



Episode 110: Erin English Deploying Nature-Based Water Solutions and The Future Of Water Use In The Southwest

6-24-2023

Jack: Frogs. I wanna hear all about 'em. Tell us the story.

Erin: I recently had this opportunity to spend five days beneath the rim at Grand Canyon National Park. A company and a friend and conservation photographer Christina Selby on a trip to document visually some of the springs within the canyon and tell some stories about why they're important.

I was really just along for the long walk for, as part of her project, but as time evolved there, we realized that there was so much snow that fell on the north rim of the Grand Canyon this year that like, The trails were closed that cut us off from some of our springs that we were trying to go to.

And so we actually found ourselves with a lot more time and a considerably shorter number of miles to explore some of the other areas within the canyon

since we couldn't get to our original destinations of Roaring Springs, for example, which supplies all the water for the Grand Canyon on the South Rim.

And so at Havasupai Gardens, which is. Halfway [00:01:00] up the Bright Angel Trail on the South Rim. It's a spring fed oasis, really within the canyon. There's a number of seeps and little intermittent streams that in some areas are perennial, and then water's kind of coming up and disappearing and coming back up again, and really enchanting place.

And there's a population of canyon tree frogs, which live there, and it's one of the, I think, the highest. The highest densities of these amazing little frogs in the canyon there. And so at dusk we ventured into where the springs are emerging and you can hear the water running. And there were just like so many frogs.

It was so noisy compared to the quiet everywhere else in the canyon. Pretty magical. And so we recorded the video or, and some audio that I shared with you. And it was this moment for me as a water person to just have this experience of like water that's coming out of the ground, making its way, sustaining this incredibly rich little [00:02:00] pocket of biodiversity birds and frogs and trees and shade on its way to the Colorado River.

And joins with the Colorado River and then becomes part of this like much bigger, hard to wrap our heads around. Highly political. Story that is, a defining story of the West, at least right now in this extended drought. And, all of the challenges with figuring out how to sustain the population, with this water from the Colorado River.

And so just being able to hang out with these tree frogs for a little bit and experience, just the really special little pockets of life that are sustained by this water, it amplified for me. The bigger story, like why this is so important that we're protecting, water in all of its forms and all the places where it occurs.

Jack: You get probably really grounded at moments like that. You probably go back to your office with. A stricter sense of your real priorities, like what really needs to be done? How [00:03:00] can I do more to and keep that in mind as I'm doing the work that I do, which isn't always visiting the Grand Canyon, right?

Correct. And listening to Canyon Tree Frogs.

Erin: That's right. That's right. And in fact, I'm a water engineer by training and trade for the last 20 years now. And. And I get a lot of puzzled looks when I tell people that I work and live in the southwestern deserts. I live in New Mexico

and this is surprising to many people outside of the southwest of like, Why are you a water engineer in the desert?

And I think it's one of those opportunities to really help people see that like perhaps the best place to be as a water engineer is in the desert, where we have a different relationship with that preciousness of the water, the value of the water, all of the ways that it has sustained cultures for millennia here.

And it's very tenuous nature when it comes to the impacts of [00:04:00] development, the impacts of climate change, the impacts of like over utilization. It, being a water engineer in the dr, in a dry place is I think the best training one could have. And yeah, I don't get to usually hang out in the canyon watching tree frogs, though I do make a habit of getting out into the wild places in the, watershed in which I live and, really experiencing the water that sustains, the place that I call home.

So

Jack: much of what we talk about in, especially in the West when it's comes to water, is about plumbing. It's really do nuts and bolts. How much water is there? I. Why are we damming up this place when it, the dam's almost empty. Oh, great. There was a big snow pack and now there's some water back in the dam and the drought's over everybody.

Woohoo. And all of those conversations are the primary ones that are going on right now in the west and to me that's all plumbing. There's nothing like your [00:05:00] story about visiting the canyon tree frogs in the big news, in the headlines and things. And I just really love to have that conversation whenever I can because it's so few and far between.

And there's some reason that you're drawn to this this kind of work. What is it about water in general That's beyond the plumbing of everything that gets you.

Erin: Yeah. That's a really big question. Right? I'm really intrigued by this book called Blue Mind, which is about what happens to our minds when we are close to water, and that there's this calming effect.

And that there's this recognition perhaps physiologically in us as humans that, the water is what sustains us. And I think it's as simple as that. And I feel like a lot of us forget that because it is plumbing, right? Like we flush the toilet, we turn on the tap, and we don't. [00:06:00] We lose that connection as a result of

the plumbing itself, like literally with where our water is coming from and where it's going to.

And so for me, I have to like constantly remind myself, go back out and reconnect with where that water's coming from. And this is something that's not so hard to do where I live in the Northern New Mexico landscape here, but it's harder for many of our clients and many of our collaborators and people we work with around the US that maybe don't live so close in that way to where the water is coming from.

And so to me, having that. Continued relationship with those special experiences of water in natural and wild places is what I think as an engineer, I hope at least, to bring to the community I work with, which are like designers, our architects builders or owners of projects of different scales like universities or even some developers, [00:07:00] right?

Is like, how do we bring and translate this knowledge of what we know about the value of water and what I know about the value of water into a project so that it doesn't just devolve into the plumbing. And granted, we design a lot, I design a lot of plumbing. There's no question I have to have pumps and valves and pipes. But we are, I think there's an opportunity to redefine how we are living in the built environment with water. So that. We can help sustain these wild places, right? Both upstream of where we live and dwell. And then downstreams, we have clean water, abundant water within our matrix of how we're developing.

Because right now there's so much, there's so much downside to what's happened with the built environment. What ha into our rivers, our streams, wetlands. The destruction is just, it's astounding. Aside

Jack: from the people that our listeners have met from Bio Habitats, many engineers [00:08:00] and I think a lot of people's experience with engineers is like more on the core of engineers side.

You've got your foot in two worlds that I don't think a lot of people picture an engineer having their feet in. It's not a traditional role.

Erin: I have great faith that the engineers who are coming out of school now and who are looking at the reality of what, this sort of like gray infrastructure engineering mindset has done, this is changing.

It's gonna take some time. But that is happening and I'm really encouraged by that and I can see it within bio habitats and I can see it within the other people we're working with. Now that said, there are disservices that have been done by the engineering profession that are hard in the West, that it was a, just a lack of understanding is the way I see it.

A lack of understanding. The science of ecology and I feel really lucky that my first job out of [00:09:00] college that I pursued was for a nonprofit, ecologically oriented engineering firm or ecological engineering firm called Ocean Arcs, working with a visionary biologist called Dr. John Todd who helped create the science or the practice of ecological engineering, or helped at least elevate it.

Beyond sort of the textbooks and imagining this idea of like nature as co-creator, nature as partner when it comes to cleaning water. He created this concept of a living machine or like a living filter that cleans water using plants and beneficial bacteria. And this is it's not new.

This is 30, 40, 50 years he's been working on that. But the the impact that, that type of thinking and training has had on me as an engineer and most of the other engineers that I have the pleasure of working with is cannot be overstated. . It's it's a different way that engineers, I think, can apply the [00:10:00] same intellect that we have and like passion that we have for doing good work in a way that like is in partnership with nature.

And you know that shift isn't that big of a leap. It's just we're not always training engineers and showing them. And so I do feel like that's shifting, the more we can connect people with those wild places and talk about the, like potential cuz that's what this is about.

It's like the potential of using nature-based solutions. The potential of having systems that are a little less in our control, right? Living systems, they're less in our control, that take some trust and take some experimentation, takes some risk. But the more that we can develop within the engineering profession, that kind of thinking and practice, the more that, we can be designing our stormwater infrastructure, our wastewater systems, even our, some of our water supply systems so that they're.

Working with nature. So like literally like systems that are increasing biodiversity. We design a lot of treatment wetlands, instructed [00:11:00] wetlands for filtering wastewater, and for also filtering stormwater or even lakes and ponds so that we're providing more habitat, more biodiversity, more More

access for birds and amphibians while also cleaning and filtering water and using less energy, less carbon footprint.

These are like really exciting types of projects that I think engineers, if get everybody on board with this is the potential of what we could be doing. I have a pretty good, I feel like the prognosis is pretty good for engineers to make that turn.

Jack: Is it really that much harder?

I imagine that when you're given a project and it's like, all right guys, it's time to work with nature. And we have all these new considerations we never took in the fifties or the forties or the thirties when we were building, just we needed this water and we needed to build a canal and a dam or whatever.

And it seems ecological considerations were at the very bottom of the [00:12:00] list if they were on it at all. That's right. But from a layperson's point of view, it sounds like an easier engineering task because you didn't have to care about any of that other stuff. And then I've evolved over the years to think is it really truly that much harder to build with nature, to engineer with nature in mind, and could it also be more beneficial and maybe make some things even easier.

Then the old way.

Erin: That's a really good question. On the whole, I fully agree it's easier, the benefits are far beyond the shorter term gains that we might get from DAMing a river or from straightening and channelizing and distributing water through, highly engineered. Distribution systems across multiple states.

That is crazy if you think about it, right? It's crazy. It's crazy. It's absolutely wild. Some of the larger scale infrastructure projects that we've developed in the past to deliver [00:13:00] water, people, you tell that story and people don't even believe it, that could be real. And so I think if you look at it this way, you know that we're designing, water systems that are like based in their own watershed that are.

Reliant upon their own, two, two legs or 10 legs or whatever, to, to stand and not all of this important export. I think just intellectually that is easy to understand, that it's simpler to go within the natural conditions of where you're working. However, most of the, I'm, I can't even get into water rights because that is a whole other pickle, but like most of the like regulation.

That has been developed and or best management practices or requirements. Those are not always so friendly to natural systems solutions. And I, I don't, but those are also easier to change than some of these longer term interstate water compacts. But, Natural systems or nature-based [00:14:00] technologies are open systems.

They are subject to climate variability and to weather and storms and insects and all sorts of like good things, right? So there's just some variability that can happen sometimes with how these are performing, but they're, the idea is that they would be performing in step with what, the natural kind of conditions in a watershed would be like.

So for example a large treatment wetlands, constructed wetlands can be used instead of a state-of-the-art wastewater treatment plant. When we have to upgrade, let's say, a municipal facility, there are hundreds and hundreds of municipal wastewater treatment facilities that are performing fine, but they're not really that advanced when it comes to removing.

Nutrients or pollutants of emerging concern like estrogen and antibiotics. And this stuff's getting into our rivers from our wastewater systems. And so we could put in very advanced high tech wastewater treatment facilities. [00:15:00] Those work well. And also in other places we could put in large polishing treatment wetlands, which we have been doing.

There's a bunch of this work happening. To filter out those contaminants, to transform that nitrogen, to cool the water we've done somewhere. We're actually cooling the water to protect the fishery because wastewater is inherently warm. And then, we're also creating opportunities for birds and for wildlife watching and for, all kinds of species.

It's a build it and you will come, are those gonna perform? In the same way every single day. Like a treatment plant that has like a super fine membrane on the back of it, maybe not always. And so having that kind of flexibility within the way on the whole that they are viewed, I think is gonna be an important evolution in the codes so that these truly like nature-based solutions can be put in without the risk that an engineer would fear, otherwise.

Jack: Is it possible that there's any rewilding [00:16:00] project of any scale that's not affected?

Positively by a great project that just went online or negatively by old projects that need to be updated. It feels to me like it we're hyper dependent in any

rewilding situation, large or small, on how everybody upstream is acting and doing.

Erin: Yeah, I think that's right and in and considering having this conversation with you today.

Where most of my actual work is within the built environment, right? Transforming how it is that we treat and harvest and reuse water for domestic and community use, right? It is not so easy to make that link with what is upstream and downstream but. If we look at where most of the water pollution is coming from in places where we are, where there are active rewilding projects going on or where they're contemplated, the kinds of pollution that we're seeing are [00:17:00] from urbanization.

So stormwater runoff, metals, high hydrocarbons, all kinds of nasty things. It's from wastewater treatment plants that are underperforming or that were never designed for. The level of like pharmaceuticals that we put into them from. From people and then also from agriculture, right? So the agricultural runoff is a huge one.

That is a little more challenging because it's so decentralized. So certainly within the urban and suburban and, developed context better managing our water close to where it falls. So good green stormwater infrastructure. It's every, we know how to do that. We know it's possible.

We just need to continue to implement it. Combined with wastewater management at the municipal scale and at the small scale, it's a lot of groundwater pollution that's happening from septic systems and from places that don't. Have [00:18:00] access to some of the more advanced wastewater treatment.

There's a lot of, there's a lot of pollution happening that we can't see. And so all of that comes around oftentimes, those, that groundwater is gonna interface with wilder places at some point, right? In some ways there. It's what goes around comes around when it comes to the water cycle, right?

It's just a matter of time. And so having, better stewardship of our water quality, Reducing that pollution within the built environment really is imperative for this idea of clean water for the sake of rewilding. Absolutely. And then also like it's not just downstream, it's also upstream.

And so using less water is a big focus of mine personally. When we can find ways to we do elect a lot of rainwater harvesting gray water and wastewater treatment and recycling. So that we're not using fresh, beautiful, clean, potable water to flush our toilets, that is a [00:19:00] ridiculous thing to be doing.

We should not be flushing toilets with beautiful, pristine mountain water or groundwater. We should not be irrigating turf grass. And frankly, most of our landscapes with beautiful, pristine. Stream and groundwater, we can treat and recycle and reuse water. The technology exists. We know how to do it.

We can do it with natural systems, we can do it with hybrid systems. We can do it with fully mechanical systems, if that's all that we have is a choice. So that we are leaving the water in the river, so we are leaving the water in the ground. So we are like creating more abundance upstream. That we don't have to, like continuously draw down.

There's so much damage that's done from the extraction of water for human use, right? And this is true for agriculture, but I'm also, really speaking about the urban air, urban context in this case.

Jack: No matter where you do this work, it has an effect that's far greater than like the city fish that wear leather coats [00:20:00] and smoke and cat call the exotic carp species as they float down the stream.

It's not just about them, it's about all the fish and the ones that downstream whose pupils are dilating a little bit because there's too much of a pharmaceutical getting through the, or all the

Erin: frogs are female. Yeah.

Jack: Yeah. Yeah. Yeah. I like that. I love how you told that story and made that connection for us because I feel like it's a connection that's really needed and that people should really explore a lot more in thinking about this stuff.

It's not all just about wild and built.

Erin: That's what the water does, right? It connects the wild with the built and where I live in Santa Fe, you know our river completely disappears most of the time between our water treatment plant, which is at the base of the mountain, and then our wastewater treatment plant, which is.

Good 10 miles downstream. There's no river in between. The river is running through the plumbing and through the people through the toilet, and then to the wastewater treatment plant, and then [00:21:00] back to the river. River springs back to life, just downstream in the wastewater treatment plant, like literally at the end of the pipe where it's discharged.

And so if there is not a clearer example of this, I don't know where there is, it's We, the river is in us when we're in the city of Santa Fe. It's a wild, it's a wild thing. And I go both upstream and downstream to, take people there. We're about to take most of our company up to the upper part of it, to look at it next week.

We've got people visiting and it's just a, it's one of those things where the permeability is broader than we think between, the built and the wild and the water is the connector. Aside

Jack: from the river disappearing for a stretch, how is Santa Fe doing with what they are putting out on the other end?

Erin: A mixed bag. There's, a wastewater treatment plant that could use some upgrades and there's gonna be some other Santa Fe in the [00:22:00] process of. Of considering some return flows back to the Rio Grande because we actually have a little bit of water from the Colorado River Watershed that's plumbed across the Continental divide into the Rio Grande which is one of those wild infrastructure projects that's hard to imagine.

But we are going to be returning some of our water back to the Rio Grande. And for that to really work, we're gonna need to upgrade our systems from a water quality perspective. But for now, the water that's downstream of the wastewater treatment plant, while not perhaps perfect, it's pretty amazing.

There are beaver. There are, very much a wild, alive river corridor down there. There's a number of irrigators and communities, traditional communities who rely on that river water. There are some incredible wild places that have been protected by Trust Republic Land and some B I m land and some tribal pueblo land that go all the way to the Rio [00:23:00] Grande.

And so it's actually a really special thing to see that river still in it's wild state, even though it's 100% wastewater.

Jack: Wow. 100%. Yeah. For all the years I lived down there, it never even occurred to me that the water I was looking at was a hundred percent wastewater.

Yeah, hundred percent. It's, that's insane. That is so wild. Yeah, we, that doesn't, nothing brings into focus the responsibility. Of one place because most of the people who've had any experience with that watershed, with that river on the downside I don't think a lot of people think of that as a hundred percent wastewater.

Yeah. It's beautiful. For one, it's like you said, with the beavers and everything else, it's, it looks like a, a. A very natural environment in places and we all take it that way. Again, I lived there for so long, it never even occurred to me. Yeah. I'm like, this place is

Erin: beautiful. Yeah. Thanks to wild earth Ians and others who've done some [00:24:00] restoration work down there, it's partly why it is like that.

But yeah, it is, it's a fascinating. Story and right now it's not 100% wastewater because there's enough snow melt that there's actually water coming down the whole channel of the river. In the city of Santa Fe. We actually helped them about a decade ago, create a living river ordinance that allows them to ensure they don't violate any water rights issues by, by essentially allowing water to flow into the river and not just in the reservoirs on these years that we have big snow melts and then.

When we have enough water coming in to, to match the natural the natural hydrology of the river, the natural flows, and so it's working well for Santa Fe. We've been able to restore 10 miles, eight miles of that river channel and sustain a lot of those plants through this living river ordinance to keep that water flowing when we can.

But the vast majority of the time, there's no water in that river except for wastewater downstream.

Jack: I hadn't planned on asking this [00:25:00] question, but you brought up the snow pack and I have an engineer here, so I have to ask this question. What does it mean to you as a resident?

In the southwest, the landscape, the drought, the mega, mega doesn't even really capture it anymore.

Erin: As I said before, being a water engineer in this, high desert elevation, of there is no norm. This is like the best place to like really wrap my head around that is that if there is any normal here it is, there is no normal. And so even like long-term drought, like we've had long-term drought, right?

We've had years of like extraordinary, like long-term drought punctuated by extraordinarily high flows and really highly intense storms or big snow packs followed by years with no snow and very poor monsoon patterns. It's hard to get excited except for like in the moments when you can celebrate the presence of water, which is what I do.

And everybody here that I know also does the same thing. If it's raining or snowing, it's really a good day. And [00:26:00] so we enjoy that. But that in the long term, like it's just more motivation to make sure that like our infrastructure and our natural, like the and I say infrastructure in the context of we, we should be designing our places, our landscapes, our natural infrastructure in a way that like takes advantage of it when it happens. Store that water in the soil, get it into the ground, minimize what happens when we get big storms and run off is flash flooding and making a mess. Get that water in the ground.

Get that water to slow down. The, to me that it's just lessons, in that we have to be. Adaptive, like many desert creatures, right? Take advantage of the good stuff when it's here, and then be prepared to burrow down when it's not. And I think that is the pattern. In the Southwest. We have obliterated that ecological knowledge.

And cultural knowledge. There's a cultural knowledge here that knows this too, that like you have to respond in a way that's knowing that while it's good [00:27:00] now we have to be, always prepared for change. And most desert creatures are adapted to live in this way. And, what have we done with these large scale infrastructure projects?

We've flattened that curve. We've artificially created a situation where our perception is that the water's always there. Even in these mega droughts, we still have, I was just down on the Colorado River, there is a ton of water moving through the Colorado River. There's 20,000 cfs. When I was there, they were gonna do a pulse up to almost 40,000.

It looks good right on the surface. And you see these things. And so I think to me it's like that lesson of the desert creatures who've, who, who've recognized, or the desert cultures who've recognized that, we have to be ready for. For variability because that the one constant is change.

Jack: If you could go back in time and tell anybody about building a ginormous dam in the Southwest. When they thought the water was forever, it would always be there and everything else. Like how crazy is it? Knowing what you know, and [00:28:00] then just thinking about the mindset of the people who thought the Hoover and Glen Canyon were good ideas because, and they built them with the idea that water would always be there and they would always be full, or at least for a lot longer than they ever imagined it ended up being.

Erin: I think it's fair to say that there's a lot we don't know, and I'm sure at that time there was, I give them some credit for not knowing, not understanding the larger hydro, hydrological cycles. I think that's not true across the board. I think Powell, I think there was a few folks who were aware that, the Colorado River is maybe not so abundant as once thought.

And who had put out some warnings about that. But I, generally speaking, I think people do it out of not ill will, but just lack of knowledge. And so the science of ecology has really evolved and we have, there are lots and lots of really good, study on this kinda stuff.

People who are focusing on these bigger picture items, when it comes to how we. [00:29:00] Manage water. So I think it's a collab, this idea of a collaborative multi-perspective approach is really the only way that we could solve that problem. And without the benefit of that, those dams are built.

That's what I would say is that you can't, an engineer should never engineer without an ecologist and a hydrologist and, that's like exactly why bio habitats is structured the way we are with. Engineers and scientists and, the ecology and the science together. We and you could argue like the culture and there's, there's a lot of other pieces, right?

But this idea of collaborative design is, I think that's where a lot of people have landed, right? With, looking at climate adaptation and all of this work we need to do to figure out how to go forward in this really, intense climate change situation that's here and that's coming.

You paint

Jack: a picture that is alluring and hopeful more so than I had [00:30:00] when we started talking today about the outlook, you make. It seem like there are a lot more people coming out of the university system ready to go with more of the right tools than they ever have before.

And I like that. I love hearing that. We all curl up in a ball if we don't have any sense of hope. You know that any of the work that we're gonna do is gonna amount to anything. So I always love digging those kinds of things out. I. Talk more, about what you think about the future.

Like where is, where's all this headed now that we have all these better tools and better understanding, given that we don't know everything yet, and there's somebody in the future who will listen to this podcast and go, wow. How much they all, they still didn't know, but that's just exactly normal. But what's it look like to you in your future?

Let's focus on the Southwest. What are some of the cool things you think. Are gonna come of all of this new knowledge and the new way you guys are working differently than your

Erin: predecessors? [00:31:00] Yeah, it's a good question. I think I think that there's been a buildup of this this work and this understanding over the last 30 or 40 years, perhaps longer.

And that what needs to happen is that the. The pace of then the implementation and the change needs to go much faster than it has been because I feel like there's been a period of making a case for these ways of doing, working with nature-based solutions and green infrastructure and water reuse.

It's been evolving and now it's time to really implement at a bigger, broader, faster. Larger scale than ever before, because that is, that's what's needed for me to continue to remain hopeful is that, there's been at least proof of concept for a lot of this stuff. And there's been a tremendous amount of innovation and better science.

But now it's okay, we've gotta get [00:32:00] the the regulations evolved, the money in place, the land. Available because a lot of these nature-based solutions take up more space than the mechanical or hard engineered solutions. And so to me there is a, it is a hopeful situation, but we, for that to really be true, we need to go faster and bigger.

And so that is a really complicated thing within. Multiple jurisdictions and all the different part, particularly in the West, like the multi-agency collab, collaboration, cooperation between federal and state lands and et cetera. But with that said, I feel like there are a couple things that are going to just become normal for us, and one of those is water reuse and water recycling.

We are going to stop using pristine. Mountain water or silly things like flushing our toilets and already most places are not watering their golf courses with it, for example. There's gonna be a lot more of that, the water [00:33:00] recycling and reuse at the city scale. And then the smaller scale, which we tend to work at the smaller scale, like small community or even neighborhood scale.

There's gonna be more of that. And then, in, in the bigger picture, like in California and Florida, places that are like also. Really subject to some of the same challenges in Southwest that, that water recycling is gonna go to drinking water, gonna be drinking recycled water that's coming.

And, all of that basically in my mind is that's good, but if all it does is serve us to develop more and have more density, then there's a loss there. I, we've, I've been pretty Clear, at least on a lot of our projects, when we have this opportunity that like if we're recycling water, we wanna recognize that.

Like we're also trying to keep the water in the river, keep the water in the ground, keep the landscape sustained. And so that's the other part is that this [00:34:00] recognition of water the value of water for the sake of the river, for the sake of the wild, is, has to be. In parallel with all of this, like great technological, improvement that we're, we are seeing now and that we will continue to see, right?

So I'm hopeful, but I'm also like, it's cautious because we could just continue to like recycle water for the sake of growth. That is not the point, and so I think going forward, Carrying both of those messages forward. We have all the, we have a lot of the tools we need. We just need to make sure we keep our priorities, in the right places.

Jack: So as other conservationists are working on projects, working on things in their area, and they don't typically spend a lot of time thinking about what everybody upstream's doing, doing the built environment stuff and how important that is you've made abundantly clear here today. They need to be thinking more about that and [00:35:00] maybe even, helping that process along.

Although I wouldn't need that much help because, the politics and lawmaking and everything go at such a blistering fast pace in this country that we should have this problem knocked out by this time next year. I'm sure. Yeah. Easy peasy. It's really wild too, how there's this gap always between what you guys on the ground know and how that trickles up.

So ever slowly to, places of power where laws can change to reflect what you've learned. Cuz like you kept referring back to, we've known about some of this stuff for 30 years. It's been evolving for 40 years and and I certainly don't see any kind of the politics, the laws, keeping pace with the kind of pace that you've talked about in your growth of knowledge and experience in all of this.

I think that's true across the board, wherever you're talking about people on the ground versus the politics of things. But it is quite frustrating cuz I now sense that you have, I sense you now have an idea. [00:36:00] That if we were really to go big with this, we could really do some serious infrastructure, giant scale.

Erin: Good at, that's right. At the big scale and, but also at the small scale because some of this giant infrastructure, huge stuff takes years and billions of dollars. It's not that nimble, right? And so that is partly why we tend to work at the smaller scale, because people can move faster. If you bundle up a bunch of those smaller actions, there is a real benefit on the larger scale.

So that's just an important piece is that we need both. It's not either or. It's both and but right now the innovation is at the smaller scale. There have been some great commissions and some work in certain states like Colorado and California to embrace that. There's been real leadership there from the San Francisco Public Utilities Commissions and others to help evolve those rules so that some of this can move faster and be more consistent.

But you're [00:37:00] right at the larger scale it's harder to see it, harder to see it, but it needs to happen there too.

Jack: There will be a bunch of extra credit as always, on this episode of the rewilding Earth Podcast and Erin will apply me with all kinds of things I'm sure that we can look at and get involved with and consider, especially if anyone here has been inspired by the work that Erin does and maybe trying to figure out how the heck would you find yourself in a position like that?

What kind of schooling? And that's the weird question for everybody at Bio Habitats, right? Because nobody. Nobody at Bio Habitats, I don't think, went to college to work at Bio Habitats and have the title that they ended up with. It's not yet. It's so weird. Yeah. But I'm, I hope that we can help that happen one day.

Like I w I did go to school so I could work at Bio Habitats or a place like that and I wanted that weird title that very few people have cuz it's such a combination of backgrounds and education. So [00:38:00] what do you think of,

It is really weird how you ended up here. I'm sure. I bet you have your weird story cuz it seems like everybody does.

This is not what you thought about when you were 10 years old. Or maybe it was. It might have been

Erin: not too far off, I'll be honest with you. Yeah. I've been on this path since I was young and I think that's actually what I would say in closing is that To me, we can study science, we can study engineering.

All of this work requires good technical basis or good communication skills or good, business development skills. However, like the underlying connecting factor, at least in my company and I think in this work in general is like a love of nature. That is if there's one thing that binds all of us together, and this goes back to the canyon tree frogs here is like cultivating that love of nature in these wild places is I think the best preparation and when paired with solid technical, training.

But because the technical training is only gonna take [00:39:00] any person so far, and we can continuously renew ourselves in nature and find that connection that is what is shared among every person I know that works at bio.

Jack: Aaron, thanks so much for taking the time, and I hope to have you back one day and you can tell us about some success story that you might even be working on right now that you're very proud of.

And just keep us in the loop on these things because I find this stuff fascinating and exciting. I'm very excited about people like you and your energy for this work. Without whom we would be in a world of trouble far more than we are today. So thank you so much for your time today and your dedication to your craft.

Erin: Yeah, my pleasure. Thank. Thank you for the invitation.