required by FEMA to protect the facility in response to climate change.
- The floodwall will provide flood protection to the plant which is a critical city infrastructure for the entire city.
- There are two repetitive loss properties west of the WRRF.
- The application does provide a detailed breakdown of costs.
- The project can be completed within the required 3-years.
- The project was not submitted for a prior grant.

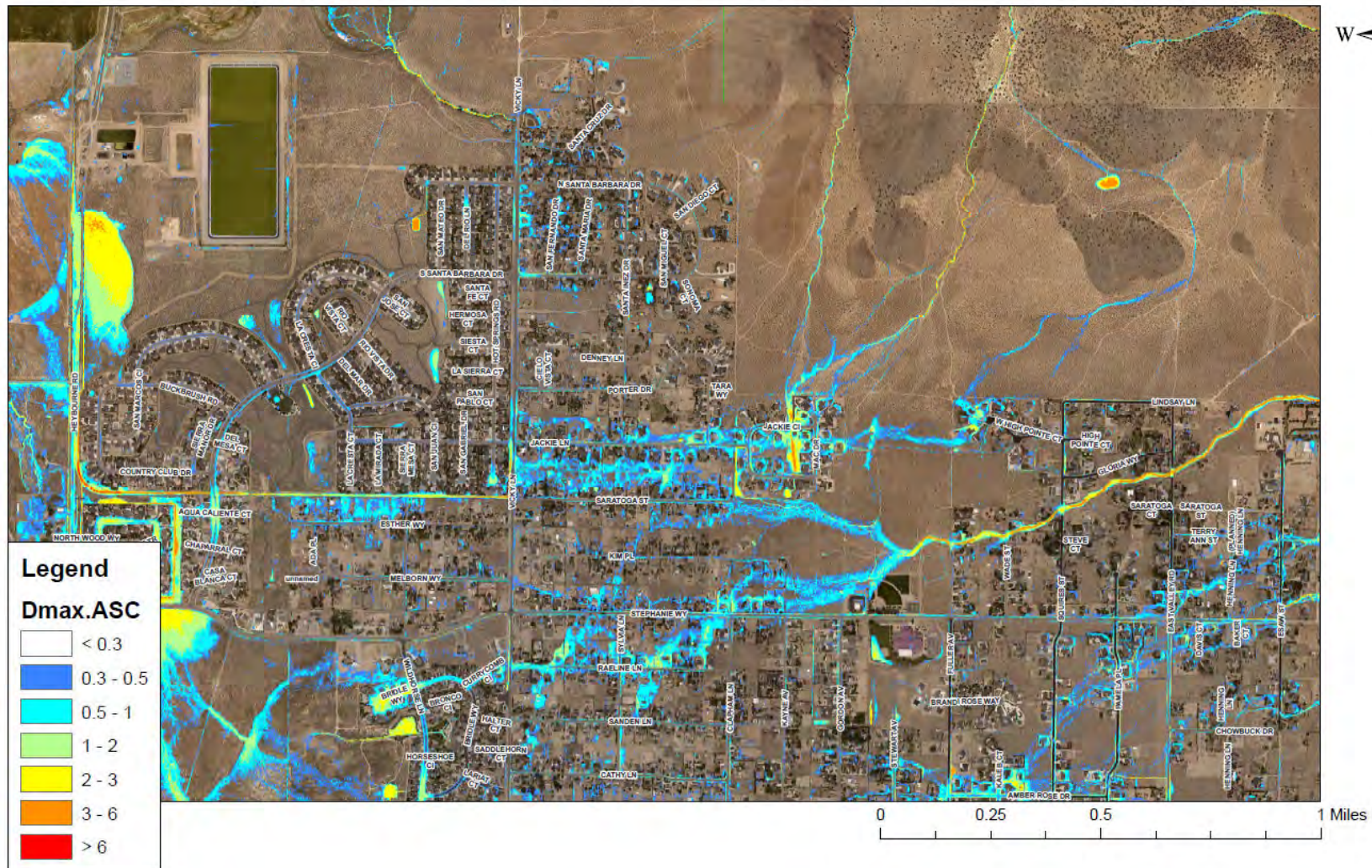


Hazard Mitigation Grant Program Meeting
October 12, 2022
Hot Springs-Buckbrush Flood Control Project
\$8,139,600



Courtney Walker, Stormwater Program Manager
Douglas County Public Works

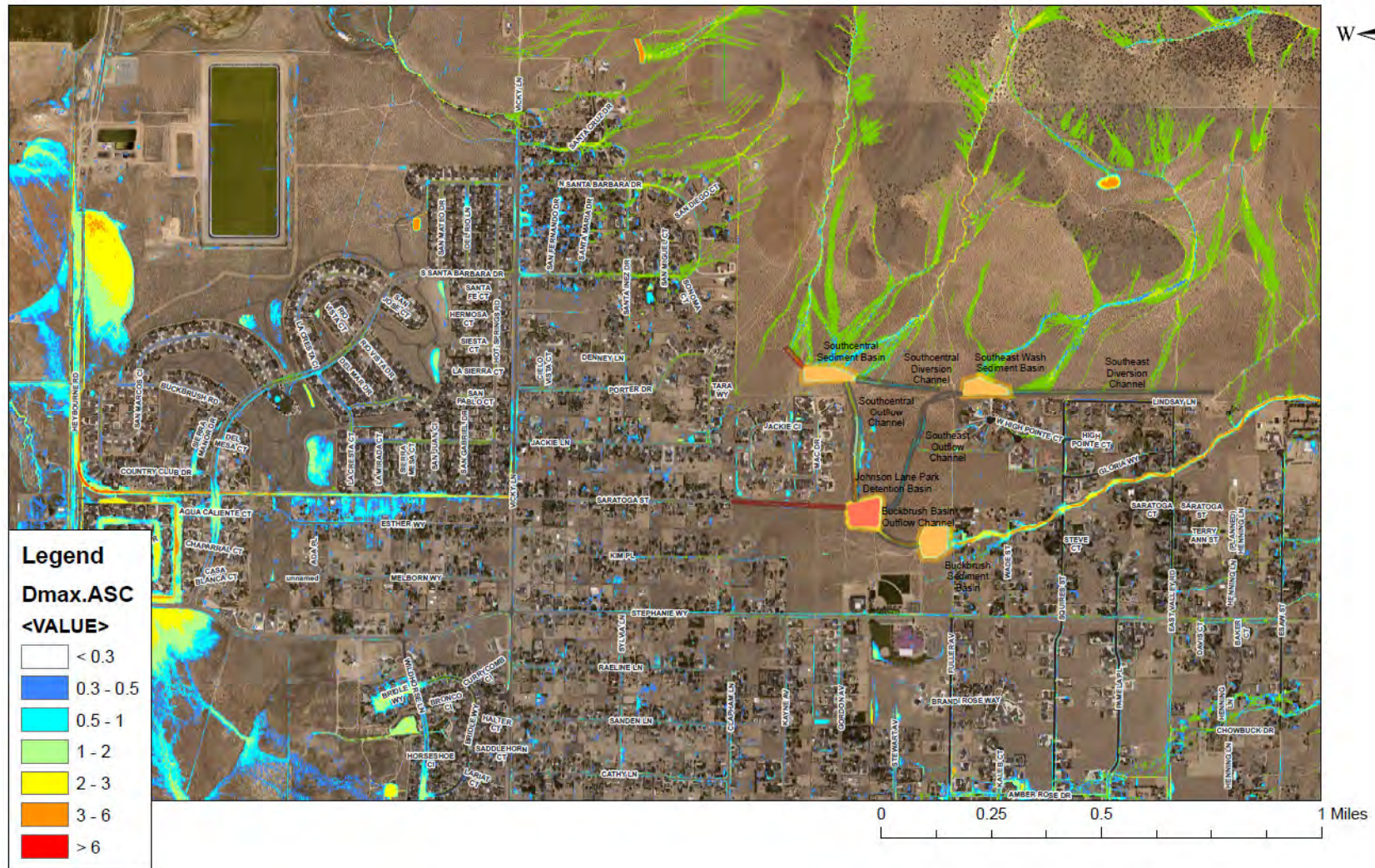
Hot Springs-Buckbrush Area Existing Conditions No Flood Control







Hot Springs-Buckbrush Flood Control Project Proposed Conditions

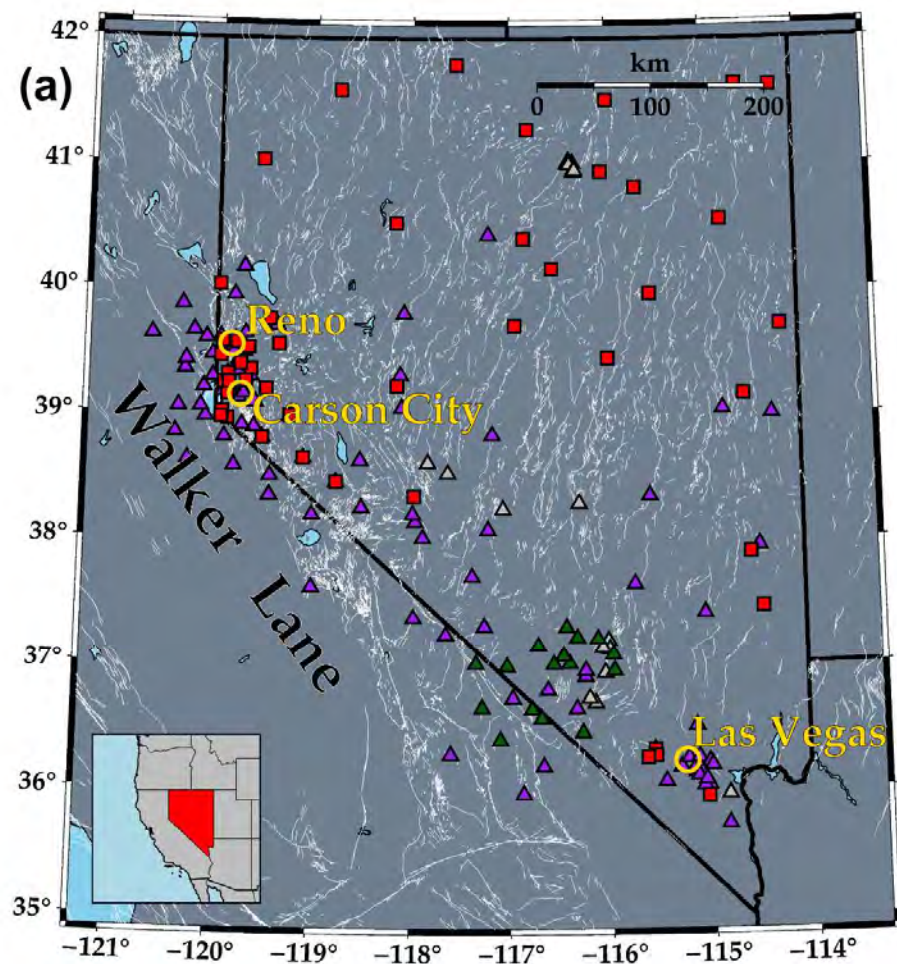


Proposed Solution: The hydrologic interaction and complexity of the Hot Springs Mountain washes and Buckbrush Wash necessitated the development of a series of conceptual basins, channels, and underground pipes to effectively mitigate the flooding and sedimentation hazards. This upstream collection and conveyance concept are also necessary to meet the primary objective for the Johnson Lane area which is to safely route stormwater flow through the community to the Carson River.

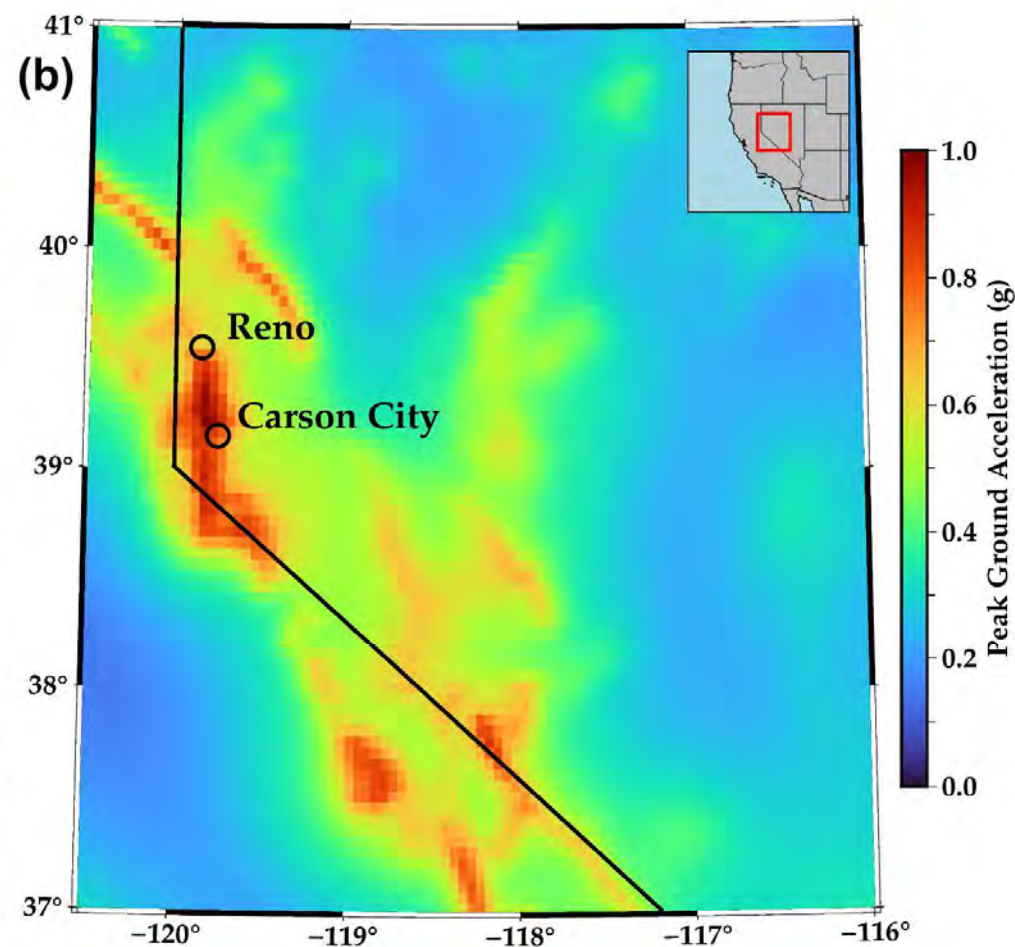
Douglas County has gone through NEPA and completed an Environmental Assessment with the BLM. A right-of-way has been granted for this project.

Figure 9-1 Label	Lumos Label and Detail Sheet ID	100-Year Construction Cost Estimate	100-Year Design and Permitting Cost Estimate	100-Year TOTAL Cost Estimate
Southeast Diversion Channel	SE_Diversion C18	\$384,000	\$76,800	\$460,800
Southcentral Wash Sediment Basin	Southcentral C4.1	\$663,000	\$132,600	\$795,600
Southcentral Diversion Channel	SC_Diversion C16	\$236,000	\$47,200	\$283,200
Southeast Wash Sediment Basin	Southeast C7.1	\$666,000	\$133,200	\$799,200
Southcentral Outflow Channel	SC_Basin Outflow C17	\$555,000	\$111,000	\$666,000
Southeast Outflow Channel	SE_Basin Outflow C17	\$316,000	\$63,200	\$379,200
Buckbrush Wash Sediment Basin	Buckbrush C6.1	\$652,000	\$130,400	\$782,400
Buckbrush Basin Outflow Channel	Buckbrush Basin Outflow Channel C15, C16	\$239,000	\$47,800	\$286,800
Johnson Lane Park Detention Basin	Johnson Lane Park C5.1	\$2,969,000	\$593,800	\$3,562,800
<i>Not Shown in Figure</i>	SC_West Diversion C4.0, C4.1	\$103,000	\$20,600	\$123,600
TOTALS		\$6,783,000	\$1,356,600	\$8,139,600

There are five documented repetitive loss properties this project would directly affect, as well as the Johnson Lane Fire Station and Pinion Hills Elementary School.



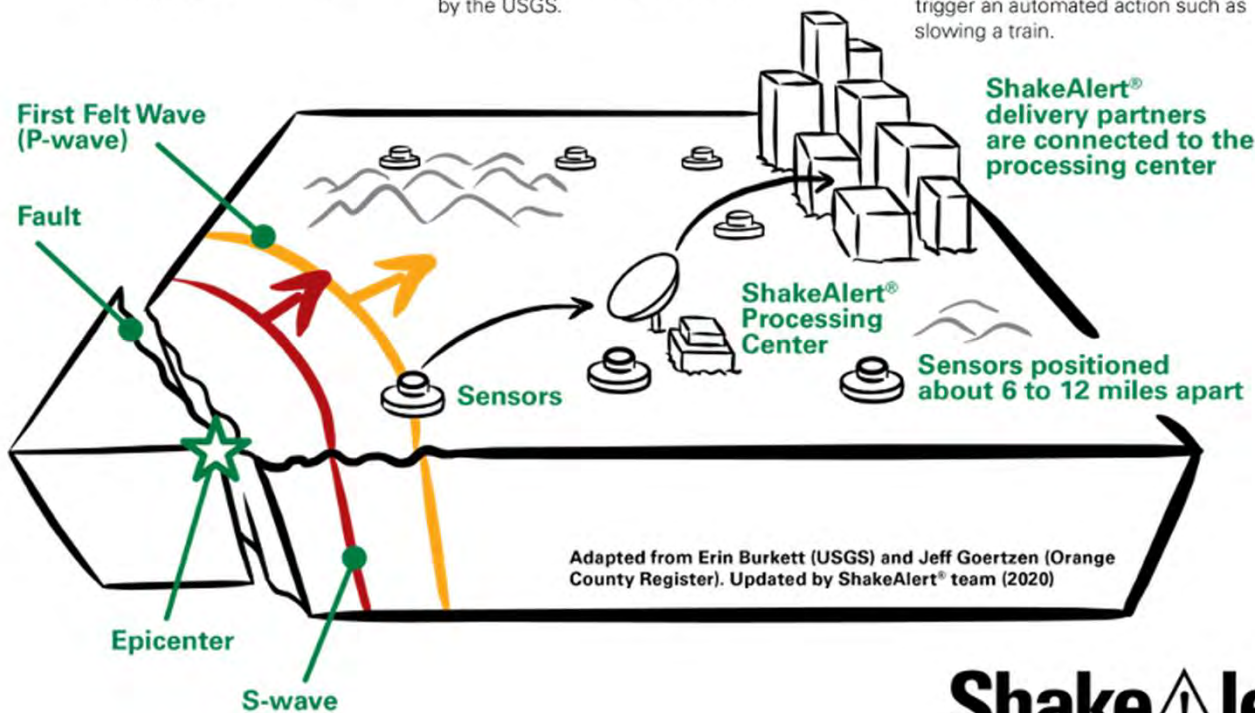
Earthquake Monitoring in Nevada



Earthquake Hazards in Northern Nevada

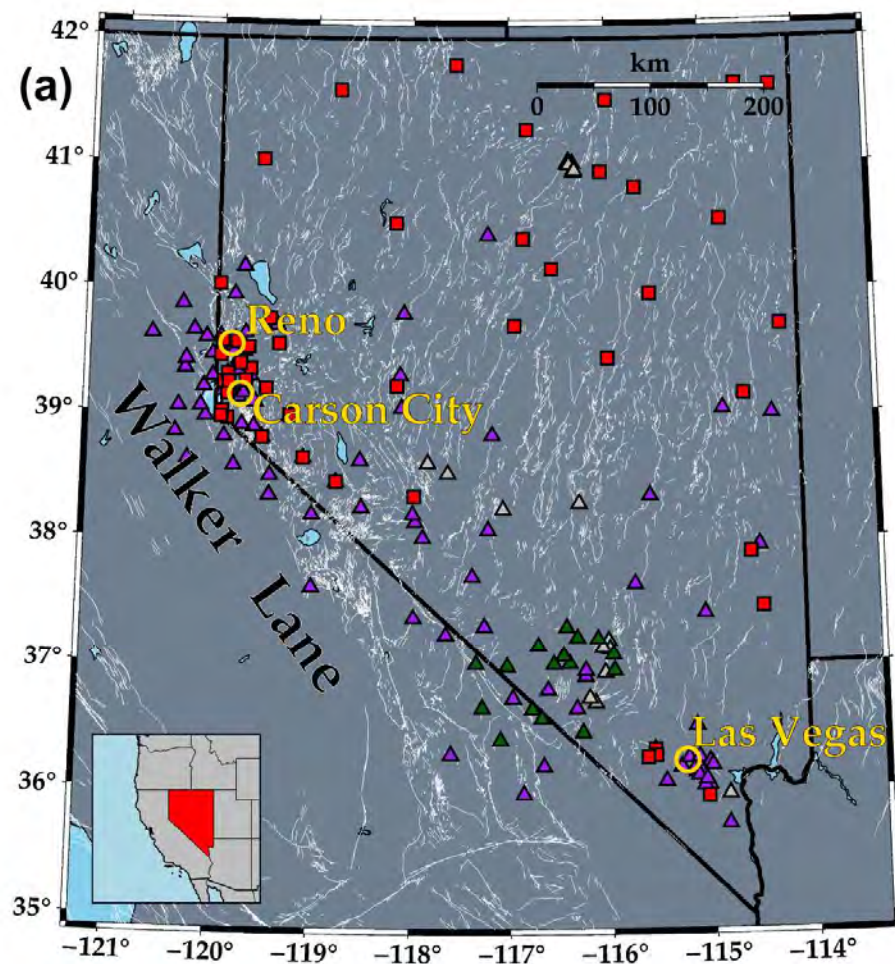
ShakeAlert® EARTHQUAKE EARLY WARNING BASICS

- 1 During an earthquake, a rupturing fault sends out different types of waves. The fast-moving P-wave is first to arrive, followed by the slower S-wave and later-arriving surface waves.
- 2 Sensors detect the P-wave and immediately transmit data to a ShakeAlert® processing center where the location, size, and estimated shaking of the quake are determined. If the earthquake fits the right profile a ShakeAlert® Message is issued by the USGS.
- 3 A ShakeAlert® Message is then picked up by delivery partners (such as a transportation agency) that could be used to produce an alert to notify people to take a protective action such as **DROP, COVER, AND HOLD ON** and/or trigger an automated action such as slowing a train.

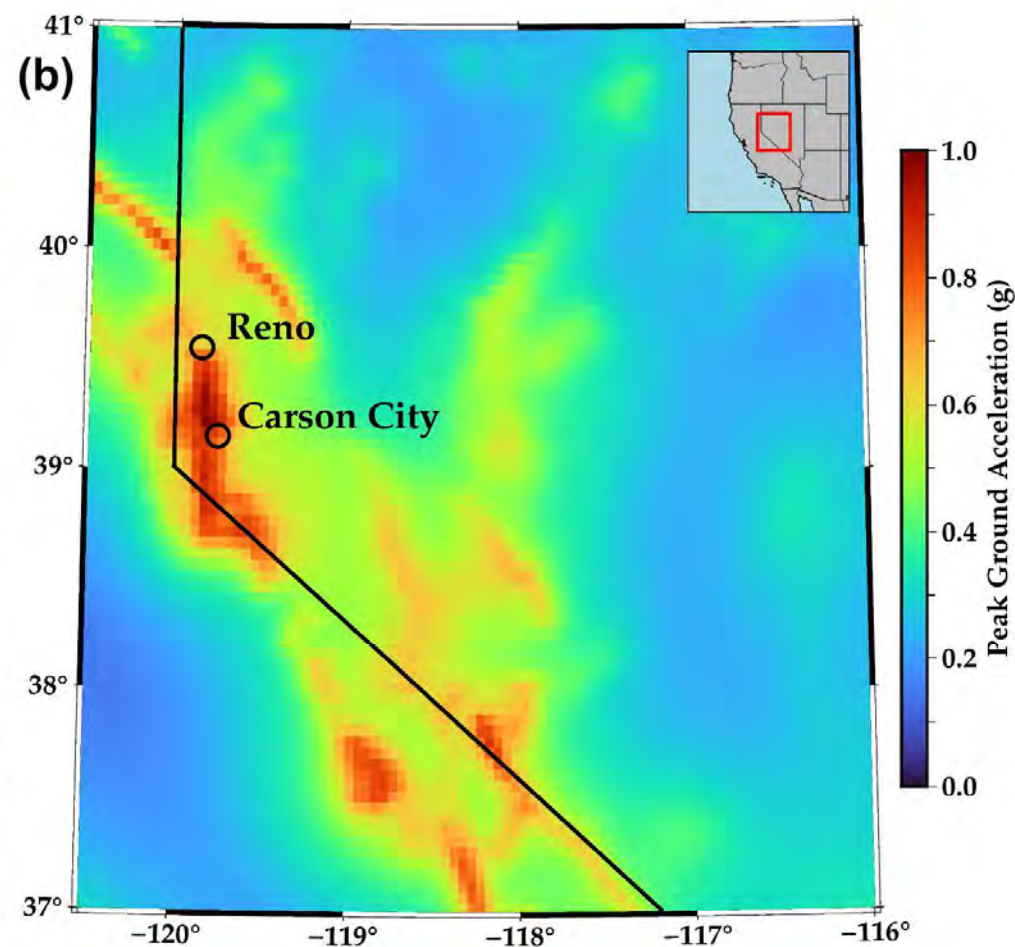


ShakeAlert™

**ShakeAlert: an
Earthquake Early
Warning System for
the Western US: CA,
OR, WA (not NV)**



Earthquake Monitoring in Nevada



Earthquake Hazards in Northern Nevada

Project Workplan Summary

1. Station inventory and analysis: determine prioritized list of recommended network upgrades
 2. Probabilistic scenario analysis of likely earthquake sources to determine value added by an early warning systems, including projected warning times to key population centers
 3. Ground motion and source characterization analysis to determine how to estimate earthquake size and how best to issue alerts for Nevada Earthquakes
- Synthesize findings into a summary report and implementation plan that could be used in Statewide Hazard Mitigation Planning**



DEPARTMENT OF ADMINISTRATION

preserving the past, serving people today, planning for tomorrow

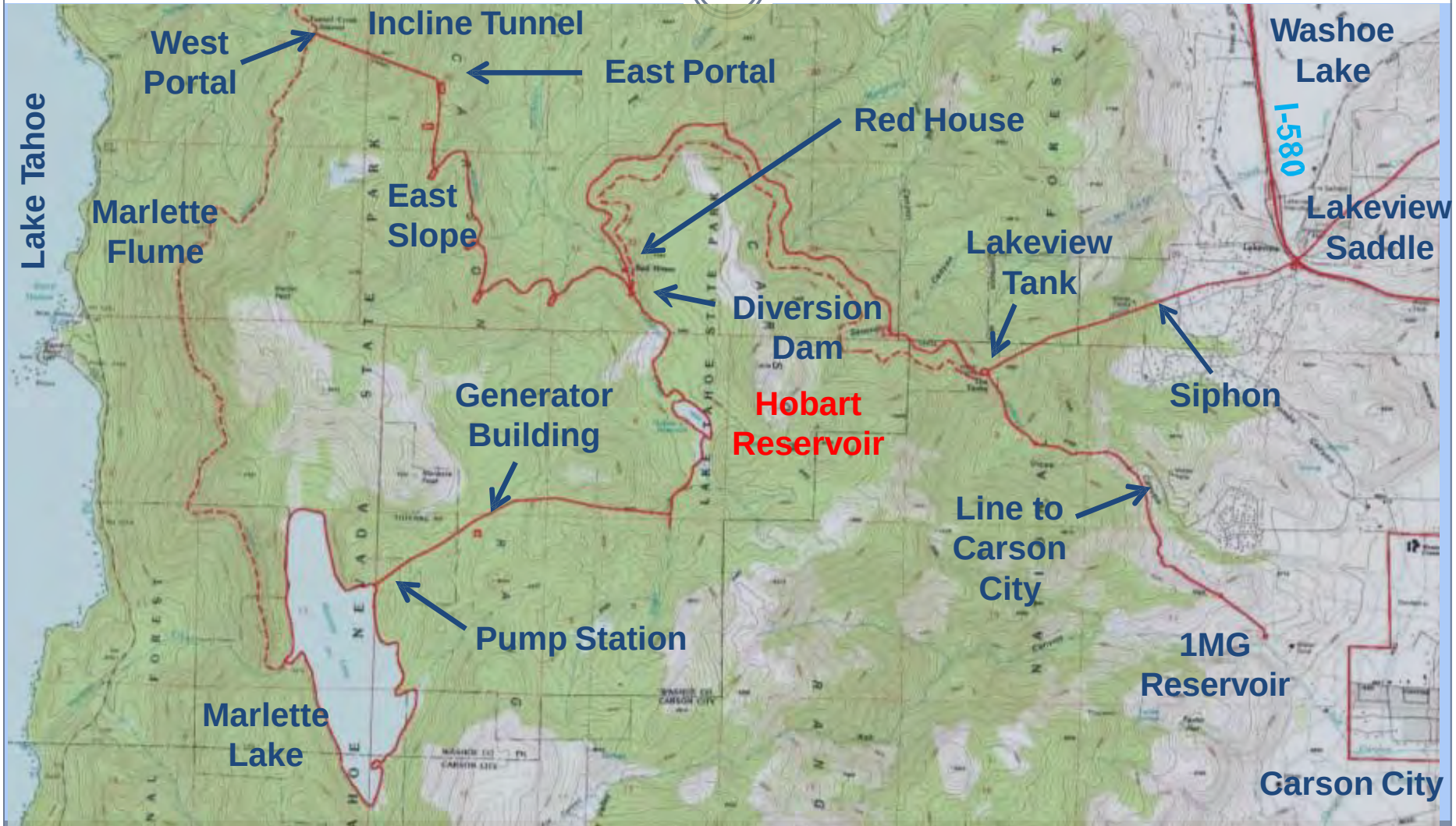
HOBART CREEK RESERVOIR DAM (HCRD) SEISMIC RETROFIT PROJECT

October 12, 2022

BRIAN WACKER, CHIEF OF PLANNING
STATE PUBLIC WORKS DIVISION

MARLETTE LAKE WATER SYSTEM MAJOR COMPONENTS

2



Marlette Lake Side (West of I-580)

HOBART CREEK RESERVOIR DAM BACKGROUND

3

- Earthen-filled dam constructed in 1877 and rebuilt in 1956 following a washout
 - 15-foot maximum depth
 - 250-foot crest length
 - 15-foot crest width
 - Retains 110 acre-feet of water
- Classified as a significant hazard dam



HOBART CREEK RESERVOIR DAM BACKGROUND

4

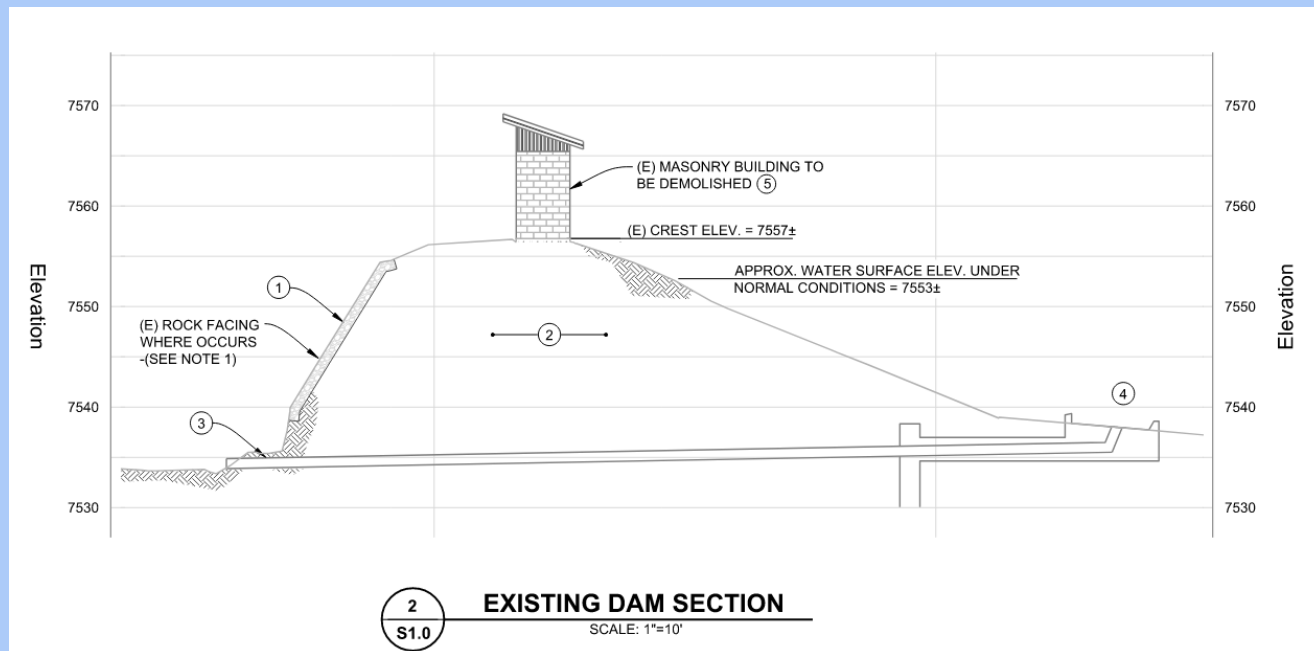
- MLWS provides water to Carson City, Virginia City, Gold Hill, and Silver City through this structure
- Primary source of Franktown Creek flow
- Also provides recreational benefit to the public through resources provided by Nevada Department of Wildlife and State Parks



HOBART CREEK RESERVOIR DAM BACKGROUND

5

- Structure is at risk failure from major seismic (magnitude 6.5), precipitation, and avalanche or rockslide events.
 - Structure is not sufficiently consolidated and could potentially liquify during a seismic event
- Failure could result in significant downstream flooding and impacts to Carson City, Virginia City, Gold Hill, and Silver City water supply.

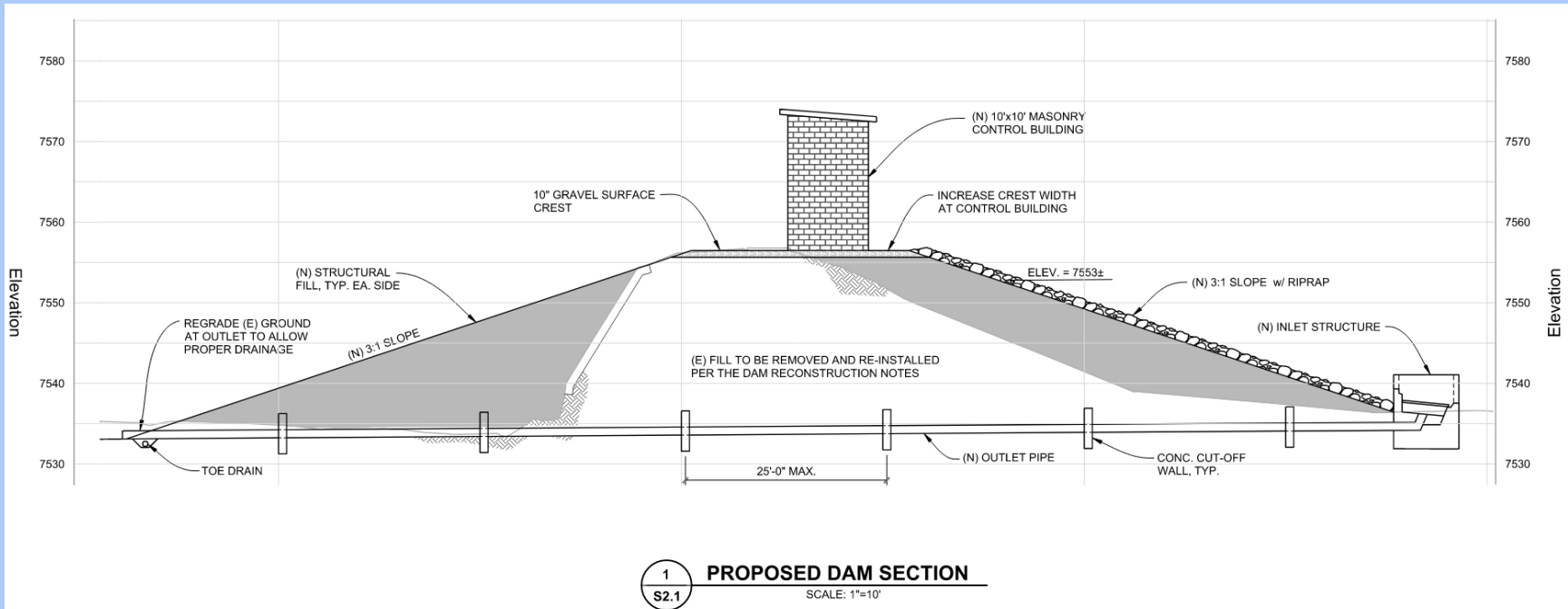


HOBART CREEK RESERVOIR DAM PROPOSED WORK

6

- This project proposes to:

- Remove and replace dam fill, including buttressing the structure
- replace outlet pipes
- replace spillway
- replace manual control system with automated controls
- upgrade access bridge.



QUESTIONS?

7



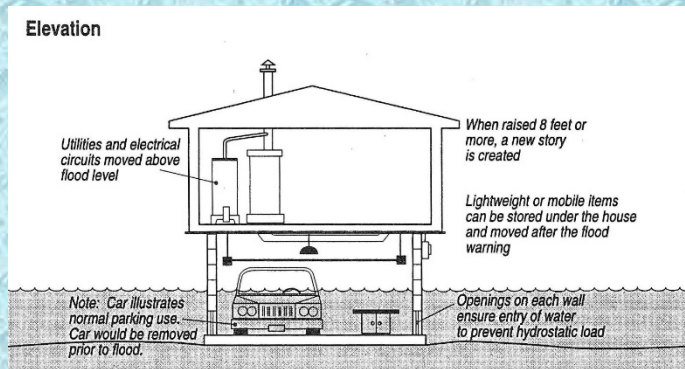
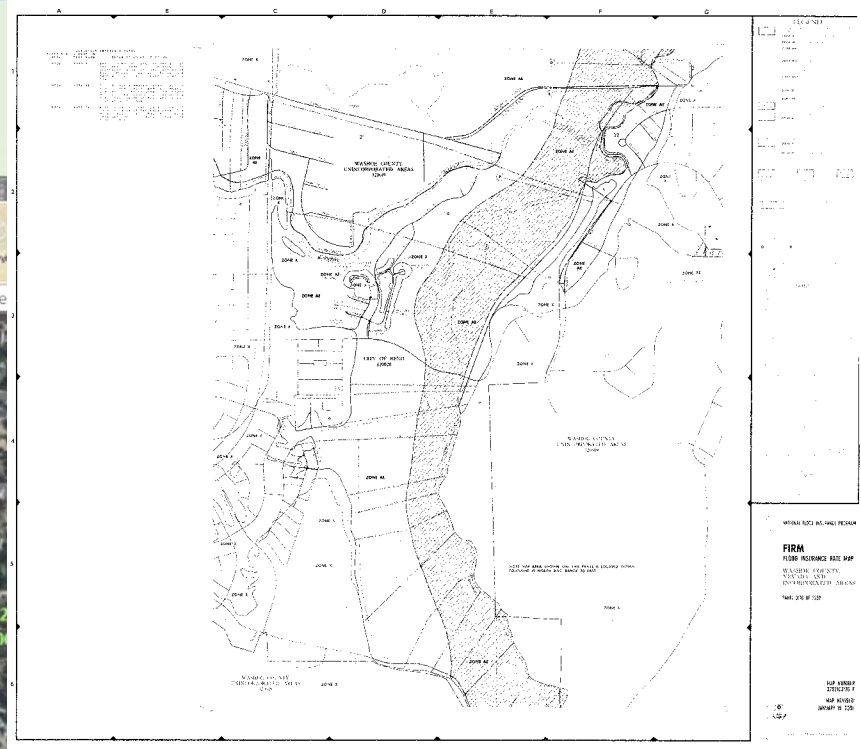
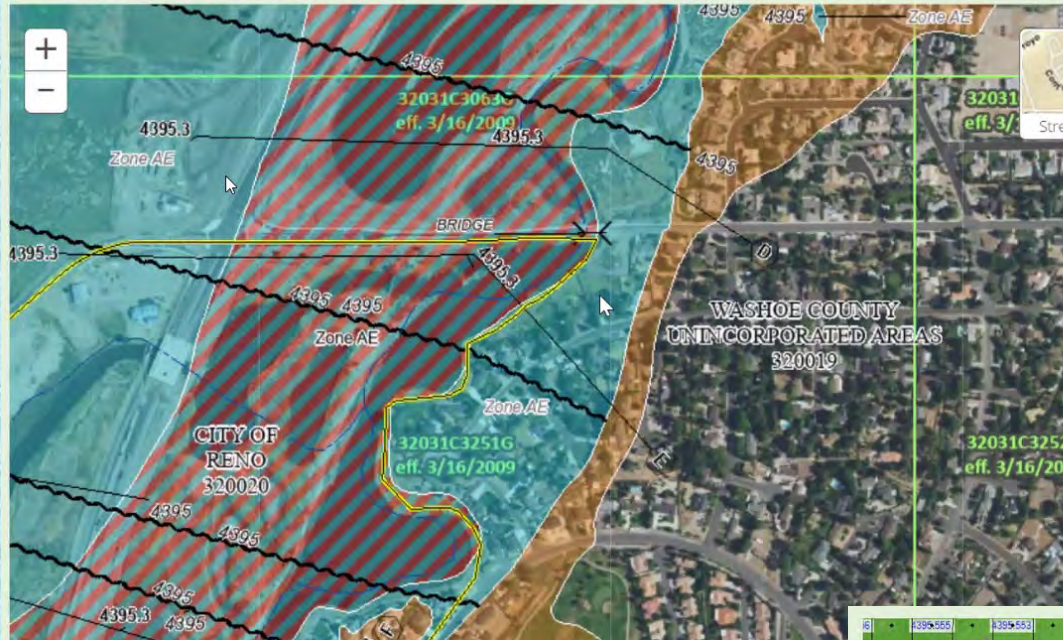
SE Washoe Home Elevation

Covid: Batch 1B - 10/11/2022

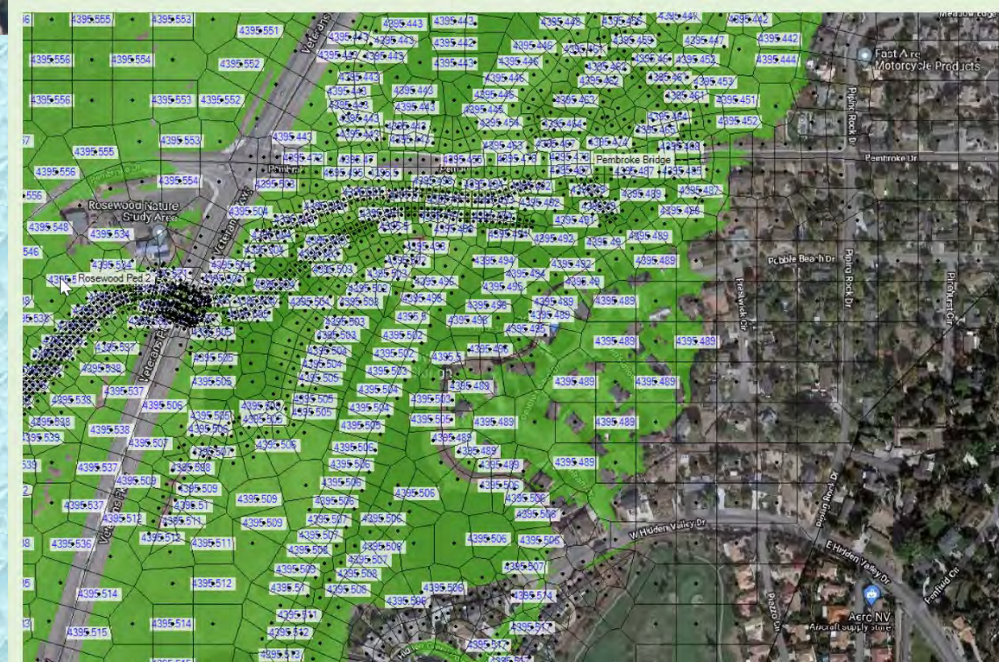




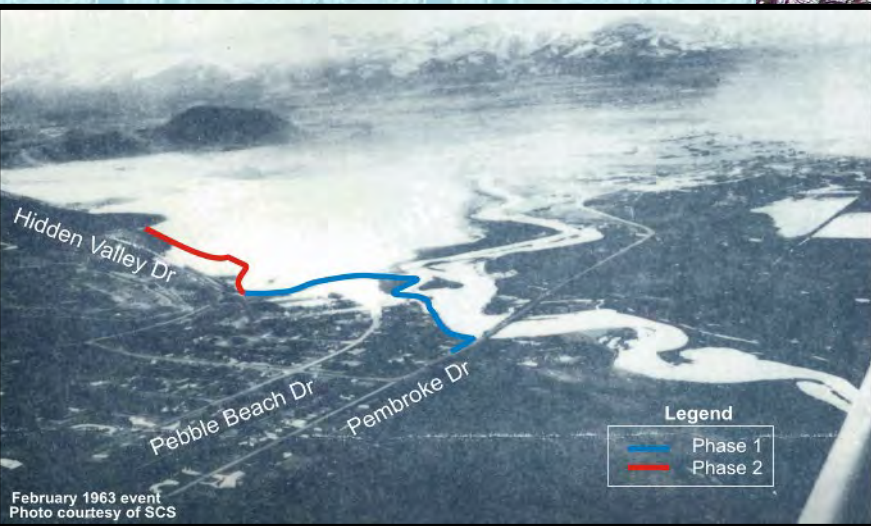
1984 FEMA



2022 TRFMA



2005
Pebble
Beach/
Pelham



	Floodwall	Levee	Raise Hidden Valley Drive	Buyout	Raise Homes
Phase I	\$22.6	\$12.9		\$20.6	\$9.9
Phase 2	\$30.5	\$25.4	\$28.1	\$9.7	\$3.6
Phase 3	\$ 4.5			\$3.3	\$1.8

New Orleans



Slab on-grade



Placer County





FLOOD PROTECTION FINANCIAL ASSISTANCE PROGRAM

HOME ELEVATION HANDBOOK



(Form Rev. 4-20-15)

APN:

Grantee Address:
When recorded mail to:
Truckee River Flood Management Authority
9635 Gateway Drive, Suite A
Reno, Nevada 89521

Mail Tax Statements to
(No change in mailing instructions
currently on file with Assessor's Office)

Notice: Per NRS 239B.030, this document does not contain personal information as defined in NRS 603A.040.

DECLARATION OF COVENANTS, RESTRICTIONS AND EASEMENTS

(Truckee River Flood Management Project Financial Assistance Program)

1. Parties and Property Information.

Date	
"Owner" "Grantor"	
"Beneficiary" "Grantee" "TRFMA"	Truckee River Flood Management Authority, a body corporate and politic and a public agency, and its successors and assigns 9635 Gateway Drive, Suite A Reno, Nevada 89521
"Grant Property" Existing Structures [See ¶ 4 below] Minimum Base Floor Elevation	Real and personal property described in Exhibit A and all improvements, appurtenances, hereditaments appertaining thereto.

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Payment and Inspection Schedule.....	9

Section 2 – Contractors' Specifications & Guidelines

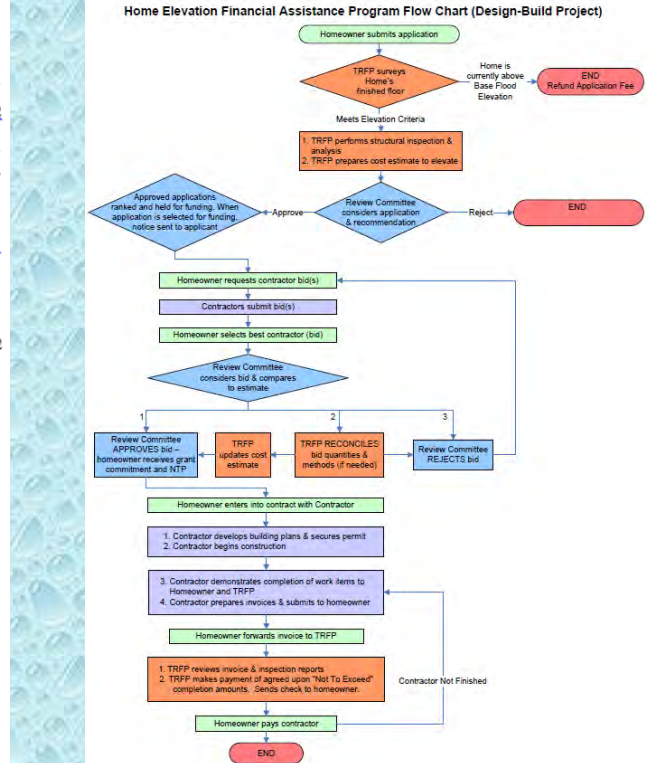
Contractors' Specifications & Guidelines.....	1
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Section 3 – Forms

Application for Grant
Bid Form
Homeowner Grant Commitment and Agreement
Declaration of Use Restriction

Appendices

Appendix A – Washoe County Ordinance
Appendix B – Special Flood Design Requirements
Appendix C – FEMA Design Manual for Retrofitting Flood-prone Residential Structures



(4-20-15)

TRUCKEE RIVER FLOOD PROTECTION FINANCIAL ASSISTANCE PROGRAM GRANT COMMITMENT AND AGREEMENT (Residential Home Elevation)

1. Parties, Definitions, Key terms:

Owner (name and address):	and assigns permitted under Paragraph 4.A of this Agreement.
Grantor	Truckee River Flood Management Authority, a body corporate and politic and a public agency. 9635 Gateway Drive, Suite A, Reno, Nevada 89521 Attn: Eric Scheetz, P.E. Project Administrator (775) 850-7423 email: escheetz@washocounty.us and its assigns permitted under Paragraph 4.A of this Agreement
Grant Property Address	
Structure(s) to be elevated	
Maximum Grant Amount	
Eligible Costs or Allowable Costs	Means those costs identified in Attachment B to Washoe County Ordinance 1439 as may be amended by the Truckee River Flood Management Authority and in the Truckee River Flood Protection Financial Assistance Program Home Elevation Handbook which is in force and effect on the Date of Commitment.
Date of Commitment	
Construction Start Deadline	
Expiration Date of Commitment	

2. Grant Commitment; Progress Payments

A. As authorized by NRS 244.3653, Washoe County Code 40.450 through 40.460 as amended, and the Interlocal Cooperative Agreement (Truckee River Flood Management Project) of March 11, 2011, and subject to the terms and conditions in this Agreement, Grantor hereby commits to grant funds to the above named Owner up to the Maximum Grant Amount to pay or reimburse Owner for eligible costs to elevate the above described structure on the Grant Property to a minimum required elevation.

B. Owner agrees that grant funds shall only be used to perform elevation work on the structure(s) to be elevated at the grant property address as identified in Section 1 of this Agreement. Such elevation work shall be limited to the work identified in section 2.c. of this Agreement and to work constituting Eligible or Allowable Costs as defined in Section 1 of this Agreement.

C. In accordance with NRS 244.3653(3)(c)(3)(vi) and Washoe County Code 40.455(5), Owner represents and warrants that Owner has not received, and agrees not to apply for, any further financial assistance to make the property resistant to flood damage from a tourism improvement district established pursuant to NRS 271A.070, a tax increment area created pursuant to NRS 278C.155, a redevelopment area established pursuant to NRS 279.426, a program for the rehabilitation of residential neighborhoods established pursuant to 279A.050 or a program for the rehabilitation of abandoned residential properties established pursuant to NRS 279B.030.

D. Funds are payable in installments based on proof of work completed (including progress check by Grantor) as follows:

Pmt #	Upon completion of the following work, submission of invoices and progress check by Grantor officials*	Estimated Progress payment would be**:	%	Amount
1	Construction contract executed and approved by Grantor, proofs of insurance and warranty provided; design completed; building permits obtained; Declaration of Covenants, Restrictions and Easements executed and recorded.	20%	\$	
2	Home is elevated, cribbed, supported, and concrete work is formed.	20%	\$	
3	Structural work completed and the house has been set on new foundation.	25%	\$	
4	Utilities hooked up, elevation certificate is issued, and elevation is complete.	25%	\$	
5	Final plan work completed, including landscaping, Owner add-ons, and final Certificate of Occupancy is issued, and owner signs off on completion to Grantor. Total Maximum Grant Amount	100%	\$	

6335 Pebble Beach



Record cost increases

Contractors experienced record increases for materials costs in 2021. While some costs have subsided in recent months, others have continued to rise or have become volatile in both directions—a threat in its own way.

Around the middle of each month, the Bureau of Labor Statistics (BLS) posts producer price indexes (PPI) for thousands of products and services at www.bls.gov/ppi. Most of these are based on the prices that sellers say they charged for a specific item on the 11th day of the preceding month. Producers include manufacturers and fabricators, intermediaries such as steel service centers and distributors, and providers of services ranging from design to trucking.

BLS aggregates these prices into index numbers that cover an entire category of products, such as a weighted average of all concrete products, as well as indexes for the mix of goods and services purchased by industries such as construction. The index readings themselves do not translate into a price found in the market, but the percentage change in an index number from one period to another indicates the amount of price increase or decrease that has occurred.

The PPI for inputs to new nonresidential construction is a weighted average of the goods and services purchased for every type of new construction other than housing. It does not include a contractor's own labor costs, equipment purchases, or direct imports but does cover an importer's or distributor's markup on imported goods.

This index rose by a record amount in 2021. As shown in Figure 1, the index soared 24.1% from June 2020 to June 2021 before moderating slightly. From December 2020 to December 2021, the increase still totaled 19.6%—a huge jump from the 4.4% rise posted in 2020 and the 1.8% gain in 2019.

24.1%

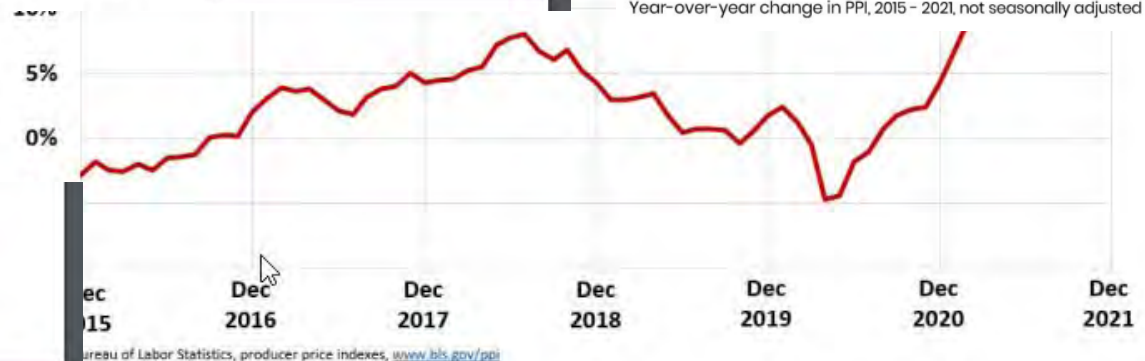
The producer price index soared 24.1% from June 2020 to June 2021. By December, the increases had moderated slightly but still totaled 19.6% for the year.

Inflation Impacts

Inputs to new nonresidential construction
December 2020-December 2021: 19.6%

Change in prices for inputs to construction

Year-over-year change in PPI, 2015 - 2021, not seasonally adjusted



Contributors to runaway costs

What has contributed to these extreme cost increases? In brief: nearly everything, as shown in Table 1. From December 2020 to December 2021, the PPI for steel mill products more than doubled, rocketing up 127.2%. There were double-digit increases in the PPIs for plastic construction products, 34.0%; aluminum mill shapes, 29.8%; copper and brass mill shapes, 23.4%; gypsum products, 20.7%; lumber and plywood, 17.6%; architectural coatings (paint), 13.9%; and asphalt felts and coatings, 11.8%.

Even items that did not end the year with double-digit gains had unusually large increases. The PPI for concrete products jumped 8.5% from December 2020 to December 2021, the largest rise in 15 years. The index for flat glass also posted an 8.5% gain (from November 2020 to November 2021), a 40-year high, before finishing the year with an increase of 7.3%.

In addition to materials that go into structures, prices for items and services used by contractors soared. For instance, contractors pay for huge amounts of diesel fuel—purchased directly to run contractors' own trucks and offroad equipment, as well as indirectly in the freight charges or explicit fuel surcharges for myriad deliveries of goods and equipment, and the hauling away of dirt, debris, and equipment. The PPI for diesel fuel leaped 54.9% from December 2020 to December 2021, while the index for truck transportation of freight climbed 17.7%.

Contractors also paid much more for equipment and parts. The PPI for construction machinery and equipment jumped 10.1% in 2021, and the index for truck and bus (including off-the-highway) pneumatic tires rose 11.2%.

As shown in Table 1, all of these increases far exceeded the changes a year earlier.

Table 1

Price increases for construction inputs
Year-over-year change in December PPI

Construction materials	2020	2021
Steel mill products	5.2%	127.2%
Plastic construction products	5.4%	34.0%
Aluminum mill shapes	-1.7%	29.8%
Copper and brass mill shapes	2.4%	23.4%
Gypsum products	3.6%	20.7%
Lumber and plywood	3.7%	17.6%

\$3.95

The retail price of diesel fuel reached a nearly 8-year high of \$3.95 per gallon on February 7, an increase of \$1.15 or 41% from one year earlier.

**AGC**
THE CONSTRUCTION ASSOCIATION

May

2021

CONSTRUCTION INFLATION ALERT

In late March, the Associated General Contractors of America (AGC) posted the Construction Inflation Alert, a document to inform project owners, government officials, and the public about the extreme cost increases and supply-chain disruptions affecting construction. Since then, price increases have intensified and spread to additional materials, while lead times for both production and deliveries have lengthened. Thus, the need for an updated document.

**AGC**
THE CONSTRUCTION ASSOCIATION

FEB

2022

CONSTRUCTION INFLATION ALERT

Two years after the coronavirus pandemic struck, the U.S. construction industry is still experiencing multiple impacts. Unprecedented increases in materials costs, supply-chain disruptions, and an increasingly tight labor market have made life difficult for contractors and project owners alike. Beginning in March 2021, the Associated General Contractors of America (AGC) has posted several editions of the Construction Inflation Alert, a document to inform project owners, government officials, and the public about these impacts on construction. The current version is the fifth update of that Alert—an indication that the situation is far from "normal."







1995 PARKWAY



3575 CRAVIASCO



6335 PLUM HOLLOW



6550 PEBBLE BEACH



6225 PEBBLE BEACH



6350 PLUM HOLLOW



5795 PELHAM

Questions????



