



INSIDE THIS ISSUE:

- The Vista Narrows Project** 1
- Tell me your story: Are you EXPERIENCED with flood risk? An Open Letter** 6
- Nevada's 2020 FMA Award Winners** 8
- Engaging Educational Outreach Tools** 9
- Flood in a Time of Corona Virus** 10
- Floodplain Management Association: Emerging Professionals** 12
- Upcoming Events & New Bulletin Announcement** 13

VOLUME 10, ISSUE 2

FALL 2020

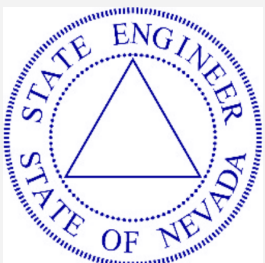
The VISTA NARROWS PROJECT

By E. George Robison, Executive Director
and Danielle Henderson, Natural Resource Manager
at the Truckee River Flood Management Authority

The Vista Narrows Project is a key element of the TRFMA's Truckee River Flood Management Project (Flood Project) that is being designed and permitted as a standalone project. The overall Flood Project is a \$400 million project that is a joint effort between TRFMA, the cities of Reno and Sparks, Washoe County, and numerous stakeholders. Once completed, the Flood Project will reduce flood damages from 100-year flows in the Truckee Meadows region. Some elements have already been completed such as the realignment of the North Truckee Drain; replacement of the Virginia Street Bridge; and river restoration projects at Lockwood, 102 Ranch, Tracy, and Mustang Ranch. The full extent of the Flood Project is from Reno to the town of Wadsworth and is shown in Flood Project Map Book available at: https://trfma.org/wp-content/uploads/2017/03/Mapbook-6-01_14_2015_compressed.pdf



Artist sketch of the channel benching or terracing to be done on the south side of the Truckee River. This sketch is looking east at the Living River Parkway with the Sparks Industrial Area on the Left Bank.



Why is this project important?

In the early 1960s, the federal government completed a series of flood control improvement projects on the Truckee River, which included removal of the Vista reefs, a natural bedrock outcrop in the river channel just east of Sparks, at Vista Narrows. As a result of this early flood-control work, the river began to erode and down-cut, creating high, dry banks along both sides of the river. Today, vegetation is very sparse and mostly weedy on these eroding banks; habitat is poor for fish and wildlife.

The river is constrained at the Vista Narrows—during floods, the water backs up and forms a lake upstream that floods industrial areas in Reno and Sparks as well as the Reno-Tahoe International Airport. Past flooding in the Truckee Meadows has caused significant economic impacts; a future 100-year flood event could cause billions of dollars in property and economic damages.



Sparks Industrial Park
January 1, 1997, Flooding
on the Truckee River.

[On the Image to the left, in the top-center] Planes are stranded on the runway in Reno-Tahoe International Airport



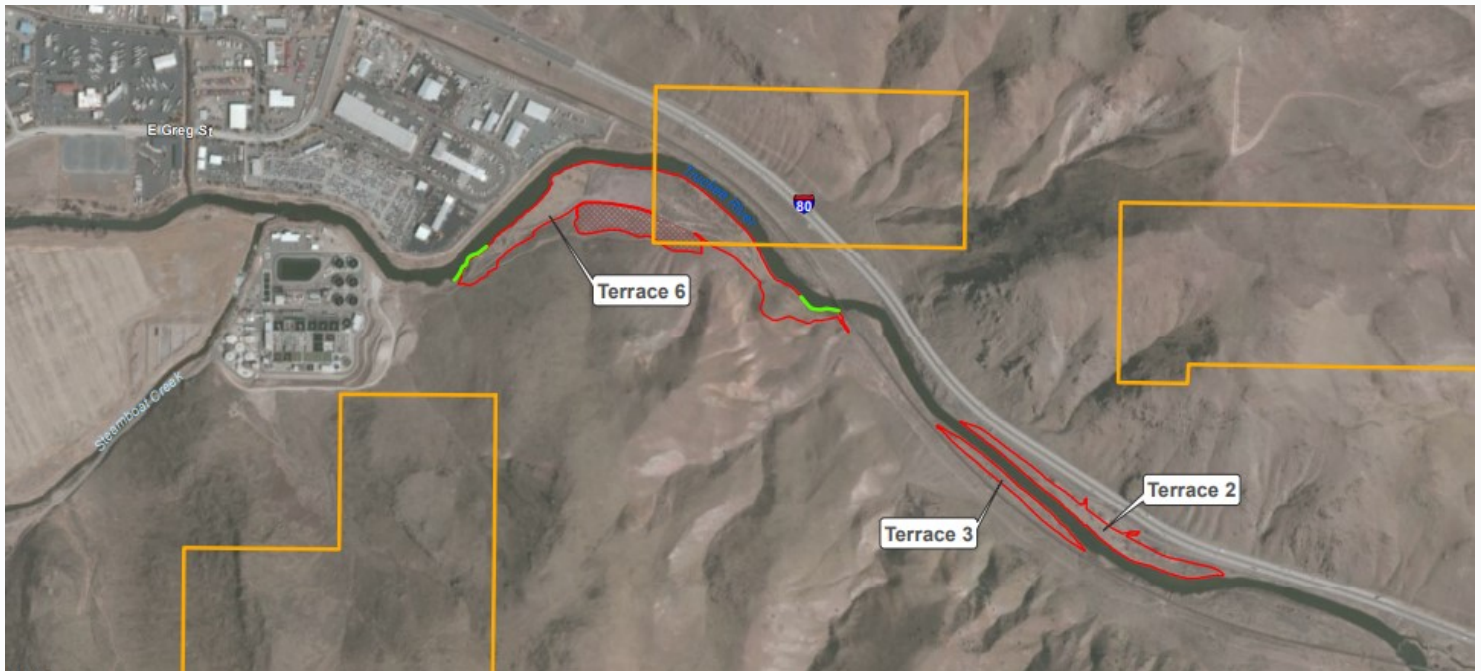
Photo above, Downtown Reno, 1997



Photo above by Marilyn Newton, courtesy Reno Gazette-Journal

Floodplain Terracing = Environmentally Based Flood Control

Excavating floodplain terraces (river terraces) is a non-structural method to reduce flood damages. To construct a floodplain terrace, higher ground next to the river channel is excavated and lowered so that the river can spread out during floods, depositing fertile soil and replenishing the local groundwater along the river. The low terraces are inundated frequently and are able to support wetland and riparian plants such as cottonwood trees and willows, creating habitat for native fish and wildlife species.



Six floodplain terrace sites were initially evaluated at Vista Narrows; three terraces (Terrace 2, 3, and 6) were selected based on flood control benefit, cost, and ease of access. Designs for the selected terraces were further refined to reduce impacts and improve environmental benefits. For example, the proposed final grade of the terraces was lowered to maximize the acres of wetland creation. The size of two terraces were reduced to avoid impacts to cultural resources.

Approximately 37 acres will be revegetated, including 13 acres of wetlands that will be revegetated with cottonwoods, willows, and other native plants in order to improve habitat for fish and wildlife species. The revegetation plan incorporates elements that have been successful on other local revegetation projects, including TRFMA's ecosystem restoration projects at Lockwood, Mustang Ranch, Tracy, and 102 Ranch (built in partnership with The Nature Conservancy and others); and the Regional Transportation Commission's (RTC) Southeast Connector Project.

The VISTA NARROWS PROJECT

Continued from page 3

Specifically, the Vista Narrows project uses planting methods, weed control strategies, and revegetation species that demonstrated success at these reference sites. Once established, the plant communities should be self-sustaining and adapted to periodic flooding and inundation.

FLOODPLAIN TERRACE

SUMMARY: The construction of Terrace 6 involves lowering the south bank and re-establishing a wide, hydraulically-connected floodplain. The active floodplain areas nearest to the river bank will be planted with wetland and riparian vegetation that includes cottonwood and willow, native grasses, and emergent wetland plants. These areas will also include large rock to provide stability and hydraulic complexity in this geomorphically active zone. A band of willows will be situated along the toe of a gentle (10:1) slope that will support upland riparian shrubs adapted to periodic flooding. As the slope gradually transitions towards upland, more xeric, drought tolerant native shrubs and grasses will be established. Plantings will include container plants (for trees and some shrubs), live stakes (for willow), wetland plugs, and various mixes of hydroseed. The revegetation approach makes use of a detailed understanding of inundation frequencies and extents, anticipated depth to groundwater, and natural geomorphic processes to allow plant communities to become self-sustaining.



Project Benefits

The Vista Narrows project is an essential part of the overall Flood Project and provides key flood control benefits in the Truckee Meadows. As a standalone project, Vista Narrows lowers water levels in the Truckee Meadows pool by 0.2 feet to more than 2 feet in some places during large flood events. Once the entire Flood Project is constructed (full build-out), large portions of the Reno and Sparks industrial areas, the Reno-Tahoe International Airport, and other infrastructure such as Grand Sierra Casino and Resort will stay dry during large (100-year) flood events, thereby preventing hundreds of millions of dollars in flood-related economic damages. In addition, construction and revegetation of the floodplain terraces at Vista Narrows will improve habitat for both fish and wildlife species.

Project Impacts

While the Vista Narrows project provides tremendous benefits for flood control and riverine habitat, it also causes some impacts downstream. The creation of floodplain terraces allows water to move faster through the Truckee Meadows to reduce/prevent flooding in that area. This increases the peak flows moving downstream, especially during very large, rare flood events.

Several studies were undertaken by TRFMA in order to better understand the effects of increased peak flows on homes near the river, as well as impacts on erosion and sediment transport (in the river and bank erosion).

These studies found that on average, the increase in depth of water during a 100-year flood was about 0.6 feet (7 inches). The increase in velocity was about 0.3 feet per second—note that during a 100-year flood, the Truckee River will be 10-15 feet deep and be running at 8-10 feet per second. Impacts to banks and the river bed in terms of erosion or sedimentation were minor—around 2-3%, sometimes less.

Project Status

Substantial project designs (65% level) were completed last November. TRFMA is now applying for permits to construct the project. The agency hopes to begin construction sometime during 2021 or 2022, once key permits are obtained and designs are finalized. The project should take approximately two years to complete, followed by several years of revegetation. The project will be funded by TRFMA using sales taxes allocated to manage floods and build infrastructure to protect homes and businesses along the Truckee River. The estimated cost for terracing is 25 million dollars; costs for downstream mitigation have not yet been fully determined.

Tell me your story: Are you EXPERIENCED with flood risk?

An open letter from Hunter Merritt, USACE Sacramento District

Hello there! I thought I would break from our comfortable, traditional, third person narrative for a moment, and instead address you, my gentle reader, as a participant in education. Because this is really what education is about, no? Personal, intimate conversation from an individual, to an individual, based on primary experience and unique perspective? Would you not agree? Oh, wait, you can't answer, because this is a letter! Well, read on...

My last few years of work with the Silver Jackets teams have been focused on Flood Risk Education and Outreach. This began, at least for me, in my capacity as a planner, with the release campaign for the *California's Flood Future Report*, a first-ever collaborative compilation of an entire state's flood risk. I learned a lot from that experience starting in 2013, and I am still using it and learning from it today. One of the Recommended actions in that report was to "increase public and decision-maker awareness" of flood risk, and we have continued to pursue our goal of flood risk reduction using this approach. Knowledge is power, right? And power is what people need to act on their risk.

This year, we have strengthened our teams' relationships in all three states (California, Nevada, and Utah), by collaborating on professional learning webinars, presenting at outreach events, unveiling high-water mark signs, and supporting many other initiatives. I am very thankful and proud because education is a passion and a mission for me personally, and I am very lucky to have found a way to serve the public in a way that capitalizes on my strengths. (And trust me, as a Water Resources Planner and Public Involvement Specialist in the U.S. Army Corps of Engineers, my strengths are not in the same area as many of my compatriots. I am not any good with a T-square, or a scientific calculator, BTW.)

To use a favorite Army acronym, here is the BLUF (Bottom Line Up Front): We have made progress in flood risk education, and the WE in that statement is the interagency, trans-disciplinary, multi-generational teams of individuals that make up each state's Silver Jackets team. Just by making these small, short, non-structural flood risk reduction projects happen, we are experiencing teamwork, and that teamwork will be crucial when the next flood comes.

This method of learning by doing is something many folks from both the education and the adult training and development worlds call Experiential Education. It is not new, but it IS progressive, in that the approach was introduced around 100 years ago during the Progressive Movement as an alternative to traditional teacher-focused pedagogy.

In its simplest form, the method involves three steps: Experience, Reflection, and Action. Many thanks to John Dewey, Kurt Lewin, Michael Kolb, and many others who have studied, formalized and normalized this approach. I firmly believe in the value of experience as an educational tool, and whenever it is possible and appropriate, and especially in adult education efforts, I try to use the learner's (and my) own experiences to teach subjects and topics, including the topic of flood risk.

And since we are on the topic: what do we mean by risk, anyway? Well, if you are still reading this – and since it is a water-related, risk-related newsletter that is likely only at the top of the reading list for certain readers, not the average layperson – you are probably already familiar with our discipline's most basic, well-accepted, qualitative calculation of "Likelihood x Consequence" as a means of teaching the concept of Risk. I will warn you, this handily synthesized version of a complex issue really only provides a basic structure for the BEGINNING of a discussion. There are lots of other factors to consider, most of them social and human, and most of them much harder to predict than the formula suggests.

I believe risk is best experienced, in order to be memorable, and so, you and I should talk, first, about risk. Do you have a risk story? Here is where I start mine:

The power of water is immense, but I don't think it is more acutely, viscerally understood than when swimming a whitewater rapid. I remember practically nothing of my high school physics class. But boy, I remember the last time I (accidentally) swam a rapid: the force of water, the swirls of whirlpools at the eddy fence, the shock of cold water sapping my strength, the powerlessness I felt when I tried to roll my kayak but came out of my boat in the middle of the current. I gracelessly pawed at the water surface for air, desperately trying to make it to shore, more than slightly panicked that I would lose my boat and paddle, wondering if I would survive the next set of waves if I couldn't swim hard and fast enough...yep, I will remember that. Very well. Which leads me to tell you my current concern about floods.

I worry that the flood we are going to experience – and it is a "when", not an "if" – is going to be fast, and the water will be really cold. I worry about people not understanding the power of that cold water and, being desperate to get across town to their kids' school or make it home to get their pet or listen to the radio and immediately evacuate an area, they will see water across a road and try to drive or walk through that water. People will not turn around if they see moving water across a road (which is why Clark County Regional Flood Control District in Las Vegas, Nevada created a [Virtual Reality](#) experience to simulate the consequence of that bad decision, so that people don't have to live through the actual experience to tell their story). The VR experience is aimed at communicating with young people, who are more likely to take that risk. While the VR experience is not a Silver Jackets

product itself, it is anticipated the team will use it in the future flood risk education efforts in Nevada).

As flood risk educators, we try to reach families, by helping them to think about that scenario and make a plan to be safe. We try to reach policymakers and elected officials and help them be aware of land use decisions that put their communities at greater risk of flooding. We reach out to other agencies to compare notes and teach and learn together on how to best respond, recover, mitigate and plan for disasters.

But most importantly, when we educate others, we speak from our own experience. If we honor that, then we can be personal and authentic in our story. After my story is told I might ask a person if they have had an experience that is similar. Or, maybe their story is not similar at all. What matters is that we CONNECT as a way of teaching, by entering into conversation, then finding a way to conclude with a message.

Thanks for listening to my story. Do you have a story to tell? A way to talk about flood risk? An effective place to teach and learn about people's understanding of their disaster risk? I would like to hear YOUR perspective. Write back, and tell me what you know, and what you have experienced. And then spread the word!

Hunter Merritt is a Water Resources Planner, the district's Public Involvement Specialist, and the Silver Jackets Deputy Coordinator for the U.S. Army Corps of Engineers Sacramento District. He also teaches at California State University Sacramento, in the Recreation, Parks, and Tourism Department. He is an avid boater and deep appreciator of the strength of rivers and water.

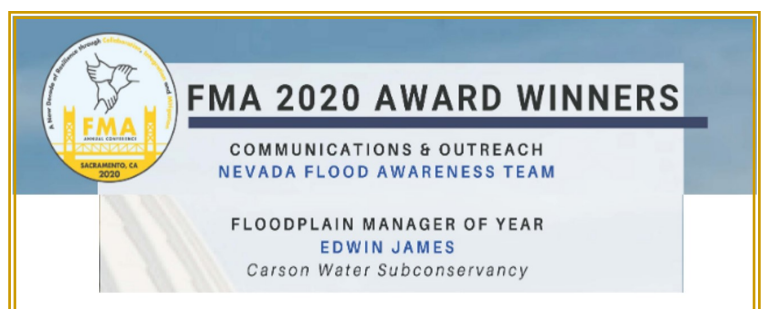
Nevada Flood Risk Awareness Team and Ed James of CWSD — Award Winners

Our Nevada Flood Risk Awareness Team is the recipient of the Floodplain Management Association's Communications and Outreach Award this year. The partnerships and teamwork that led to this was no small feat, and as such, the names of each partnering organization, city, and county have all been specially engraved on the award plaque to honor the outstanding accomplishment.

And a big congratulations to Ed James, winner of the Floodplain Manager of the Year Award! The Carson Water Subconservancy District stands as one of the nation's most outstanding flood programs and it is a truly, well-deserved recognition.

In lieu of an in-person FMA event, Award Videos were made and are available here to view:

[Communications and Outreach Award](#)
[Floodplain Manager of the Year Award](#)



STORY MAPS



Nevada Floods Story Maps

Outlining the history of flooding in each of the six major watersheds in Nevada, these are great informational tools for everyone. Two are currently under revision, but all are fully available now:

- [Carson River](#)
- [Truckee River](#)
- [Muddy River](#)
- [Virgin River](#)
- [Walker River](#)
- [Humboldt River](#)

FLOOD FIGHTER: NEVADA



Flood Fighter: Nevada

A wonderfully innovative educational video game. We are working with Sierra Nevada Journeys to develop a set of activity sheets that will meet Nevada State Educational Standards/NGSS. These virtual educational features will be finished by early-2021.

Access to the game can be found here:

[Flood Fighter: Nevada](#)



VR Flood - A 360 Virtual Reality Flood Experience

Clark County Regional Flood Control District's 'Virtual Reality' simulation is a huge success, reaching over 4 million YouTube visits in a little over a year. It takes you through being trapped in your car during a flash flood in Las Vegas. Recently added is a Spanish version:

[VR Experience](#) in English [VR Experience](#) in Spanish

Nevada Floods PSA

New TV Public Service Announcements will be aired throughout Nevada during the month of November.

- [NDWR Flood Awareness PSA 30 seconds in English](#)
- [NDWR Flood Awareness PSA 60 seconds in English](#)
- [NDWR Flood Awareness PSA 30 seconds in Spanish](#)
- [NDWR Flood Awareness PSA 60 seconds in Spanish](#)

Nevada Floods website

Same great website, with new features coming online in the next couple of weeks. It will include the FEMA Map Service Center linked in, with a detailed explanation on how to read FEMA MSC maps.

[NevadaFloods.org](#)



Series of Nevada Flood Videos (Ready to view now):

- [NV Dam Safety Video](#)
- and
- [Floodplains as Community Assets](#)



Series of Nevada Flood Videos (Still in Production):

- Floodplain Model demonstration
- Flood Fighter: NV & Clark County's VR Flash Flood simulation
- Story Maps
- Atmospheric Rivers (from the NWS)
- Know Your Flood Risk (from the NWS)
- Geomorphology of the Carson River Watershed (from CWSD)

Flood in a Time of Corona Virus

By Sarah Fichtner

Have you converted your dining room into a home office?

Have you been able to complete home projects that have been in limbo for years? Have dried beans been scarce at your local grocery store for months?? Unthinkable changes have come to pass... I never thought I would be accessorizing my wardrobe with a patterned cloth mask, or driving through the Reno Spaghetti Bowl at 5 on a Friday without white knuckling my steering wheel.

Something that has not changed, and will not change, is the occurrence of disasters. Since the beginning of this pandemic, our country has faced earthquakes, dam failures, an active tornado season in the south, civil unrest, even the threat of murder hornets and nunchuck bears (seriously, look it up). On top of all that, climate scientists project 2020 to be an active hurricane season. Could we just have one crisis at a time, please?

Another thing that has not changed is our goal at Nevada Division of Water Resources (NDWR) to spread awareness about flood risk and the availability of flood insurance. Typically, the majority of our work involves meeting with the public directly, either in the classroom or at large events in communities throughout the State. Last year, flood staff reached 165 people during flood awareness week alone, at in-person events.

Flood Awareness Week 2020 will be Saturday, November 14 - Friday, November 20, and we are preparing to raise flood awareness virtually. Thankfully, we already have some online materials that we intend to build on and add to!

Nevada flood Story Maps have been a years-long work in progress to compile recorded and anecdotal history of Nevada's Rivers dating back to the state's earliest settlers. The NDWR flood group created Story Maps for the Humboldt, Muddy and Virgin Rivers as an interactive learning tool. Story Maps for the Carson, Truckee and Walker Rivers are in the final steps of completion by the Nevada Silver Jackets.

Another project created collaboratively by the NDWR Flood Group and the Nevada Silver Jackets is the Flood Fighter: Nevada video game.

The next step for the NDWR Flood group is to roll out educational materials to accompany the Story Maps and Flood Fighter: Nevada game. These will be resources for teachers to work into a lesson plan. If you have visited the NDWR Flood booth at events in the past, you have likely

Flood in a Time of Corona Virus

seen a demonstration on our 4-foot flood model. Since we cannot bring the model to you physically, we will make a video demonstration. This flood model is often the center piece of our booth and has traveled all over Nevada.

Now you will be able to see it online!

Like us on Facebook at Nevada Floods to hear about our upcoming online events!

We are excited to create new material to spread flood awareness, but this will take some time! Since you are already reading this, here are some tips to help you prepare in the event of a flood:

Visit the FEMA Map Service Center at: <https://msc.fema.gov/portal/home> and enter your home address. Know if you are in an area at risk of flooding.

Have a “go bag” packed and ready with the essentials in case you need to leave in a hurry. This can apply in other disasters, not just flooding!

Never try to drive through a flooded road; it is not worth the risk of getting stuck and needing to be rescued!

For more information, visit <https://Ready.gov/floods> and NevadaFloods.org



The Emerging Professionals is a group formed under the Floodplain Management Association and is now expanding into Nevada. The goal is to assist individuals who are relatively new to Floodplain Management professions and associated fields.

If you or someone you know would like to learn more,
please contact Carlos Rendo at crendo@water.nv.gov

Floodplain Management Association

Emerging Professionals

Striving to engage and support emerging Floodplain Management professionals, as well as students and academia in related fields of study, through mentorship, networking, and training.





Upcoming Events

- ◆ November 14 -20 | Nevada Flood Awareness Week (FAW)
- ◆ November 17 | Douglas County FAW Virtual Town Hall event

Nevada Floodplain Management News Publication will be Changing Course, Soon to be Released as the “*Nevada Floodplain Management Bulletin*”

The Nevada Floodplain Management Program is changing the format of this news publication in order to include more timely and region-specific information. We hope these changes can bring a robust impact to delivering content that will better address the needs in your communities, focal points relevant to Nevada’s Floodplain Managers, and foster greater collaboration and cooperation between us.

The new Nevada Floodplain Management Bulletin will still contain article submissions, like our past newsletters, but will be available for more immediate release. We encourage you all to submit news articles about flood-related projects and developments in your region. We are enthusiastic about future publications of the Nevada Floodplain Management Bulletin, and invite you to join us in this exciting endeavor.

To Submit New Content, or if you have Questions or Comments?

If you have any questions or comments regarding the content of this newsletter or are interested in contributing an article for the Nevada Floodplain Management Bulletin, please contact Nevada Division of Water Resources, Public Outreach Manager: Carlos Rendo at crendo@water.nv.gov

