Media Briefing: Multi-solving with nature in the Colorado River Basin

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TRANSCRIPT

Nicole Lampe, Water Hub:

Welcome everyone. Thank you so much for joining us. We're really excited for this conversation about how working with nature can help Colorado based in communities and ecosystems prepare for a hotter and drier future. I'm Nicole Lampe from The Water Hub and we have a really great panel who I will introduce in a moment. First, just a bit about what inspired this conversation. As you all know and have helped to support the River has been in the news and in the public, I, I'd say more than ever recently. But a lot of that coverage is focused on the current crisis. Specifically, how can we save two to 4 million acre feet of water to keep the reservoirs flowing through the keep the river flowing through the dams? That focus obviously is understandable given the high stakes, but we know that interim solutions aren't enough to bring the basin back to health.

That's why we've convened this great panel of expert practitioners to talk about the opportunity now with billions in federal funding to rehydrate the landscape with nature-based projects. From the headwaters all the way down to Southwest states in the Salton Sea, we are joined today by Felicia Marcus from Stanford's Water in the West, Carina Bracer from National Forest Foundation, Kern Collymore from Six World Solutions, Frank Ruiz from Audubon and Catlow Shipek from Watershed Management Group. And I'm very excited to be co-facilitating this conversation with Teal Lehto, also known as Western Water Girl. Teal, do you wanna briefly introduce yourself and share a little bit more about your interest in this topic?

Teal Lehto, @WesternWaterGirl:

Hi, everyone. My name is Teal and I am mostly known for my presence on TikTok as the Western Water Girl. I produce extremely hard hitting and snarky videos that explain the situation in the Colorado River Basin, and I do my best to make it relatable and understandable. But I have noticed that in general, the content that I make that is related to solutions within the basin is not reaching as many people. And I think it's really important for us as journalists and community members to make opportunities to discuss solutions in a way that are engaging and entertaining for people who are viewing or reading that information. And also, like Nicole said, I really think it's important for us to start looking towards long term solutions within the basin and in ways that are sustainable and equitable for every user within the basin.

Nicole Lampe, Water Hub:

Thank you Teal. And in terms of the structure from the hour, we're going to hear briefly from each panelist about their area of work. And then we will have time for questions and answers at the end probably about the last 20 to 30 minutes. But we invite you to drop questions into the chat or the q and a at any time, and we'll get to them at end. And I'd love to start with Felicia. As I said, Felicia is The Landreth Visiting Fellow at Stanford Water in the West, and she authored a recent report on nature based solutions in the Colorado River Basin. Felicia, can you share some top takeaways from that report? I'll drop the link into the chat.

Felicia Marcus, Stanford Water in the West:

Thanks so much. And, and that's great that folks have it. It, it was written as a primer for the layperson, more or less particularly water people who didn't really know climate policy but also for climate policy makers who didn't really understand water or nature based solutions, and how you can bring these two very different worlds together at a, at a useful level. You know, the space is way more complicated messy integrated than the traditional parts per billion environmental issues many of us started with and also work on. It's more complicated than counting carbon parts per billion in the atmosphere. But it's vitally important on a host of levels and there's real opportunity here. So I hope you'll you'll dig in afterwards in the months and years ahead. The thing about it that was amazing is the biggest takeaway, and maybe I'm being a little emotional about it, is that there's really magic in this space and a lot of momentum.

And the necessity and the opportunity to seize that opportunity and to meet the challenge is breathtaking. When you think about it. There's been a whole trend at the international level going for a number of of years, sort of probably highlighted in the 2019 IPCC report on land-based emissions that made it really clear that unless we deal with land-based emissions, we can't get there from here. We could stop emitting fossil fuels tomorrow and we're still gonna live in unlivable world. And that dealing with land-based emissions, both from things like deforestation as well as wildfires, et cetera, and destruction of meadows and agricultural lands, land disturbances, et cetera, that if we started managing it more effectively and working with nature more effectively, we could meet up to 37% of the, of the carbon reduction load that we need to have.

And it was kind of amazing to me to see that wildfires alone, wildfires that come from these outsized conflagration that aren't just natural fire, they're fires that are hotter, bigger and more frequent than they were before because of the fact of not managing our forests because of smokey bears, well intentioned fire suppression efforts, but misplaced in some ways the, the, the squelching of natural fire and this incredible buildup of fuels that these wildfires are now in, in many places, if not everywhere, emitting more carbon than fossil fuels, which doesn't mean not working on fossil fuels. We need to redouble that effort, but we also need to start putting more effort into the, into the natural land space. And the beauty of that is that there are multiple benefits that come from it. And the challenge of dealing with it is that there are multiple benefits that come from it, each of which are, tend to be managed and quantified in a silo.

So if you look at doing this work from a, a, a part per billion carbon, not emitted into the atmosphere or an acre foot of water received for action, it's gonna be a fraction of what you get. But if you look at it from a multi benefit per perspective, it's pretty wondrous. And yet we don't have common public policy tools for that. There's some work going on Pacific Institute and the CEO Water mandate on that, but a lot more needs to happen. So those were kind of the headlines at the national level. We're getting it. You've got billions coming in and, and I know we'll talk about this later at the national level, both in the Infrastructure and Jobs Act and in the Inflation Reduction Act, because the federal government really sees this as an amazing opportunity. And actually during COP and getting no traction on it that I saw on November 8th, they issued a roadmap for using nature-based solutions to help communities, the economy and climate that I really encourage people to look at with forests, you end up with this multiple benefits that are easier to capture.

And yet people who don't work on forests don't think about forests. And I guess my point was to say we've gotta think about this whole suite of landscapes from top to bottom of the watershed. But if you start at the top, you have the opportunity to prevent catastrophic wildfires, which prevents these massive carbon plumes. You protect life and limb, which is in part why it's been easier to put billions of dollars into this cuz that's the benefit of, of benefits in many ways. But you also get water benefits and

the quantification isn't precise yet, but it's growing and there are experts working on it. Again, not dollar per acre foot in, in isolation, but together that by managing our forest and allowing more snow, that does fall. So we know less snow will fall, more rain will fall with a few degrees, temperature rise more can hit the ground.

And if you keep it still shaded, it can last longer. So the timing benefits of snow pack as our single largest storage venue can be preserved a little bit. Then if you move down the watershed and you do meadow Restoration Meadows, which allow for the slower meandering of water, just pack a punch in terms of benefits, in terms of groundwater recharge, in terms of seeping into the land and, and going across it creating refugia during fires, creating natural fire breaks, but also sequestering carbon and slowing that flow of water, which is essential to help with that water flow later in the season when we use more of it for agriculture in particular. So there's a linkage between our lands at the bottom and our forest and meadow work at the top. And the the problem with our setup is that we manage these things in isolation, but there are efforts at the states, which I know we'll talk about in a moment, that are also making a difference.

And then finally, the other, there are many other things, but the other thing that really struck me was the magic of beavers, which since I started writing the port, there have been a massive number of stories. It was like I was like racing to, to get it done. I had to keep updating my paper. But as nature's engineers, these little guys can restore meadows on their own faster than anything. And the results are striking. And the quantification that's starting to happen in terms of the carbon sequestration potential, as well as that timing benefit for water is pretty huge. And I'm just scratching the surface cause I know we're not supposed to talk that long right now, but there's, there's plenty more where that came from, where there's just this wonderful opportunity to meet the climate challenge, solve some water problems, and create a healthier ecosystem for people and critters in a way that has alluded us as we've over specialized in the work we do. But it's hard cuz you've gotta work across silos.

Teal Lehto, @WesternWaterGirl:

Thank you so much for that. I feel like I just learned so much. I was wondering if you could weigh in on how states are using nature to combat climate change and how this new federal funding might support those efforts.

Felicia Marcus, Stanford Water in the West:

Well, that, that's easier in some ways. I mean, there aren't as many states that have hopped on the bandwagon, at least in the Colorado basin. California is the most evolved in their planning and in their implementation because they've been able to use billions in total from their cap and trade proceeds to go into this for a number of years. And certainly the wildfires of 17 and 18 really sparked, no pun intended, a massive infusion of dollars into, into fire prevention. And the cap and trade money allowed it to go into that, but also into meadow restoration, which they recognized even without the data would make a difference. And in their healthy soils programs. And that's a long story, but we can talk about there are a lot of different things you can do in agriculture to make a big difference, although a lot of it takes yearly, yearly work.

And so they're doing a lot of that, that work. And they recently have taken the next set of steps, and these are all in the paper so I won't go through it in detail, in their current scoping plan update, which is the update they do every five years of the shape of what they're gonna do in their rules in the coming five years, they're going long on nature based solutions and forests in particular, even acknowledging that doing the forest management takes to take out all this excess fuels and trees. And clearly you've gotta take out the little ones, the brush, all the things that create the, the fuel ladder that allows these

massive fires to burn and to burn even the old trees. That you're gonna have a loss of sequestration in the short run because you're taking out biomass. But in the long run, you're gonna prevent bigger emissions that come from wildfire.

And that is a massive watershed, so to speak, for carb, which it's much easier to prove a technical thing, but they know it to be true and they know and they explicitly talk about the multiple benefits cuz they're part of one state. And then in parallel, the resources agency put out a really good climate, smart California plan that pulls this all together and even cuts it down by regions within the state and what the opportunities are in the region. The other two states that are looking at it, and I sat through I read all the reports for one and sat through all the listening sessions for the other Colorado and New Mexico are developing nature-based solution, national work, natural working lands as the term that most states use plans to deal with climate. And I think those are a really important place to encourage and watch.

They don't have a ton of resources or nowhere like California, but California can provide at least some ideas for them to build off of. And there's a really important study being done by tnc world Resources. I instituting US Climate Alliance on looking at nature based solution opportunities for climate in both New Mexico and Colorado. And that should be coming out sometime next year and provide something of a roadmap. And my paper has a million how to and recommendations, but those two states are places to watch. Nevada has a little piece of it, other states do some of it, even if they don't call it climate like Arizona has pieces of these things. And the the final thing I'd say about the states, it's I think, important for the folks who cover climate and probably my most important recommendation is that, you know, most states that have a climate program have a complimentary energy strategy, energy efficiency, alternative fuels, both promoting them and suppressing fossil fuels.

All the things that, that the climate world. And at NRDC I owned this as well has really focused on. But frankly we need complimentary natural working lands policies that are as least as stringent and important given the magnitude of the numbers. And so far only, call it California is attempting it at that scale. And I have hopes that Colorado and New Mexico will really step up because of the multiple benefits they made noise. They have really good people who really want to do this particularly the state forester and in New Mexico and the folks in natural resources and water programming Colorado. But it's gonna need more support, I think, in order to really come to fruition. Thank you. Arkansas is doing a lot. Other states and outside the Colorado are doing a lot, Oregon, et cetera.

Nicole Lampe, Water Hub:

Thank you so much Felicia. Felicia talked quite a lot about, about the vital role that forests play in protecting clean water. And so I wanna turn next to Carina Bracer from National Forest Foundation. Is there anything that you want, anything more you wanna say about the role that forests play in providing both clean water and ample water supply?

Carina Bracer, National Forest Foundation:

Yeah, sure. Can you hear me okay? Yeah. yeah, thank you very much for the opportunity and I'm very appreciative of all the interests in the work of, of Colorado River Basin and water issues which are really critical in so many ways. And yeah, of course healthy forests do, I think, you know, have a lot of different values, multiple benefits as as mentioned, but I wanna focus on, on the water right now. And so the healthy forest ecosystems have impact on water quality and water quantity. You can look at it from those two lenses. Although it also helps to sort of mitigate extreme weather and reduce, reduce impacts from weather as well on water resources. And there are clear and and measurable benefits both to the ecosystems themselves and also to society from the impact of, of healthy forests.

So improved water quality, just to sort of describe it pretty in, in a very basic way comes from amongst other things that vegetation helping to trap sediments and pollutants that would otherwise run off, you know, down in our waterways, flow downstream and affect users. Those are, that's sort of the primary quality impact of the vegetation. And then healthy forest and forest health projects can also increase water quantity which is critical as well as we know because they more efficiently help to replenish meadows and springs and wetlands as Licia was mentioning. So essentially they're also helping to, the vegetation helps to regulate the water flows and help to protect downstream areas from flooding, which is another, another major potential impact. And it's really important to note that high elevation forest are home to the headwaters of many of the rivers that ultimately feed into the Colorado River Basin and the Colorado River.

So these upper elevation forests mostly in national, the National Forest System the US public forests, which is where, where the National Forest Foundation, my organization predominantly works. So these lands in the National Forest area represent about 20% of the total land area of the Colorado River Basin, but they have a disproportionate, more or less 60% production of water for the entire river basin. So it's a much smaller land area with a very big impact on the amount of water that, you know is generated, the quality of that water and that large scale restoration efforts, which you can do over these large national forest areas help to reduce, you know, return perennial stream flow. A lot of the flow that we see is very, you know, sporadic and not notal. So these tributaries and streams that have not run for decades, some of them or have run very in a very small way, are also benefited by, by these healthy forest projects.

And then finally, fire, I can, I can mention that, you know, fires and forests and forest areas particularly have a huge impact on water quality, apart from, of course all the other social impacts that, that it can eventually have. But we do have evidence of watershed health projects in forested areas, making the land much more resilient against the fires. So the increased wetness in the forested areas are, you know, highly vegetated upper forest areas have the healthier environment and they mitigate fire risk, so reduce the fire risk, but also will reduce the severity of fires. Both of those things are important. So if fire does come and the, the headwaters restoration projects also serve as anchors for fuel reduction treatments, which is really critical to do. In fact, we have a lot of, you know, excess materials that, that, so we do need to reduce the fuels.

And a lot of the watershed health projects that that we do,, are about reducing the, you know, breaking up the landscape scale fuel continuity and if a fire is to come, you know, reduce the severity of it, that'll help to stop the massive amounts of erosion. I mean, we have videos of streams of, of of just, you know, the erosion coming down after an area's not vegetated and the downstream users are just, you know, having this horrible quality and just very big impacts apart from the flooding that can happen. And so yeah. So those are some of the, the forest health benefits. <Laugh>,

Teal Lehto, @WesternWaterGirl:

Thank you so much for sharing that. I think the connection between forest health and watershed health is often overlooked. And my area my home river is the Animas River and in 2018 we had a very large forest fire and there was flash flooding immediately after that, and it killed about 80% of the fish in our river. Yeah. Which was just a tragedy. I was hoping that we could zoom in on a specific restoration project that you have underway. Can you talk about the Trail Creek project and explain how it will benefit the Gunnison and Colorado Rivers? And in that, can you explain how you think about a forest project like that holistically and a way that benefits the water cycle and the fire cycle of that area?

Carina Bracer, National Forest Foundation:

Yeah, absolutely. Yeah. This is a, a, a project that we're very excited about. One of our first project using the low, it's called Low Tech Process Based Restoration, a very you know, jargoning word, but it's, it's essentially an approach where as Felicia mentioned, we're working with beavers is one of the ways, one of the method methods of low tech process based restoration. So this Trail Creek project in, you know, Colorado Gunnison area, the Gunnison National Forest demonstrates our practices of working together with the National Forest, the managers of the National Forest, and of various other experts of all kinds, hydrologists, geologists, engineers, et cetera. But in this case, what we're doing is building very minimal structures. So that, you know, these are on the high elevation the watersheds in that area, and the goal is to reestablish the stream process, essentially, right?

So the and I'll mention a little bit later, but the, so the, these structures that mimic beaver dams, so they're called beaver dam analogs and insert with little posts and then, you know, block it up with the, some twigs and branches, and eventually the beavers the beavers do return because the damning of the water behind our, our beaver dam analogs is what then allows the beavers to find secure habitat, but also a bunch of other you know, fish that have been in, you know, removed from many of these degraded upper elevation areas. So and then once you pool the water, it is able to sort of overflow the, the, the banks of currently damaged very narrow, fast running streams that are in size as they're called. And so the water then can, you know, require much broader and deeper flow regimens essentially.

And so that is, is is very helpful to the, you know, upper elevation watersheds. We also do a lot of removal of invasive species at that, at that area and in general, and our forest health projects that have a big impact on on water. So the, the Trail Creek project started in 2021, and then a very, very short time. In fact, even weeks after you install the, the, these beaver Dam analogs, you already have a very big water impact visible immediately. I actually would love to have shared some photos and I'm happy to do so afterwards. But so the resilience of this previously degraded ecosystem returns pretty fast. And so we are already able to see the, the improvement in water quality and return of the wetlands as we were mentioning, water flowing much slower. And we're really excited to see what's gonna happen this winter with the snow pack and how much longer, you know, what, what is the sustainability of this wetness in the, in the the upper elevation.

So forested watershed areas essentially. So, yeah. And so the high elevation areas is, you know, where we hope to do additional projects like that Trail Creek project. There's a lot of group working on, you know, trying to, you know, collaborate with the beaver and and basically just, you know, recuperate how it already was working. We sort of took it away <laugh>. And so so yeah, we're, we're very excited about a lot of the work that can happen in the national forests in terms of supporting water quality, replenishment quality and, and all of that.

Nicole Lampe, Water Hub:

Thank you so much, Carina. Moving now down the River, I wanna hear next from Kern Collymore, who's co-founder of Sixth World Solutions, and along with his partner recently was recognized with the Indigenous Resilience Leadership Award. Kern, we know that agriculture is the biggest user of Colorado River Water but the farmers, like everyone else in the west is going to, are going to have to make do with less. Can you please talk about the drought friendly farming methods you've been learning and developing with Dine farmers?

Kern Collymore, Sixth World Solutions:

Hi everyone. Thanks for the introduction. I guess just to give a little foundation of where I'm coming from as I answer this question is, I am a history person. I love history. I love like how things started, where they come from. And I think that's just a really important question because as you look at the

history of agriculture in the southwest, or you know, in the Colorado River Basin there have been large scale ag producing peoples for a long time, right? The Colorado River Basin has supported quite a few different numbers of tribes in the area, right? So when we talk about agriculture today, we're, I guess we're, we're really pointing to the fact that this large scale agriculture that we're engaging in is at this point where it's unsustainable, right? The systems that we're utilizing in terms of tilling and mono crops the pesticides and clear cutting it's leading to exacerbating situations where we are using more and more water.

So as you mentioned before with these droughts, like how are we reducing these ways? And I think that just what we've seen is when you look at the people doing the work on the front lines of this, you know, the new word is regenerative agriculture. It's traditionally been local communities, indigenous tribes frontline peoples who are doing these, these works, right? So there's recently a study that said 80% of the world's biodiversity is being overseen by Indigenous tribes. And it was cool listening before I was, as we were mentioning forest management and, and forest fires, and how that was something that these tribal communities have had been incorporating but we're forced to stop, right? You know, and, and as we're we're talking about things like nature based solutions COP 27 was just came to an end. But we see how sometimes if tribal communities aren't on the front lines of the creation of these solutions they kind of fall short.

So nature based solutions as, as looking at like just leaving this land alone. So even the indigenous peoples from this land can't access their traditional medicines or can't go upon it and, and do their traditional hunting. And how, you know, as we start looking at solutions, the really important fact that we make sure that frontline communities are there Indigenous communities are there because they are the ones who've been holding this knowledge for a long time. So when we talk about agriculture it's, i, I, at least for me, it's like important to point out, right? Like there's like, like the farming that we do today, which is a very system that's been focused more upon profit, and how are you able to like, you know, like the biggest yield you can bring back. And we literally have farmers who are feeding the country who can't feed themselves.

So this system that we're like, we're seeing, right, it's unsustainable. So, you know, we're talking about these waterways and these water practices and, and I said before, the solution is looking at our community, looking at our frontline indigenous communities and what solutions are some of the things that we've been seeing, you know, really passive water catchment. So care about the, the benefit of marshes, right? Is because they allow the wire to spread and sink, and how do we do that actively utilizing teams of young people you know, working with our local farmers, our local land restoration groups. So those are are things that have been done on the ground. You know, you're looking at drift irrigation systems, those, those have been techniques we see people working on. So as opposed to, you know, sometimes I drive to, like Cortez, I'll drive up to Colorado and you see these fields and it's just spraying everywhere, and then you're watering everything and anything within that area.

And some of these farmers now are saying, well, you know what? I'm just gonna put the water right here where the seed is right here. And, and, and, and, you know, these type of ways of conserving water in more beneficial ways. But you know, also the fact that in general, these large scale producers are we just water our fields any, like in the daytime, usually doing like the hottest part of the day, you know, between like 12 and four, you see these huge sprinklers going on, but there's been no research that shows that water in your plants at night is any less beneficial. And then your plants have so many more hours to drink. And these are like on the ground solutions that we're seeing people implementing. Again being, for being in the southwest in some of these desert communities, people putting up these shades, these huge shades over their greenhouses, which allows them to grow longer.

Cuz again, one of the problems we see with greenhouses in the summertime getting really hot where you can't even like utilize them anymore. But there are these on the ground solutions, these decentralized solutions that are being done across the board. And I think that it's important to get the resources down to those, to those communities. So earlier Felicia mentioned some of the money that's coming down through different government funding and different programs, but having worked on the ground for such a long time, we see like this big disconnect between funding that's, that's supposed to go towards communities or funding that's supposed to go towards building up regenerative agriculture or permaculture land management. And then they all, they usually end up in these other places, right? A quick example I have is back when back when the CARES Act came, was supposed to go towards rural farmers and food deserts that ended up going to a lot of inner cities.

And I, I have no problem with money going to like inner cities to like work on food, food security, but that funding was initially supposed to go to rural communities. And I feel like it's time and time again where we don't see the resources going to the communities or to the people who are actually dealing and creating these solutions. And, you know, the USDA, they come up with these funding resources, with these funding proposals and they say they want community input, and then the application is like a 15 page thesis where you have to like, like quote and like site and blah, blah, blah. And it's like, well, you're asking for community input and then you're asked, right? Like asking these like, like deep level type of questions. I feel that kind of keeps farmers or keeps local people kind of excluded or separated from that. And we see it time and time again where resources come in and they don't make it down to solutions. Well, how do we create these, you know, grant applications or, or, or these methods and systems that do allow on the ground people to access them and, and, and see those resources.

Teal Lehto, @WesternWaterGirl:

Thank you so much for sharing that. I definitely feel like Indigenous perspectives are often left out of these conversations, so it's so important that you are providing us some insight from that perspective. I was wondering if you could explain how regenerative agriculture helps to support food security and drought resilience here in the southwest?

Kern Collymore, Sixth World Solutions:

Yeah, I, I, I touched on it a little while ago, but yeah, I think, you know, even terms like regenerative agriculture or you know, these like, like these like new kind of like academic or new ways, like words that are coming down the line and it's right, sustainable living and sustainable growing that as I said before, people have been doing for a long time. So some of the, some of the ways I feel that we've been able to see those things happen on the ground is just ways of like building up your soil. So for a long time tilling was this kind of like mindset that we were spreading in terms of land grant offices and, and, and ways of, of farming. But you know, as we look at, at growing up the land again, both Felicia and Karina mentioned earlier in terms of the forest, right?

Allowing the land to soak, allowing water to, to, to infiltrate the ground, it helps farming like so much. Again, we personally build, do a lot of agriculture as well. And, and you can see it from a sandy field, right? Compared to a field where there's lots of like root penetration, there's lots of like grasses growing, the water stays longer and the water sinks in longer too. So, you know, someone mentioned earlier when there was a forest fire and how there was a lot of flooding and that's like, you know, water is kind of, it, it flows so lowest point, and there are places when it's straight, it literally becomes like a shotgun, you know, excuse the terminology, but just in terms of how fast and how rapid that water can move and take soil and take ground matter, and when you have cover, when you have organic matter, that slows it down so much and it's so impactful for allowing that water to like sink.

And there've been, there's work being done on this, you know cat Lo mentioned that they're from Tucson and, and, and you know, Lancasters have been doing a lot of work down there and kind of written this book on how you do water management to more slow down the land. And I feel like it, it ties into farming so well, right? Like a lot of times someone was mentioned earlier how we decompartmentalize or we compartmentalize these things, you know, like farming is here and like water is here and land management is up there and for me and for the people that we work with, right? Like it's all flows together where you decide to put your farm plot, right? It's gonna rain and is the water gonna run through it? Is the water gonna run past it? If the water's running past it, how do you get it to run to it?

You know, like all these different ways of, of engaging with your, with agriculture that allows you to engage in this larger, this larger being with the land around you and with, you know, starts to be with the community around you. So, you know, like yeah, it's just like taking care of like all the land and the water systems and then, you know, the protection of, of those type of you know, the seeds and like the, the heirloom seeds that come from those ecosystems. You know, like when you're using seeds that have been grown there for couple generations, they're used to that area, you don't have to add as much water anymore. And again, these are just like some of the solutions that we're seeing that like farmers in our local area are doing. So for, you know, I I know that after four generations is seeds kind of considered yours.

And, and one of the things of the seeds growing in certain areas, if you don't have that much water and that fruit makes it to the end of a season, it makes seed. It's now used to not having that much water. And then you keep on going that way and these seeds are being made in these localized area, which is why you have these type of like, special corns you have with Navajo corn and you have Hopi corn, right? Like these, those type of crops are used to being grown in those type of areas which are used to these type of environments and ecosystems. And it's really cool as you like, learn from these indigenous communities cuz you know, I've seen Hopi, Hopi fields and they don't like, have fences up, you know? And it's just really cool how they're able to grow outside of these PIA areas, which is one of these like criteria a lot of times for, for grants like practical, irrigable acre.

It is, you know, like, and just really quickly, it wasn't until 2018 that the few US Farm Bill acknowledged dry land farming as a, as, as, as a type of farming, right? And these are ways that indigenous peoples in the area have been using for millennia. So when we have people who are creating rules and creating laws, and they don't even see these systems as viable, you know, like that's why it's really important to make sure that, that, that these communities and Indigenous peoples are on the front lines as, as we're making these rules, as we're talking about what this future looks like because these communities have been doing it for a long time. So, you know, we talk about the impact that's gonna be coming to farmers, and we can look and see how we can help alleviate those impacts by incorporating and engaging these technologies and techniques and, and providing the resources to really make it pertinent. You know, that whole saying, put your money where your mouth is, and if we really want local communities to be able to fend for themselves and feed themselves and be decentralized, we need to be able to get the resources down to those communities.

Nicole Lampe, Water Hub:

Thank you so much, Kern. I wanna acknowledge that we're running a little bit behind schedule. We will hopefully still have time for questions, but also we're gonna follow up with a transcript and contact information for all these folks. So if you have follow up questions that we don't get to during this hour and you have to hop right off, we can definitely connect you directly. I wanna turn next to Frank Ruiz from Audubon, California. Frank leads Audubon Salton Sea Work, and Salton Sea has been much in the

news including yesterday in relationship to the Colorado River. And I'd love Frank for you to talk about the connection.

Frank Ruiz, Audubon:

Yes. thank you, thank you all. The Salton Sea is intrinsically connected to the Colorado River, both hydrologically and politically right? And the South Sea is probably the, the, the, the tip of the iceberg in the West. And what I mean, you know, the tip of the iceberg. This is a result of years and years of the inability to approach the the water crisis in a more comprehensive way, right? I usually, you know, say that salty first and foremost is a, is a water crisis. And that is honestly the result of the settler's mentality that has been unable to look at water and other natural resources in a, in a very, in a much more comprehensive and holistic way. The Salton Sea that we currently have, you know, will become even more exacerbated as climate change becomes worse.

And unfortunately, communities around the sea being mainly bipolar communities don't have the socioeconomic or political capital to leverage their concerns. I say that if the Salton Sea was closer to the greater Los Angeles area or San Francisco, the problem would've been resolved, you know, many years ago. But in addition to the environmental crisis, and I wanna highlight this because the Salton Sea is probably the last standing jewels along the Pacific Flyway that connect birds, you know, from Alaska, the way to South America in California, we lost over 97% of the wetlands, either to agriculture or urban developments. So, but the Salyon Sea is more than just an environmental crisis. It is a, a public health crisis, you know. It's common to hear families of young kids complaining of asthma and COPD respiratory problems.

And I say that the, we have the highest asthma rates and, and I base, you know, my statement on the my knowledge of the local communities the way that we measure asthma rates is either by hospital visitations, but a lot of these communities being by and underserved either don't have access to medical care or they have to go across the border to get their medical attention. So it's really difficult to quantify the number of kids that are dealing with asthma. But in, from my conversations and my knowledge of, you know, the region I think, you know, this is probably one of the highest, if not the highest, you know, asthma rate. The Salton Sea has been declining mainly after, you know, 2003 when the quantification settlement agreement was agreed on. And, and it will start receding at of much faster pace after the new water cuts, you know, that are, you know, that you all heard, you know, yesterday the water districts are working with the federal government to conserve more water, but it, it can create it can solve a problem, you know, the Colorado River, but it can open up another pit, you know, here in the area as the sea will continue receding and will recede at a much faster pace.

Traditionally, we say that for every drop of water that comes into Imperial Irrigation District, a third of that water flows into the sea through the runoffs of the agri, the agricultural agricultural fields. So it's, it's, it was a great news to hear that the federal government is finally paying attention to, to this crisis. But I think, you know, know even though this is the first step, I think, you know, we need a whole lot more than this. We need to have a better understanding of the water budget in the region, how the water can be distributed equitable, right? Not just, you know, for the ag industry or for the lithium industry, but for the communities, for the environment that traditionally are not voices, you know, that are invited to the table. And in 2017, Audubon put together a what we call a habitat suitability model that gave, that gave us a good understanding how much land is needed around the Salton Sea just to allow the birds to survive.

But even so with the, with the water becoming more limited, the Salton Sea become shrinking at a faster pace. We lost more than a third of the species that used to come to the Salton Sea in past decades. We used to have over 400 different species. Now we lost, you know, pretty much a third of,

you know, those species, mainly the fish birds. So the Sound Sea is very dynamic, right? And it needs, you know, a dynamic approach. It needs, you know, to have a comprehensive approach that understands all the different elements that that are important such as, you know, the how the water can be distributed. Yesterday, somebody was asking me, is this a great news? You know, that now you got $250 million? I said, it's a great news, but we need a whole lot more. And in addition to that, we need to have a water security for the Salt Sea for the projects that are gonna, that are being implemented right now. And that will be continue to be implemented in the future. We need to have a water security, otherwise we can have money right now. But, and, and, and, and most of you will know this, that as you know, the crisis continues, our money will not be, will not equate to water, right? So I don't care how much money we have, we're not gonna be able to buy the water, so we need to learn how to take it comprehensively and, and create a model that can be more equitable.

Teal Lehto, @WesternWaterGirl:

I was wondering if you could talk to us about the large wetlands project that Audubon is working on at the Salton Sea. Can you explain how that will benefit local residents and wildlife?

Frank Ruiz, Audubon:

Absolutely. as the water continues, the sea continues to recede. A lot of the runoffs are no longer able to reach the sea any longer. So the water is percolating through the ground, creating this beautiful wetlands. And the last, I will say six, seven years, Audubon has been able to identify the emergence of new wetlands, over 6,000 new acres of wetlands. So nature is, is helping itself. And and birds been opportunistic. They are, you know, taking advantage of, you know, a lot of, you know, these new wellness. So Audubon wanted to be more intentional, and rather than waiting for other entities to con to implement projects on the ground, we wanted to be more intentional. And so we identified wetlands next to the community of Bombay. That can be expanded, that can be enhanced, that can have multiple benefits. So the purpose of our approach is to create a multi-benefit approach that will provide habitat for the birds, for pub fish, for wildlife.

But in, in addition to that, some of the areas adjacent to the Bombay Beach wetlands are very missive. And the only way that you can suppress dust is through water. So we're trying to also bring the element that as we expand the wetlands that we enhance it from and protect it from invasive species such as tamarisk or erosion, we can also provide additional benefits. And one of them is suppressing dust. That is, you know, one of the biggest problems, you know, here in the area. But in addition to that, we also want to engage communities especially communities that are, that, that live around the south and sea and provide education opportunities for the young kids. I don't wanna create environmentalists, I want to create leaders that understand that the, that ecosystem is, is, is very intrinsically related to the economy, to public health and whatnot.

So we want to create, and we are creating education pipelines research opportunities. We are hiring young kids to come in and from different local high schools, from colleges to come and, and, and, and experience firsthand how wetland restorations can perhaps here in the area can, can be creative using every drop of water in the most meaningful way, create a multi-benefit approach. So this is, you know our main objective as we continue, we we got some funding from Bureau of Reclamation and we're working in collaboration with Imperial Irrigation District with with other entities. And is, we're gonna divide it in, well, we're divided in three different phases that developing the design concept, the permitting, and finally construction. We're in the second phase right now, and hopefully by next year we'll be able to break around and create and expand this wetlands and cover up to 950 acres.

Nicole Lampe, Water Hub:

Thank you so much, Frank, and that's very exciting. Lastly and certainly not least, I wanna turn to Catlow Shipek from Watershed Management Group cat Low. We know that Arizona will again, receive less Colorado River Water next year. Can you talk about how green infrastructure has helped Tucson prepare for this eventuality?

Catlow Shipek, Watershed Management Group:

Great question, Nicole. And similar to cur, and I like to go a little bit back into history and kind of see where have we come from and where are we going. And I think thinking about green infrastructure, we first need to think and recognize that Tucson has over 4,000 years of continuous agriculture, thanks to the historic and continued stewardship of indigenous peoples. However, since the early 19 hundreds, Tucson has been in a water crisis. So the shortage on the Colorado River, the current crisis, we've actually experienced crisis for well over the past hundred years as the newcomers to the land have over pumped or ground water and dried upper rivers. So then thinking about moving forward to the 1990s, we've been really working to reduce our overall water use and started importing Colorado River to replenish our local aquifers. So then thinking, what's the role of green infrastructure?

We started recognizing that we need to better manage our local water. So in early two thousands, we began to seriously invest in green infrastructure solutions. And it was kind of a, a community based movement kind of meeting with the local governments municipality as well. And so is kind of that by prong approach. And so just to kind of quickly define green infrastructure it is using natural features to slow sink and infiltrate rainwater and storm water close to the source. So we can think of it as like rain gardens at homes, storm water basins and swales along streets, even thinking about parking lots what we can do in our parks. And then even moving beyond to restoring our flip planes that can be green infrastructure. So by increasing our investment in rainwater and storm water as a water resource we realize we can nearly double our local supplies and then couple that with demand strategies, we can really start to achieve true water resilience as a community.

And so we, as a organization, watershed management group we coined a, a fun term that we like to call going "hydro local." And so this is really thinking about how do we steward and wisely use our local renewable water resources, rain water, storm water, gray water treated effluent instead of sucking distant watersheds like the Colorado River dry, like why are we relying on extractive waters? And so green infrastructure can really help to nearly eliminate outdoor portable water demands. Overall water demand by nearly half green infrastructure can enhance storm water infiltration to recharge shallow groundwater areas of our watershed. Green infrastructure can come combat urban heat stress through increased urban forest canopy coverage, especially in historically under-resourced areas of our community. We can even grow food resources without tapping into potable supplies. And then, so thinking, you know, since 2018 in the last few years, we have seen some of those results.

We've seen an increase in surface water flowing in our creeks and rivers. And this is thanks to the collective work across the community to come together as a one water community in thinking about how do we better manage all of our local water resources and diversify our portfolio. And so some of this is through groundwater replenishment. Some of it has been charging, recharging, treated effluent inner rivers. And so we feel that by being hydro local Tucson can shift our path forward, our story, and support a shared collective effort to sustain flows in the Colorado River, rather than continue to extract and diminish the Colorado River.

Teal Lehto, @WesternWaterGirl:

Excellent. I love hearing about the work that you're doing, and I would love to hear about what is needed to scale up this work so that it can be replicated to other cities within the southwestern region.

Catlow Shipek, Watershed Management Group:

Yeah, great question. And it's one always on the top of my mind. How do we scale up? How do we scale up locally? How do we scale up regionally? And I think first and foremost, it's focusing on shifting our communities from being water consumers to being water stewards. Thinking about, you know, water farmers can be in urban population, fostering our connection to our rivers and creeks, celebrating our native plants. All of this helps to enhance kind of the sense of place and support and drive community stewardship. And having a collective community centered approach is what I feel really helps to drive those simple, innovative and collaborative solutions instead of relying on large infrastructure, big technology. I think secondly is investment and natural infrastructure. A lot of our speakers here today have already mentioned that, and it's really focused on how to restore our local water supply.

So from the mountaintops especially those forest soils which feed our springs and streams that then feed down into our urban areas to then our river flood plains through flowing through our, our urban fabric. Even thinking about the smaller royals and those parts how do we slow and spread and really infiltrate that water along the entire way. And then I'm so glad many of you have mentioned beavers, even here in southern Arizona, we should look to partnering with nature, like bringing back historic beaver populations. Yes, we had lots of beaver historically here in southern Arizona. And so how do we bring those, bring that habitat back? And so I, I think most importantly to me is the health of our desert rivers and creeks, which can be an indicator of community resilience, water security, having a regenerative relationship to our natural systems that support us.

And I think green infrastructure is actually quite simple. However, the, the hard part of it is the human ented piece, because it is integrative, because it is intersectional, it requires a reframing of our approach that includes engagement of culturally rich, diverse communities, limited income households. It it requires engagement and a collective effort across our community. And I think that's when I speak with other municipal governments and they're coming to Tucson for answers, they often miss that community aspect. And so they're driving it from the top down. And I think we need to remember that needs to be really in parallel, in tandem with our community members. And it really needs to be fostering that stewardship across the community.

Nicole Lampe, Water Hub:

Thank you so much, Kern. We have just a couple minutes for questions. I don't know, speakers, do you have a hard stop at the top of the hour? Right now we just have one question which is open, but, but but particularly addressed to Felicia and Kern, what opportunities do you see in the Inflation reduction Act and or infrastructure bill to leverage indigenous knowledge and get funds to these leaders who are already doing the work that will have the most impact? How can utilities, nonprofits use these historic federal funds to help support this?

Felicia Marcus, Stanford Water in the West:

I'm just giving of a couple thoughts to start. The, the Biden administration's very good on all kinds of issues dealing with tribes, not just their appointments, which have been extraordinary, but also the commitment of funding, particularly water for tribes and and other issues. And I think they'll be very responsive to outreach from tribes. It, it would be a place, a place to start, but I, I appreciate the, the reference to water agencies, cuz one of the things I didn't mention was the leadership that water agencies are showing in this space. And Colorado Denver Water has their Forest to Faucets program. I

profiled the North Yuba forest restoration group that's been working very hard. And, and in that one they're working very much with local tribe to pull together money to deal with it, to deal with upper force management, both to be a part of the community for the carbon benefits, but for those very important water quality prevention, degradation prevention issues that Carina mentioned.

So, well the sedimentation and the, the toxicity that comes from post fires. And so there's millions coming in from water agencies that help create the hub of how you then leverage the federal money and have lots of partners. And so I think following up on the Denver Water model as well as the Yuba Forest Restoration Partnership is something that all water utilities should really be looking at cuz it's in their interest and it allows them to create sort of a core kernel of funding that is much cheaper than cleaning out through reservoir after a fire in the long, it's a cheap insurance policy, but then brings in all these other partners including private sector funding and others. So those are two opportunities. And the, the other thing I mentioned is the issue of indigenous knowledge Tek and Fresh Water is, is getting more and more traction even at the international level. The commission, I'm a a public advisory committee member too for the three North American countries. We have a sister te k expert panel three from each country and they're right now doing a Fresh water initiative. And we're, and that has the ear of the environment ministers from all three countries. So that's something to watch and build on as well.

Nicole Lampe, Water Hub:

Thank you so much, Felicia. Kern, anything you wanna add about how, how, as you said federal funds have historically not always reached tribal and rural communities. Any, anything you wanna say about how we can make sure that we do better with this tranche of funding?

Kern Collymore, Sixth World Solutions:

Yeah, thanks. So much, and I'm gonna leave my video off cuz it, you know, my connection is better without it right now. But yeah, as I mentioned earlier, I would definitely say like removing the barriers to funding would be a, one of the big steps. And again, when I say barriers to funding, you know, these like education qualifications and these like, you know, five one c three qualifications and these, you know, all of these different hoops that people have to jump through to, to access a lot of these funds when it comes to, you know, engaging in, in local communities. But you know, also to ensure like the alignment of this executive memo by the Biden administration, which was to engage with traditional knowledge, right? So like all federal agencies have to like start engaging more, like utilizing traditional knowledge.

And I, and you know, I I, to me that automatically means engaging with like, frontline communities. It means engaging with like indigenous communities and you know, once you do that yeah, I think that a bunch of these hindrances in terms of getting resources down to local communities we'll we will hopefully start going away cuz you know, time and time again we see what's happening in, in local communities and indigenous communities kind of like being extracted and like like digested and then like regurgitated as like, kind of like new thing. And as I, you know, we talked about before in terms of like forest, like forest management through like wildfires and how like literally it was illegal for indigenous peoples to do these things. And now like, like we have we have like people like reintroducing this thing as this like new thing, right?

When we talk about like, again, like these like catch phrases, like regenerative agriculture, right? Like these are traditional knowledge yeah. Techniques and, and methods that have been passed down and, and are out there. And when we start looking at this kind of like how these words and how these terminologies like definitely help add towards the erasure of the work that indigenous peoples and local communities have continued to do to address these solutions. And when yeah, when we look at that

way, as I mentioned before, then I keep on saying, well make sure to make indigenous peoples and local communities are on the front lines of the creations of these solutions because that's where again, these solutions like keep on coming from. And it's important that these peoples are on the front lines of, of, of answering these questions and being in these meeting spaces.

Nicole Lampe, Water Hub:

Thank you so much Kern. And thank you to all of our panelists and also Teal for joining me in moderating this really awesome discussion. We'll follow up with the transcript, the recording, and some photos as well as the contact information of all the speakers as soon as the transcript is ready. Thank you very much. Thank you all.