



Harold "Hal" Wiggins

Life Along the Rappahannock: An Oral History Project

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Interview conducted by
Dr. Jess Rigelhaupt
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Since 2016, Friends of the Rappahannock has been interviewing individuals with unique knowledge related to significant events affecting the Rappahannock River watershed, and the communities that inhabit it. This project's goal is to collect and preserve significant and endangered oral histories of people living along the Rappahannock River, from the Blue Ridge Mountains to the Chesapeake Bay. These audio-visual documentaries will be available for generations to come.

Oral history refers both to a method of collecting information through recorded interviews of informed narrators with singular perspectives on significant historical events, and to the product of that process. Recordings are transcribed, and reviewed by the narrator, to provide researchers with primary source material. These accounts reflect the narrator's experiences, perspectives, and historical understandings rather than a definitive account of history.

Friends of the Rappahannock is a non-profit, grassroots conservation organization based in Fredericksburg, Virginia. It works to educate everyone about the river and to advocate for actions and policies that will protect and restore the Rappahannock River. This project is a collaborative effort with the University of Mary Washington Department of History and American Studies.

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Harold "Hal" Wiggins

Harold "Hal" Wiggins is a nationally-known author and naturalist. Most of his professional career was spent as an environmental scientist with the U.S. Army Corps of Engineers' Fredericksburg Field Office. Wiggins was instrumental in the Corps' decision to remove the Embrey Dam on the Rappahannock River in 2004, thereby restoring upstream access to migratory fish, like herring, shad and striped bass. During his career, Hal put more than 10,000-acres of wetlands, streams, riparian buffers, Civil War battlefields, and archaeological sites in preservation, including Crow's Nest Natural Area Preserve. When not exploring area rivers, Wiggins is often found these days at his River Gallery art studio in Fredericksburg.

00:00:07

Rigelhaupt:

It is March 18, 2016. I'm in Fredericksburg, Virginia at the Friends of the Rappahannock building and we are doing an oral history interview with Harold Wiggins about the history of the Rappahannock River. My name is Jess Rigelhaupt. Sitting to my left is Nancy Milroy, who may come in later and ask some questions. But I'm going to begin by asking you if you could describe your earliest memories of the Rappahannock, which may well have preceded your work with the Army Corps of Engineers.

00:00:42

Wiggins:

Yeah, I would say I've been aware of the Rappahannock River since the 1970s, but it wasn't until the mid-1980s that my family and I moved to Fredericksburg. And around 1985 my son, James, needed an Eagle community service project and we thought maybe we'd go down and see that place at the bottom of the hill where they have canoes and talk about a nature trail. So we came down here, pretty close to where we are right now, and walked the property. And we sat down on the ground and a man came out and asked us what we were doing. That was Bill Micks, okay, and Bill Micks, who owns the Virginia Outdoor Center, assisted us in finding a trail project. It's almost a 1-mile loop called the Rush W. Mables Trail. We named it after Rush Mables, a man who's done a lot of walking and had a lot of memories of the mid-Atlantic here, trails he's walked all over. So we named it after him, Rush. So that was my first contact with the Friends of the Rappahannock, through Bill Micks. I became intrinsically connected to the Rappahannock River through the Friends of the Rappahannock. In 1993, I believe, John Tippet and I, one of the former directors of FOR, we got the Department of Game and Inland Fisheries involved in talking about the removal of the Embrey Dam. The Embrey Dam, built in 1910, was an impediment to fish and recreation and this seemed like a project that could have great benefits to the Rappahannock River and the region. But 1993 began a long conversation with various interest groups and agencies. My work with the Corps of Engineers, I'm regulatory, I don't remove dams, but my agency did get involved in the mid-1990s with the project to remove the Embrey Dam, and ultimately it was breached in 2004 and removed in 2005.

00:02:59

Rigelhaupt:

Could you tell [00:03:00] me a little bit about how it looked different right around here when you said you came down here around 1985? What would someone have seen walking around that would look different than it does right now?

00:03:12

Wiggins:

Well, the main change has been the replacement of the Fall Hill Bridge and the trees along Fall Hill Avenue. But beyond that, towards the river, there hasn't been much change. The Mables Trail has led to more public awareness of the river and a lot of the people who'd stay overnight and break glass and leave trash, that got cleaned up. I guess the awareness with the Friends of the Rappahannock doing their programs helped create a more public awareness situation here, so that was a change, but it came gradually. But when I first came here in 1985, it was just the woods, this building. There were many more trees along Fall Hill Avenue here. There hasn't been a whole lot of change right here.

00:04:05

Rigelhaupt:

How would it have looked different walking from here up to where the Embrey Dam was at that point, and maybe even walking a mile past it?

00:04:16

Wiggins:

Well, the Rappahannock River above the Embrey Dam was a lake, okay? It was a large body of water that had a cascade going over the dam. That changed in 2004 to become a river along that 1-mile segment of where the Embrey Dam was. But, I wouldn't say that physically there has been much change beyond the removal of the dam going up towards the upper reaches of the Friends of the Rappahannock property.

00:04:52

Rigelhaupt:

When you say it was a lake, how wide was it? Did it affect the property on both sides?

00:04:59

Wiggins:

Yeah, the dam itself was over 1,000 feet long and then another .7-miles of distance of backwater. And you could essentially canoe right up to the edge of the dam in a canoe because the water was going over evenly over the entire stretch. The Embrey Dam itself was considered historic and one of the things we had to pay attention to during the removal was preserving some part of its history. The abutments were left on each side of the dam, you can see that now but you couldn't see before. You really couldn't see it before the excavation. You can see that there was the Embrey Dam and behind it the Crib Dam, which was a much earlier dam.

00:05:53

Rigelhaupt:

Where were you born?

Wiggins:

I was born in Anchorage, Alaska in 1953, Providence Hospital, [00:06:00] and when I was one year or one-and-a-half years, we came down the ALCAN Highway. Alaska wasn't a state when I was born. Alaska didn't become a state until 1959, so whenever we travelled out of the county I always had to refer that I was a citizen of a territory of the United States. I remember that. And the American flag had 48 stars in columns, they weren't staggered. That's pretty cool when you tell kids that, because a lot of kids think there's always been 50 states and within our lifetime we've seen states added.

00:06:37

Rigelhaupt:

Did you grow up in Alaska?

00:06:39

Wiggins:

No, I was very young when we left Alaska. My dad was in the military so we lived in El Paso, Texas, Fort Bliss, and when I was 12 we moved to the Panama Canal and for three years I lived in Panama. I think that something about going from a dry, arid climate to a humid climate that was very lush and green changed my health. I was a very sick kid but I got very accustomed to being in humid places and my love of the outdoors and going into the jungle and finding animals, that was a real benefit to me as a kid. I joined the Boy Scouts. I walked from the Pacific Ocean to the Atlantic Ocean, the Chiva-Chiva Trail, when I was 13. Of course this was only 45 miles, but with the Boy Scouts we were able to hike and walk. I met native peoples along the way, I remember that. But there were a lot of wonders for a kid growing up to see in a foreign country in a land like that. And in 1967 we moved to Virginia and I grew up in Northern Virginia. In the mid-1980s we came here to Fredericksburg after I finished my education and my wife finished her education.

00:08:07

Rigelhaupt:

So, other than what sounds like a really fantastic hike, are there experiences from your childhood that influenced your interest in science and the natural environment?

00:08:20

Wiggins:

Well, yeah, I think that one of the things that got my brain into looking at science was when my older sister gave me a book on Charles Darwin. Living in Panama, I began to see animals and began to contemplate evolution. And that kind of stayed with me, that love of the outdoors. And I have an artistic side in my nature and a scientific side in my nature, like most people, and I try to work on both of them and become a balanced person, that's my philosophy. But from an early age I was very studious and able to apply [00:09:00] myself when I got into college and ultimately I graduated with a Bachelor of Science degree in 1986 at Old Dominion University.

00:09:24

Rigelhaupt:

Are there experiences that you've had with your parents that influenced your interest in science and the outdoors?

00:09:33

Wiggins:

Well, just the fact that I was left at home a lot as a kid, before latchkey kids were known, and the fact that one of my favorite pastimes was getting up early Saturday morning and packing a lunch and heading out to the mountains, and just walking and walking and exploring and going and finding new places. I remember walking up a ravine up through the Franklin Mountains where we lived in El Paso. There was a bright, shiny gemstone lying in the ravine and it turned out to be a big chunk of quartz, faceted quartz. It got me thinking about, you know, how that

could have happened, you know. I began to go farther and farther in the mountains and found there were fossils, actually, in the rocks farther up. It really just stimulated my imagination. Then, to just suddenly go from a desert, mountainous environment, to a lush, jungle, riverine environment like Panama is evidence to me that there's places all over the world that have great variety. And so that was a big influence on my love of nature and spending as much time in nature as I possibly can, when I can.

00:10:53

Rigelhaupt:

What were some of the best experiences you had in Panama?

00:10:57

Wiggins:

Well, there was an abandoned concrete factory out in the jungle and we'd leave the perimeter of the base and walk and walk and walk and find this, this, this ghost-like series of buildings and finding pythons, and spider monkeys, and marmosets, and coatimundi, and three-toed sloths, and Fer-de-lance snakes. The place was alive and we would spend as much time as we can just seeing animals. Most of them were too big to capture and wanna keep, but I can remember clearly seeing pythons. And coatimundi are like these raccoon-like creatures that sneak around the garbage cans, we had the same problem in Panama. But in our front yard we had a sloth hanging out of a tree and snakes everywhere. I mean, you know, many of them were poisonous, you know, the Bushmaster, the Fer-de-lance, just bad news. But you learn to keep [00:12:00] a healthy respect for nature and let animals go along their way. Most animals are not there to hurt you, you know? They're more afraid of us than we are of them. But the color, the vibrancy, seeing turtles. I remember seeing turtles. And the creeks and just hearing the sounds at night. Birds, bird calls, waking up in the morning, late in the afternoon. Our home didn't have glass windows, we had screens. There's no such thing as air conditioning living in Panama, we didn't have that luxury. There were two seasons, rainy and dry. When it rained, and rained, and rained, often creatures would be washed out of the jungle and down the street. I mean it was pretty wild. So constantly being aware that there are creatures in hidden places all around where you live stimulated my mind as a young person.

00:13:00

Rigelhaupt:

What were some of your favorite subjects in school while you were in Panama?

00:13:06

Wiggins:

Well, it would have to be art. It would have to be biology and art. The study of living things. I didn't do real well in math, but I can memorize the names of plants. I always wanted to be a botanist, and in my professional life I've learned that being a botanist assisted me in being a wetlands ecologist and preserving wetlands and working to protect the environment. But mainly,

getting out of school and playing. Hiking and canoeing, those were the things that I really liked to do.

00:13:52

Rigelhaupt:

So you were 14 when you got to Northern Virginia.

00:13:56

Wiggins:

Yes.

00:13:58

Rigelhaupt:

Where did you go to high school?

00:13:59

Wiggins:

Well, initially Annandale High School. And I ran track, I ran cross country, and I wrestled. My family moved to Fairfax, I spent a semester at Woodson High School, and ultimately I graduated at Fairfax High School in 1972. That was a time when I saw the Vietnam War going full-tilt and the end of the Vietnam War coming. The 1960s, I went from freshman year when nobody was allowed to have hair over their ears to the time I was a senior, you know, most of my friends had long hair and could still run track, could still do athletics. It was a pretty wild time, you know, to witness a change that fast. And the generations were so divided, so much polarity between parents and kids. But I remained close to my family, had a lot of interesting experiences [00:15:00] as a teenager growing up in Northern Virginia.

00:15:04

Rigelhaupt:

What were some of the things, experiences or things, that were changing that were particularly memorable?

00:15:11

Wiggins:

Well, the fact that the environment was changing. We didn't really have the environmental laws at that time. The Clean Water Act, NEPA, any of the anti-pollution laws. Just watching the rate of development. I remember as a kid seeing streams filled full of mud, streams being destroyed, wetlands, the loss of our environment. We had a forest behind our house that was clear-cut for development. That, the rate of change, you know, the suburbanization of Northern Virginia in the 1960s was quite a phenomenon. Watched the woods go real quick, I remember that. George Mason University used to be George Mason College. The last big tract of woods was being George Mason. When I was a kid I used to go back there and camp and build shelters and spend several nights at a time. But now it's the Patriot Center, it's George Mason

University. The University of Mary Washington became a college and university. Yeah, Fairfax was kind of the limits of civilization. You know, you went beyond that it was this, the country. There's nothing, just nothing, beyond Route 50 in Fairfax. But that all changed and I began to see that change as I got a little older. That was on my mind. One of the reasons we moved to Fredericksburg is there are still resources here that are accessible, always a place you can escape, hike, and see the water. It was a big reason why we came here from Fairfax.

00:17:06

Rigelhaupt:

There were a number of events that affected the environmental movement while you were in high school, rivers caught on fire. What were some of the events that you remember that became part of the national discourse that might have had an effect?

00:17:30

Wiggins:

Well, there were several planned rallies in Washington, D.C. As a teenager I remember going to a couple of those. There was one that happened in 1970 that resulted in D.C. being closed down for three days. 50,000 kids camped in West Potomac Park to protest the Vietnam War. Mainly, it was [00:18:00] the Vietnam War that was driving a lot of the change, but of course with it came the environmental movement. You know, rights between the sexes, women's movement. Social change was happening so fast that you couldn't go anywhere without seeing some sort of protest or idea that maybe it's time for a change. I remember as a kid driving to St. Louis and seeing smog that was so bad that when the sun shone through it created a sulfurous yellow color. I remember that. It's unthinkable to see a city here in this country like that. I think you'd have to go to New Delhi or Beijing or one of those places to really see what it was like here before we had anti-pollution laws come into effect in the late 1960s and early 1970s. It's interesting, back in the 1950s a project came to this region called the Salem Church Dam, and I have the original document. The agency that I worked for, for almost 25 years, was at task to build a dam on the Rappahannock River that would have flooded 24-miles of river upstream, a mega-mega-project. The Salem Church Dam picked up a lot of steam over the 1960s and almost got built, but it was defunded, okay, in 1974. There was a citizen's group here, the Rappahannock Defense Council, that fought the Salem Church Dam project. But at that time there really were no environmental laws that would make a federal agency like the Corps of Engineers study the environmental effects of building a dam on the Rappahannock. The document that I have rarely mentions the environment. In fact, there's a letter from the Virginia Institute of Marine Science that said, "Hey, it'd be a good idea if we keep fresh water in the upper reaches and help oysters." That's how our thinking was back then, before, you know, we really began to apply the science to understand our actions and what our actions have on the environment with projects of that scale. It's interesting, the Rappahannock Defense Council in the 1970s, many of the members helped to create the Friends of the Rappahannock that came about in the 1980s. There's a direct link with the same people that gave birth to this organization as a watchdog over the Rappahannock.

00:20:49

Rigelhaupt:

Now you weren't here but, either in your work or now being close to the Friends of the Rappahannock, did you get a sense that the [00:21:00] Rappahannock Defense Council sought to be a part of the environmental movement to really defend waterways and protect the natural environment?

00:21:12

Wiggins:

I don't think we have enough information about the Defense Council. I think they were more local. There was one fellow in particular, Randy Carter, who was an avid whitewater boater, who was fighting to preserve the scenic qualities, in particular the rapids that would be flooded by this large lake that would be built here. I got to meet the Carter family later on. I wrote a book, *A Tale of Two Dams: From Salem Church Dam to the Embrey Dam*. In my lifetime I've seen this change from agencies, like the Corps of Engineers destroying the environment, building dams, building seawalls without much thought process put into studying the effects it would have on the environment, to an agency that's at task to remove dams, to restore the environment. Our values as a people nationally have changed, and nationally the political will of the people gave birth to these environmental laws that put agencies, like the Corps of Engineers, at task to assess its undertakings on the environment. And that's a good thing, it's been a long process of evolution. But when you think 30 years, that's all it is, 30 years, how much we've changed, from wanting to build dams to now restoring the environment. The Corps doesn't build any dams anymore, they don't build dams. But there are Corps of Engineers dams all over the country that were built in the 1930s, 1940s, and 1950s. But the rate of dam building began to go down dramatically in the 1960s and 1970s to the point where that's not what the Corps does anymore.

00:23:05

Rigelhaupt:

Could you tell me about your decision to attend Old Dominion.

00:23:10

Wiggins:

Yeah, that's a good story because I was attending college at Northern Virginia Community College and I had a biology professor named Walt Bulmer who, every year, would take students down to the Great Dismal Swamp in the Chesapeake and Suffolk counties. I went on one of these, and when I was in their vertebrate zoology class I met professors from Old Dominion who told me I should be down there studying oceanography and marine science. So I transferred in the early 1980s to Old Dominion. It was the right decision. Initially I wanted to be an oceanographer but I found that I could be more useful locally if I became a wetlands consultant and ultimately become a [00:24:00] wetlands regulator. That's kind of the chain of sequence of events. The Great Dismal Swamp was a Petri dish for me to discover that I am in a position where people are needed who can understand wetlands and their values, and protect them. And that's what I pursued. I had great mentors at Old Dominion that helped me find my way

through life. That was really important because many young people don't know where they're needed and how they can apply their love of a subject like nature and biology to actually having an effect locally in their community. So I was lucky to have a handful of professors that guided me and helped me understand my way and my path through life. In 2013, I co-published a book with one of my professors, Dr. Lytton Musselman, who is a world-renowned botanist. I got up under his coattails and we wrote a fascinating guide to wild edible plants, it became very popular. Lytton's written many books but every time we'd go out paddling I would assist him in finding rare plants in wetland marshes. We began talking about edible plants and those that haven't been published. We decided to publish original recipes and we spent two years going out foraging, finding that most of the plants that reportedly were edible in the literature turned out to be not worth the effort. We have a whole chapter on failures, but we feel that's part of the search for knowledge, going out and trying something and failing and reporting it. But every now and then we'd find a great recipe, a plant that is widely available and easy to prepare. We feel that we have written an original book that actually has recipes and explains the toxicity of plants and toxic lookalikes and plants that you can identify easily. It's kind of a survival book. So I've continued a tradition with my professors, a couple of them, and in the 1990s I helped with the 23rd Annual Dismal Swamp Symposium, where we co-published a paper on the years of vertebrate zoology and what we found and what were the trends with animals during that period of time, which was gratifying to also find that you can publish, and learning how to publish, learning that you have something worth researching and publishing.

00:26:59

Rigelhaupt:

[00:27:00] I mean I know it's probably hard to sum up, a few years ago, but what was some of the thinking about wetlands and their role particularly in this region while you were in college?

00:27:17

Wiggins:

Well, when I was in college the Clean Water Act had really just gotten off the ground. There were controversies with regulating wetlands, trying to define the upper limits, how far do we go beyond the navigable waters, beyond the perennial streams. Where is the limit of boundary to protect the wetlands, to draw a line in the sand? I came into the Corps when that was not settled and we had to create our own manual that was a counterpart to the law because, basically, the law said that wetlands are those areas that are inundated or saturated, sufficient to support, and under normal circumstances, do support a prevalence of plant life typically adapted to saturated soil conditions. We had to take that one paragraph of the law and create a manual that looked at almost 3,000 plants and giving them a wetland indicator status looking at wetland soils, determining which soils support hydrophytes, or wetland plants, and which do not. Indicators of wetland hydrology. You can look at a wetland today that doesn't look like a wetland but, depending on how long the growing season window is, it can be a wetland because it is wet enough. And those areas are regulated and we discourage the unnecessary destruction of wetlands. The average person doesn't understand this, they don't understand the science, they don't understand why wetlands are so important. It's almost in a cosmic way you have to explain

that the wetlands on this piece of property can affect water quality downstream, can affect the Chesapeake Bay, can affect fish. You know, there's a connection between the headwaters and the wetlands and our living resource that we all depend on our here, fish.

00:29:17

Rigelhaupt:

Could you point to a wetlands area connected to the Rappahannock that looks different now than when you were in college?

00:29:30

Wiggins:

Yeah, I'd say so. That's because here we have pockets of wet areas this time of year. The growing season has started and those wetland areas are vernal, like you have vernal plants. They're only there in the spring, there's pockets of water that are very, very important for amphibians. If the amphibians don't have that yearly cycle to lay eggs, they die. But those areas are wetlands. By the time June rolls around they're dry as a bone. But are they any less important [00:30:00] as another wetland that is wet all year long? They have different values but they're extremely important and we need to be able to identify them before we can protect them and that takes people who have the training and understanding of plants, animals, soils, hydrology, that can make that call and define that as a wetland. And that's a good part of what I did as a consultant, is delineate the wetlands. And then the landowner, developer, builder would take that wetlands study to the state and federal regulatory agencies and say, "Do I get a permit to destroy this?" Sometimes they get a permit for small impacts, sometimes there's no permits needed, sometimes they say, "Stay completely out of the wetland." But that takes judgment and it takes a weighing of factors and it takes the understanding of wetland ecology and how important that wetland is. Wetlands are connected by streams, usually, in this region, and if you change the natural drainage of the landscape, that affects another part of the landscape downstream. But a landowner on his parcel doesn't always see that, so you need people not only need to explain the regulations, but to explain why these areas are so important, and can you have your project farther up in the watershed. And most people in this country, in this state, understand that and agree. There's still a few instances where people don't understand it. Your land is your land to do what you want. But you do have a right to get a permit or to apply for a permit. That's what I spent a good part of my career doing, is meeting with landowners and talking them out of destroying the wetland and explaining their options. For unavoidable impacts they get their permit. They have to mitigate, make wetlands or buy mitigation credit from the wetland bank. But a trend I've seen through my career is that our society is becoming more aware of the importance of our water resources and the tolerance level of impacting the wetlands is getting less and less. We don't like to see wetlands destroyed. It's very, very expensive to mitigate wetlands, which is a disincentive to want to destroy the wetland. By the time I ended my career I felt like I had created, in this area, the roots of understanding, through the media, through speaking engagements, through the Friends of the Rappahannock, that wetlands are extremely important and that if you have plans to modify them or change them in any way, contact your local official and have that discussion.

00:32:55

Rigelhaupt:

One of my next questions was going to be about working with Froehling & Robertson, [00:33:00] which, if I'm remembering correctly from speaking with you yesterday, was your first job out of college.

00:33:08

Wiggins:

No, my first job out of college was actually working at a biohazard laboratory. I had to wear a bunny suit and I had to grow cultures of HIV in these large tanks to create tests that could test positive or negative for HIV infection. It's called viral production, which is probably the most unhappy two years of my life, working in isolation and working with biohazardous materials all the time. But it was a professional job and I worked in my field of biology at the micro-scale, the very, very small. My minor was in chemistry but when I found that I could be a wetland consultant I was closer to working with plants and the outdoors, and working on the macro scale, the large scale, was really where I was the most happy. I found that was where I needed to be.

00:34:06

Rigelhaupt:

So, the second job with Froehling & Robertson, could you tell me about one of the most important wetland projects that you helped work on and might have been a success story? Or it sounds like some wetland projects also probably involved some destruction... project that was really important during your time there.

00:34:26

Wiggins:

Well, again, during that phase of my life, mostly what I did was go out on tracts of land and spend several days and sometimes several weeks flagging, or delineating, the wetlands, creating a wetland delineation report. Applying the known manual methodology and the science to doing that. But very often the wetland delineation report would then be handed to the proponent of a project and I wouldn't necessarily get involved with the permitting of that project. But there were a few and one of them was called Jennings Pond in Spotsylvania County. Somebody wanted to build a championship ski pond and it took going through the permit process to get a permit to impact several hundred linear feet of a stream in some wetlands. At that time, back in the 1980s, it was very easy to get permits from the state government and the federal government, to impact wetlands. You essentially got a permit that was written on the spot, torn off, given to you, and what you had was a carbon copy. There were no computers, no word processor, no internet. Internet didn't come in vogue until the early 1990s, so I can remember going out with the Corps and reviewing a project and saying, "Look, they're going to impact wetlands here, we're going to make 3-acres over here, fine. Fill out the form, here it is." Times have drastically changed [00:36:00]. It's not that way anymore. In fact, ponds of that

scale, or lakes, are rarely built, rarely built, because of the need for permitting. The permit process itself is so hard to go through to impact something that scale. I can remember working on large tracts of land in Tidewater, Virginia that, essentially, every square foot of the piece of property was wet and giving that to a proponent, what do you do now? Everything there you build on is going to be wet. At some point I decided, rather than just do a report and turn it over, maybe I should be the regulator. I should be the guy working with the public on those projects, and that's why I went from being a consultant to actually working in the public sector because I saw the need to explain to people how important these areas are, and if we can find another viable alternative, let's work on that. That's part of what the permit process was about, is looking for alternatives that were available, practical, and I had great success doing that with the Corps. But the consulting world was cutting your teeth, it was kind of getting the knowledge, the background, the science there. But the regulatory world, you know, you have to work with people, you have to use multidisciplinary tools to affect change. Forming a team, getting experts together, looking at a project, and kind of weighing all the ups and downs. Finding the middle ground, if you will. I worked with Silver Companies here in Fredericksburg on Celebrate Virginia, North and South. What came out of that collaboration with the agencies was low-impact development for this region. We helped take a concept from Largo, Maryland, John Tippet and I, one of the early directors here, and looked at a way of preserving streams yet getting your stormwater management, by not damming up streams, but by getting infiltration. Using the natural features of the landscape, using trees, using bioengineered swales to hold water. Looking at the flow paths of water through a development site where you keep the natural features, you keep the permeable soils. You shrink your envelope of your development but not really give up developmental space because these stormwater ponds just chew up the landscape, and if you can treat that same volume of stormwater in the upland using depositional areas, biofilters, raingardens, you have achieved the net goal of no net loss of the environment, the aquatic environment. There's still gonna be some development, [00:39:00] but you look at the footprint of the development and you find ways of softening that impact on the environment, and low impact development allowed a way of starting with the stormwater, kind of engineering in reverse, from the beginning, and then looking at how you can meet your project goal in the watershed, getting that same amount of water into the ground the way it should to feed those streams below so you don't change the hydrograph of those streams and how they flow.

00:39:37

Rigelhaupt:

What were some of the most important things you learned as a consultant that you began to use when you switched careers into the Army Corps of Engineers?

00:39:46

Wiggins:

Gosh, I think that learning to listen, trying to keep on the learning curve, understanding that there's going to be complexity and controversy when you work with people and large projects. Learning to get the opinions of others and look at environmental documents through the lens of NEPA, the National Environmental Policy Act. Are there alternatives to destroying the

environment? How do you develop alternatives? Do you accept what's on paper? Do you accept the blueprints? This is what they want to do. That is a virtuality, that blueprint can change. The proponent of that blueprint, the developer, can get their way. But if they can have the proper environmental documentation to see what the pitfalls are they can avoid those pitfalls and have a viable project. Basically, finding out that there's a lot more going on in the realm of development than just the planning department and the approval of a plan. There's three levels of government: local, state, and federal. There's local wetlands boards, there's the Department of Environmental Quality, there's the Virginia Marine Resources Commission, there's the Virginia Department of Game and Inland Fisheries (Game Department), there's the U.S. Fish and Wildlife Service, there's the EPA. I can go on naming agency after agency after agency. Most of them are advisory, not regulatory. Those agencies can give you scientific data that help you make an informed decision. Knowing that biology isn't the end-all of knowing. The study of living things implies that you know everything. But there's chemistry, there's the physical [00:42:00] properties, there's geology, I mean there's so much that goes into looking at the environment and there's so many different people that have expertise in looking at the environment. Learning how to consult with the different agencies and interest groups and interested parts of the public that have a say.

00:42:23

Rigelhaupt:

When you began in the Corps, what were some of the agencies that you felt, I don't know if allies is the right word, but shared sense of commitment to, what sounds like, a moment of transition to the Corps being much more focused on environmental preservation. What were some of the other agencies that you felt like shared in that issue?

00:42:49

Wiggins:

I felt that the U.S. Fish and Wildlife Service had a stock in protecting the environment and explaining why are rare species so important. The Virginia Department of Game and Inland Fisheries is their corollary at the state level. You don't know what's out there. These agencies keep information, they keep a database on the environment. So they're committed because they know. If you have knowledge of something, you want to be able to share it. But if the public isn't asking for it, they're not going to see it. So with my agency I could ask and I could receive information that helped me make an informed decision. The EPA seemed a little more remote, although with bigger projects the EPA would come down and be a voice for the environment and ask questions. My corollary at the state level, the Department of Environmental Quality, they're regulatory, they have their wetlands protection permit program. But in the beginning they didn't have that, they had what's known as Section 401, Water Quality Certification, where they would certify our permit actions but they didn't give much input. It's a changed world now. The people of the state have almost an equal role in the federal government in a very, very similar program looking at wetlands and permitting and preservation.

00:44:20

Rigelhaupt:

Was there a big project you worked on in this region before you began working on the Embrey Dam removal?

00:44:28

Wiggins:

Well, there were many before and there were many since and one of the things that made my work extremely interesting, dealing not just with wetlands and streams, rivers and harbors and so forth, but were historic properties. Because I worked for a federal agency, there's something called Section 106 of the National Historic Preservation Act, which meant that federal agencies have to look at their permitting [00:45:00] and look at how their review affects historic properties. And I began to find out early in my career that we are right here in the cradle of vast historic properties. We've got the greatest density of archaeological sites, architectural sites, historic districts, than anywhere in the entire country. There's probably three states that would argue they're the most historic. With known resources they'd be Florida, Massachusetts, Virginia. But Virginia was the gateway, in many ways, to civilization in North America. We're not counting the French, we're not counting the St. Lawrence River, how the French came into this country. We're talking about the mid-Atlantic, and Virginia played a huge role in making us who we are. So I learned through my work that Virginia's one of the most historic states, and in all of Virginia this region has tremendous resources. So I'd be looking at an application for development to impact wetlands, but in fact we'd consult with the Virginia Department of Historic Resources and we'd find there's a Civil War battlefield here, there's a Native American site here, there's an architectural site over here. All of these are either listed or eligible for listing on the national registry. That makes your work really complicated because now you have to consult with many, many more interest groups and people, and what you seek is the ability to mitigate the effects of permitting on historic resources. And that really is difficult because when you, for instance, if you destroy a wetland, you can rebuild a wetland in theory, but when you impact a historic property, it's gone forever. It's obliterated. You have written record but you don't have the full record. And so we worked very hard to protect archaeological sites. I've worked with the Civil War Preservation Trust, I've worked with the Association for the Preservation of Civil War Sites. I have many, many success stories where landowners put aside chunks of land, five acres here, 10 acres here. Silver Companies proffered 300 acres on the other side of the river. Just towards the end of my career, another project down on Route 3, the Binns Property, they're putting aside almost 300-acres along Route 3. You have to work with the National Park Service, you have to work with the Advisory Council on Historic Preservation, and you have to listen to these agencies. And many of these projects are very controversial because you don't want to issue a permit that would impact a Civil War site where men fought and died. The National Park Service has told me over and over again the most blood-soaked ground in all of America is right here, right here. Even on this property [00:48:00], along Route 3, there's men who have fought and died. Hallowed ground, you know there's so many instances where you can look on the landscape and what you see is a farm. But if you're somebody who comes where their ancestors have died and you look out there, that field up here, the location of the May 1st battle of 1863, which opened the Chancellorsville campaign, you can get a sense, it conveys a sense

of what happened there at the battle, and these areas need to be preserved. I've been to India four times, I have a daughter-in-law from India. India is chock-full of history, it is a living museum. But here in America, you know, we are a relatively young country. We need to covet our history, we need to protect our history. If we destroy our history, we don't know who we are. What are we? It's very important, very important here to respect history. Next month, I am being honored with an award from the Civil War Preservation Trust for my work in this area which, they say, has combined over 1,000-acres of protection of mostly Civil War sites. It all adds up, these little 1-acre, 2-acre, 3-acre, 4-acre, 5-acre, 10-acre postage stamp areas along development. Preserving strategic areas helps maintain our sense of history.

00:49:41

Rigelhaupt:

Part of that story is also that you're coming up against developers and development.

00:49:49

Wiggins:

You do, you do, and I feel ill-prepared sometimes to deal with the ire of the landowners who don't understand initially. You have to develop people skills, you have to be able to take criticism and not lose your temper. If you're a public servant, you basically have to get cussed at, shouted at, accused and threatened. I've been pulled into court, I've been cussed at, I've been personally threatened with my life. But I've blown it all off as, you know, just part of the job, and it's something that I need to do to keep focused. And if I stay focused on the environment, and not on the individuals who are upset, we'll get through this somehow because even the landowners who get upset, they come around one day and say, "Thank you." In many instances I've had horribly, ghoulish developers, who initially used foul language to me in my face, come back and say [00:51:00], "Thank you, Hal. Thank you. You helped me realize how important this is and that I can still do my project. I'm not bankrupt, like I accused you of making me and my family. But look what I have achieved. And I'm going to build a granite monument, right over there, and show the world that I love this place." And that's the fulfillment of your work, and that's when you can say, "Goddarn it, if I just let off that control stick for a minute, this plane's going to go down, because I've about had enough of it." All of us working in a professional field deal with projects that affect people's lives, and are going to come up against that. But you learn people skills, awesome people skills, like I said. Just keep working with them and listening to them and trying to find a way to get through it. And you do. And you do. And every one of them, every instance, has found a successful resolution. Many an apology letter, a Christmas card, from those forces out there that didn't understand the process, but we got through it.

00:52:06

Rigelhaupt:

Is there a case from earlier in your career that you learned a lot from in terms of not issuing a permit or that became influential in dealing with the process?

00:52:22

Wiggins:

Well, one thing I've learned is that some days you're not going to succeed in getting your way because you're not in control, you work for a federal agency. There are certain things that your management has asked you to do and sometimes your management will tell you, "Issue the permit." But I had the good fortune of coming back the next day and looking at it afresh and feeling, "Let's look at this from another angle. Maybe we can find a better way to do this." There's been probably less than a handful of projects in my career that I can say that didn't have a happy outcome, or management, who I worked for, told me to issue the permit. But in not one instance did I find it to be unethical, it was just that the permit process with the Corps of Engineers is not absolutely perfect. It's not the Environmental Protection Agency. But it's a program that sought a middle-ground. This concept of unavoidable impacts, in most cases I'm going to find a way for a landowner to avoid impacting the wetland. We will find other alternatives to this, this is not acceptable. What I've learned is that you don't just tell them no, there's a way to say no. There's a way to say no that the public respects. And, amazingly, what most of the public wants is not [00:54:00] just a yes or no, they just want an answer. They want an answer. They don't want to beat around the bush. So you find a way to give them strong indications of how the permit processing would go and what we're going to get at the end. If you work with me, I'll work with you. And 99.9% of the public had that attitude. Let's work together, do a site visit, let's see the paperwork, here's what you're going to need, you need this, this, and this, if you can get this, this, and this, then we can make a better-informed decision about your project. And so that's a lot of what I did, but there's always going to be those instances where, man, you walk into a buzz saw, this is ugly. Before you know it your two state senators and your congressman and the Pentagon have found out that you're a no-good, S.O.B. from some landowner that didn't like a permit decision. But when you look closer at it, the details of it, what is revealed is that we did what we were at task to do, to issue or deny a permit.

00:55:12

Rigelhaupt:

What year did you join the Army Corps of Engineers?

00:55:15

Wiggins:

1991.

00:55:17

Rigelhaupt:

When you began working there in 1991, was there already discussion going on about the Embrey Dam removal?

00:55:25

Wiggins:

Not to my knowledge. What I remember is in the summer of 1993, John Tippet, the former director of the Friends of the Rappahannock, had an idea, and it might have been through the

Game Department, that there could be a way of working on a project to remove the Embrey Dam. We went off to Richmond to talk to the Game Department. Senator Edd Houck put \$20,000 in the budget to remove the Embrey Dam, which was laughable because I think that would buy a stick of dynamite. So it began with a local effort, state effort, and it percolated up to a federal effort, and that happened in the mid-1990s when Senator John Warner got involved. In fact, there was a meeting in Brompton House at the University of Mary Washington with the City Council members, Mayor, Game Department officials, the Corps of Engineers. I was asked to attend, and Senator John Warner was there for the commencement. This was May of 1995 or 1996. And the discussion was made. Do we want the federal government to come in and remove this dam? And my role was to explain that you could get a permit to remove the Embrey Dam, but you'd have to do an Environmental Impact Statement. Something of that size is going to take an environmental study [00:57:00], you just can't go out there with a chest full of dynamite and blow it down. There's going to have to be some thought. Senator Warner made the point that if you go alone, or if you work with the Corps, you're going to be up to your bootstraps with environmental regulations. You might as well let the Corps do this. That kind of got things going at that point. I don't think the city wanted it to be a federalized effort but it cost \$8 million dollars to remove the Embrey Dam, which included the dredging, the studies, everything. And it got done. And it is a good thing that it is not there anymore. The living resource, the fish that come up river, 700-miles more of streams and spawning areas. Stripers, yellow perch, smallmouth and largemouth bass, American shad. The Game Department gets empirical data. What's coming up the river now? There's a world that only anglers know that exists now in the upper reaches of the Rappahannock and all of its tributaries because of the breach in the Embrey Dam, the removal of the Embrey Dam. Very important.

00:58:13

Rigelhaupt:

Was that the major impetus, or framing, of why removing it would be a good project. It would be restoring the river, increasing flow, increasing wildlife? Or were there other parts of why the project might be beneficial?

00:58:31

Wiggins:

Well, it was initially finding the right congressional authorization that would allow the Corps to remove the dam. Amazingly, it came in under authorization that wasn't a dam removal authorization, it was an environmental restoration authorization. The Corps wanted to do stream restoration all up and down the watershed which would have been infeasible because most of the degraded streams are on private property. It could be an exercise that would take decades to identify all these sites. What eventually played out, Senator John Warner had to put a line item in the budget that was specifically to remove the Embrey Dam and for the Corps of Engineers to do that. At that time our agency had the tools to do this but all the other funding that went with environmental restoration wouldn't happen because it would just take forever to identify all the sites and work on private property. So that was seen as an impediment to the project at hand, and what the public in this region wanted was the removal of the dam.

00:59:50

Rigelhaupt:

What were some of the reasons you were hearing at that point as a community member and as someone, not necessarily in your job with the Corps, [01:00:00] involved and observing? What were some of the main reasons the community wanted the dam removed?

01:00:05

Wiggins:

Well, locally here, there were instances of kids falling off the dam and hurting themselves. A young fellow named Justin Cook drowned. My friend Jerry Benhase found his body when the police were doing their search. The city was scared to death that the dam was going to fail. The city had their water supply here and they were afraid because it was downstream of I-95. The City of Fredericksburg wanted to abandon their intake at the Embrey Dam. We helped them with that to form a regional water supply where Spotsylvania County and the City of Fredericksburg could combine their water treatment plant five miles upstream, which then obviated the need for having an old concrete structure that was 100 years old out there. Remove it, it was falling apart, it was crumbling, it was seen as a nuisance, it was a historic property. A lot of people in the region wanted us to tread very lightly because if you destroy anything that is over 100 years old in this region there's going to be people that fight you. They don't want it. But when the Embrey Dam was breached in February 2004, it seemed that everybody in this region came out for it. It was one of the first times I've ever seen a project of that magnitude have the entire community behind it. There was nobody saying, "Let's not remove the dam." It was everyone on board. But we had to study its history, we had to preserve parts of the dam on each side. That created some controversy on the Stafford County side. A landowner didn't want to see the abutments down below. It created a nuisance to see anything remaining of the dam. But those are small complaints, you know, compared to removing a dam. It was a big project, it was one of the biggest things that happened in this region since the Civil War, in my opinion, or the building of I-95, or the Route 1 that went through the City of Fredericksburg. But everybody got behind it and it got done. If you don't have the public behind you on a project you won't ever see it come to completion, which applies for any large project that comes to an area. If you don't have public support, you know, it's just not going to happen. But the public got behind the removal of the Embrey Dam and it happened.

01:02:34

Rigelhaupt:

Do you remember instances where you were providing your expertise, not necessarily in your official job duties, but beyond the Corps of Engineers about how to help the public understand why this was beneficial and to help build public support?

01:02:51

Wiggins:

There were speaking engagements. I can remember state Senator Edd Houck talking with me several times, "What're we gonna do, Hal? [01:03:00] What're we gonna do? We'll draft a letter to the court." I helped him with that. I have to give a lot of credit to Senator Houck for pushing, pushing, pushing. Getting us to the table. We just didn't volunteer a project, we had to be asked to come. We did a recon survey, we did a feasibility study that said, "Yes, this appears to be in the national interest. Remove this dam because it supports national issues. Environmental restoration, fisheries, anadromous fish that go up all rivers on the eastern seaboard. This is important to do." But as a citizen, there wasn't much. Just being an observer, and being able to talk to people, and get them together to meet. There were people. I remember Marcia Keener, who was with Friends of the Rivers of Virginia, came to me, "Hal, how do we do this? How do we get an initiative to remove Embrey Dam? Who do we talk to?" Basically, facilitating. But most importantly, when the Corps got on board, I was asked to help in my professional role and I was chosen to be on the Project Delivery team to deliver a product: the removal of the dam and the restoration of a mile of the river upstream. And that was done. And so I saw a project that began with people talking, and then the media getting involved, and then the state senators, and then finally the federal government. It took a process of everybody working to communicate and find a way to make this happen.

01:04:53

Rigelhaupt:

In the, it sounds like, years preceding the actual earmark in the funding that Senator Warner helped lead, it also sounds like you were doing some reconnaissance, you said sub-planning. Could you tell me what the process was of your professional work on that, and management, supporting that in the sense that, I'm sure like every government agency, you're probably underfunded, time is hard to come by, and you weren't necessarily sure how far this project was going to go. Was it hard for your agency, your managers, and your region to say, "Yes, go spend time doing this feasibility study. Go do this reconnaissance." How did that process work?

01:05:38

Wiggins:

Well, I think the best way to describe how it worked was asking, "Is there a local interest?" In the media, it seemed like every summer, when you had the slowest summer in the history of the Free Lance-Star, they'd do a story about the Embrey Dam being removed. And to the locals it seemed like a [01:06:00] big joke because it's never going to happen. The removal of the Embrey Dam is just like one of those dreams you have out there, "I want it so bad, but it's so far behind the clouds. We just keep talking about it, keep reaching for it but we really don't know how to get it. It's out of sight, you can just never acquire it." But there was a way of getting the public officials into the same room to talk about it, and talk about the needed letters of support. I helped with that. I talked to John Warner, I spoke in front of John Warner. I got the City of Fredericksburg interested in getting this done. "But how are we gonna do it when our water intake is there?" They want to do it, but they don't want to do it. It seemed like the first piece of the puzzle is getting that intake moved upriver. I took, and when I say I, I didn't do it personally, but it seemed that what was happening was my agency was taking the City of Fredericksburg

and Spotsylvania County and banging heads together and saying, “You guys can’t increase your water supply for the region in two different places. You need to combine together one straw in the river, cut that water consumption in half, put limits on what you take out of the Rappahannock River, put your intake five miles upriver, and look into the feasibility of combining your water supply and how much would save this region in costs and in water consumption. That would obviate the need for the Embrey Dam sitting out here, too. You’d get a bonus.” I saw that process gradually, gradually, gradually happen. When I look back over the things I’m most proud of, with that specific project of the Embrey Dam removal, I think about the years it took, with Spotsylvania County and the City of Fredericksburg, getting them in the same room to talk. The first instance when that happened, when I got them in the room to talk, Kim Payne, the Spotsylvania County Administrator, looked at me and said, “I must not be from Virginia, we don’t have regional cooperation in Virginia.” But he bit his words because in the end, 10 years later, they are opening a new plant. They’re not taking water from the Embrey Dam, their intake has been abandoned there. Getting that done, setting the groundwork, was really important. But it took a big leap of faith because the City of Fredericksburg, with their intake at Embrey Dam, wanted to double their water intake from the river, to double their volume and size. And Spotsylvania County wanted to take more water, [01:09:00] and double their amount. The Corps looks at the river holistically, as one river. And you just can’t keep cutting pieces of the puzzle out of the pie and saying that you have anything left. We’re going to look at one environmental report for how much water is coming out of the river, “This is the limit for how much you can take, how much water has to stay in the river at all times, different times of the year. You can’t take any more.” And the only way to orchestrate this, and in Stafford County’s water supply, is to have one report that addresses one straw in the river where they know when it’s time to turn off their pumps and allow a flow-by, which protects fish, recreation, and water quality. There’s a lot of stuff that I got to do in my work that I was lucky to do, that I feel I was directly in the hot seat and responsible for, that ultimately led to a project like the Embrey Dam removal project because you had to address that intake at the Embrey Dam. If you had to remove it, then the project could conceivably go forward with federal funding to make it happen. I feel that, you know, 50 years from now people will look back and they’ll go, “God, they removed that dam for \$8 million dollars? That’s nothing! \$8 million dollars?” Of course, \$8 million dollars would seem like a lot less 50 years from now, but not really. When you look at how important our environment is and what has to happen to protect the environment, an example would be Flint, Michigan. Oh, it’s going to cost more money to treat the water coming out of the Flint River. The high acidity causes leachate in lead pipes which affects the quality of drinking water and people’s lives. You have to look at our water resources through the lens of our lives. We are water, we are mostly water. We live on a watery planet. We have to really think hard about preserving our water resources. Through my work with the Corps, that got hammered into me time and time again. The most important things out there that we need to protect are our air, our land, our water. And the City of Fredericksburg, Spotsylvania County, Stafford County, they have water for their citizens. The Rappahannock River has plenty of water. The flow-bys are set very high, we determined what those levels were on the river that have to be there at all times. The river can never be low when they take water. They have to store water in skimmer reservoirs during the high flows in the winter.

01:11:57

Rigelhaupt:

Was the permitting process for the new intake [01:12:00] of the water system for Spotsylvania and Fredericksburg, did that also fall under the Army Corps of Engineers?

01:12:06

Wiggins:

Yes, it did. Under the Rivers and Harbors Act, any structure that is put into a navigable waterway requires a permit. For instance, if you have a structure like a pier, a dock, or a jetty going into navigable waters, it is going to need a permit from the Corps. It also applies to a water intake that would go into a waterway. So we look at the footprint of that intake in the waterway and the water that is being taken from the waterway. So we had to pay attention to flows in the river, we had to define what flows are the absolute optimum for fish, for people, for water quality. Anything above that you can skim the reservoir and not affect, in a very negligible sense, the flows in the river. An example would be when the Rappahannock River is flowing. Right now, you could have 1,665 cubic feet per second going by. If you're only taking 6 million gallons a day, it's a very, very, very negligible amount of water. It's hard to measure, really, when you think about it. But if the river is down to 300 cubic feet per second, and you're taking 6 million gallons a day, which equates to about 3 cfs, you start to see some effect. So it's a tricky science, but it's a lot easier to regulate and orchestrate flow-by conditions when you have one straw in the river, one intake, one rule that the locality has to follow, and not contravene those flows, or take more than they're allowed to. Amazingly, my agency was at task to say, "This amount of water in the river must stay at all times to protect the aquatic environment." But we didn't know what that level was, we spent a year canoeing, talking to the fishermen, measuring, to come up with what were, you know, the optimal flow-bys for the river to protect its qualities. Talking about minimum in-stream flow, talking about the mean annual flow, cubic feet per second, million gallons a day. These are concepts that most people struggle with. I didn't know anything about hydrology when I started the Corps, but I got on board quick because you are looking at graphs, you are looking at flow-by curves, you are looking at worst case scenario during a drought, what happens if a locality needs [01:15:00] to pull 20 million gallons a day out of a river that only has 3 million gallons a day going by? How do you deal with these inevitabilities? You plan for the worst. You plan for the optimum, you know? You look at a locality's deficit here. They're running out of water. Spotsylvania County said they would run out of water in 1997. They wanted to build a reservoir on the Po River that would have impacted 660-acres of wetlands. It's hard to conceive what that's like but the Po River Valley that they were going to flood was huge. When I got into the Corps that would have required an Environmental Impact Statement. Spotsylvania County decided to look at alternatives. We looked at 16 alternatives. The least environmentally-damaging, practical alternative was Hunting Run, a small stream adjacent to the Rapidan River, for them to build their reservoir on. But they would have to pull water out of the Rappahannock River. So they had their application in. The City of Fredericksburg wanted to expand their water supply. We got the two localities in the same room to create one environmental assessment, one environmental document to look

at, which made it a lot easier to regulate them and a lot easier for the localities to understand what was their limit. It's like delineating a wetland. Here's a line in the sand, that's wetland, that's upland, you can develop the upland. With the Rappahannock River, here's the Rappahannock River. Everyone who uses it has a right up to a point where you regulate it. And the Corps had the right to regulate that water, which was a whole new twist to regulating wetlands, dealing with water, because with water, the river you touch now isn't the same river it was five minutes ago. Flows in rivers change constantly. The Rappahannock is a proved flashy river, up and down. It's hydrograph can change on a dime. It can be out of banks one day, the next day it's dry as a bone. How do you plan a water supply from a river like that? That would be the challenge.

01:17:16

Rigelhaupt:

One of the other things that's happening at this time period is regional growth. I don't want to say quite an exponential curve, but pretty close. One of the things that don't always mix well is regional growth and environmental protection. What were some of the conversations about the region growing and how you would both protect the river, increase water supply, or make it a steadier, plannable, more effective water supply, if it wasn't necessarily an expansion in terms of cubic feet? [01:18:00] What were those conversations like?

01:18:02

Wiggins:

Well, the conversations would be like this: a locality would hire a consultant to look at their water use, would look at what is known as a planning period where they say, "X amount of people are coming into this region, and X amount of people are going into the high-growth region where we need to provide water." At the rate of water consumption, you develop what is known as a curve that predicts their water deficit year. Their water deficit year could be five years out, it could be 50 years out. Spotsylvania County and the City of Fredericksburg found that their water deficit year was growing upon them. To give some credit to Spotsylvania County, they developed a program to conserve water, to maybe push that deficit year out farther because they knew it was going to be an uphill battle getting their own water supply. They wanted to dam water in Spotsylvania County, in the Po River. Everything seemed to be on board until it hit our desk, and when I came in at 1991 it was at that point where our colonel in Norfolk, Virginia wrote the county a letter saying, "You've got to look at alternatives, it would be an uphill battle to get your water supply here." So what does a locality do, does it stop growth? How do you do it? All those questions are being asked. So you have a region, you know this was the fastest growing region in the state for many, many years, and localities trying to get a handle on that asking, "What are we going to do? How are we going to create the primary settlement zones where you have more dense development and have public water supply? When our water supply was dwindling, you know they had the Ni River Reservoir here in Spotsylvania County, and it was a small reservoir compared to what the needs were. I came in at a time when all that was going on and the consultants' reports were forecasting gloom and doom in the late 1990s. One thing about that is that it always seems the localities forecast worst-case scenarios. So their deficit year would be

1997 but you could always do something to forestall running out of water in 1997, and that is what the county had to do because they didn't get their permit for Hunting Run Reservoir until later, until, gosh, 2004. It was out there in the future. [1:21:00] An example would be the Newport News, Virginia water supply, wanting to make this huge, huge, King William Reservoir. "We're running out of water, all these localities together depend on this, we're running out of water." But they find that when you scrutinize the data in water consumption in gallons per person per day used, and fixtures, and leakage, there's all kinds of technologies that come in to conserve water. Your need really isn't that dire. But when you look at it from their perspective, the Public Works directors are always going to forecast gloom and doom because they know that there is going to be some study and there is going to be some regulatory reports, review, assessment and questions, and that process can go on for decades.

01:21:54

Rigelhaupt:

It sounds like the two biggest hurdles to removing the Embrey Dam were first building a new water supply upriver and then the funding.

01:22:05

Wiggins:

The funding, there were other issues. There were real estate issues, property owners' issues. There was the canal. The canal would dry up. The canal would be a dead zone. What would happen to the water, what would happen to the fish? Last week I walked along this canal and counted 77 Eastern Painted turtles, these large turtles. This thing is chock-full of life out here. Essentially, the canal functions as a stormwater management pond. It's not a natural wetland, but the city didn't want to see their canal gone, they didn't want to see the water dry up. So you dam up one end of it. It never had free-flowing water going through it. Back in the 1850s you had the Crib Dam, you had boats going through the canal. But when the city says, "We want to see our canal unchanged," we listen to them. We found a way to do that. Initially there was an aeration system put through the canal, so more oxygen in the water column for fish. That was found not to be necessary. There were people afraid that if you make the water too clean it's going to be like an aquarium. We don't want to look down and see absolutely clean water like a swimming pool. There's always going to be people who complain, always going to be issues. But you deal with them one, by one, by one. When you deal with the public, you have to listen and you have to try to understand their perspective and explain. So it's a process of working with people, back to back, [01:24:00] making yourself available, listening.

01:24:04

Rigelhaupt:

What were some of the challenging issues related to real estate?

01:24:09

Wiggins:

Well, for instance, at the water's edge with Embrey Dam you have a waterline. When you breach the dam, and remove the dam, property extends out farther. So whose property is that now? You have to deal with that because people believe that that property belongs to them, it's been in their family's deed record for a century or more. If you allow them to have more land along the river, are they going to be allowed to develop that land? There's questions about property. A landowner on top is afraid that if the dam was blown, it would shake the foundations of his house. So we had to study that. You have to keep listening, you have to keep addressing the issues one by one, and hopefully you get them all. One of the unforeseen issues with the removal of the dam has been the silt that comes down the river. And that has been a problem addressing because one thing a lot of people don't understand is that most of the silt that was behind the dam was dredged and put in upland containment. Also, when you get big storms coming down the river, a lot of bedloads move. And it is not moved just from where the dam was but from way upriver. Some of the data I've seen from USGS show the amount of silt in the water column from these big floods exceeds what was ever behind the Embrey Dam before it was breached. And it ends up down here. I have articles from the Free Lance-Star that go back before the Embrey Dam was breached talking about the silt that comes down the river. Since I've lived in Fredericksburg, there has always been issues with silt. The visual knowledge that there's silt in the river down here. Why is that? Well, one thing, the Rappahannock River is a fast-moving river, it's lotic, meaning fast-moving water, hitting the fall line of the Rappahannock, which is estuarine tidal. Where the two hit, the silt falls out, okay? There's a misconception that the floods, or what they call freshets, wash the silt away. But in my understanding of river geomorphology, it's the big events that drop the silt, and it's the small stormwater events that gradually carry the silt away. If this didn't happen, there would be no river because [01:27:00] more silt would come, more silt could come, it would just build up, there would be no river. There's people who believe that one day the Rappahannock River's going to disappear. They really believe this because of all the silt coming down. But it's a process of bedload movement, and in my opinion a lot of the bedload in the upper reaches of the Rapidan River come from disturbed streambanks. That needs to be addressed, landowners need to be made aware of the amount of sediment that comes off those farms and off those streambanks that are not protected with forest buffers. Friends of the Rappahannock has a goal to do that and has been having success meeting that goal. I had some success with the Army Corps of Engineers working with landowners to restore streambanks back in the 1990s. But they're there. The Rappahannock River, especially its tributary, the Rapidan River, has been tinkered with and farmed and changed. Farming, by its very nature, is land-disturbing. A lot of that silt comes off those farms. If you don't have the buffers there, it's going to come off the streambanks as well. Getting an understanding of the entire system takes a real stretch of the imagination. But what we see locally, we see the silt here and we don't like it. It's easy to blame the Corps, it's easy to blame landowners upriver. But it's a fact that the City of Fredericksburg is here because ships could come up, and this was the head of navigation back in the early 1700s, 1746. Ships don't come up anymore because there's been a change. Another thing, the Embrey Dam was 22 feet high, and it was a lake. When it comes down, there is going to be something below it coming up a little bit, there has to be some adjustment that happens naturally. When the Embrey Dam was breached there were bathymetric surveys done, after the breach, before the breach, to show

that some areas are shallower, some areas are deeper. But, unbalanced, it's still the Rappahannock River, and it has still got its dynamism to create shallow areas and deep areas. But there's still the need to address the source of the silt.

01:29:29

Rigelhaupt:

Were there people upstream that had water rights in terms that were part of the consideration?

01:29:37

Wiggins:

Yes, there were, and that discussion had to happen with our agency, within our legal counsel. But the real estate issues were minor issues compared to the fact that you're removing a concrete structure of that size. How do you do it safely? How do you do it so that it doesn't interfere with fish migration? [01:30:00] You have fish coming upstream in the spring, going back downstream in the fall, you have resident fish. The removal of the dam, after the breach, was a pretty messy process. The river was closed. That upset a lot of people when that work was going on, but it got done. You had a short-term environmental impact for a long-term environmental benefit.

01:30:27

Rigelhaupt:

What were some of the most complex issues, that we haven't talked about, getting to the point where it is going to be breached and the dynamite is going to breach it? Were there other things that would be important to record?

01:30:46

Wiggins:

History. History. There had to be documentation of the Embrey Dam and the Crib Dam behind it. Extensive documentation, a process where we consulted with local historians, the Virginia Department of Historic Resources. We signed an environmental document with the state agency, with Stafford County, with the City of Fredericksburg, to leave parts of its history there for people to understand that it was there. Section 106 of the National Historic Preservation Act. I can't underscore enough how important it is to reach out and find people who know something about the history so you can preserve a little bit of the history. That process was pretty complicated. One of the benefits of removing the dam that we didn't realize was Ballard's Mill, on the other side of the river, of a headrace made of stone that no one had thought of before that was used in the 1700s as a headrace to bring water to turn a wheel that stamped out machine parts for guns. There is a wall out in the river that nobody saw which, you know, adds to the fabric of interpretation of this region and how important it is. Mainly, dealing with imagined and other issues that had merit, all that comes together with meetings, discussions, listening to people, media, questions and answers. There was a long process of that before the Embrey Dam project really got off the ground and happened.

01:32:37

Rigelhaupt:

Who were some of the people you remember being good to work with, strong advocates, leading up and through the permitting process and the years of work it took to get to the point of the breach?

01:32:52

Wiggins:

Well, initially John Tippet with Friends of the Rappahannock. There were some members of Friends of the Rappahannock back then that [01:33:00] kind of pushed the ball. There was state Senator Edd Houck, like I had mentioned before. Councilman, who was on council at the time for the City of Fredericksburg, Gordon Shelton. He was most concerned about removing the dam and leaving some of the history. There were people with the American Rivers association I worked with who had a stake in seeing the dam removed for fisheries, primarily. The American Canoe Association. The list of groups came fast and furious out of nowhere because this project got on the radar nationally. This was a national event during the breach. It took all the different groups coming together, pushing, meeting, getting things going, finally getting everything signed off. But the individuals were actually, in my memory, very few. I can probably think of five individuals that really pushed for the removal of the Embrey Dam, and really got the council members to sit down with the Corps, and really got some documentation going, and studies going. Resolutions passed at the state level and the federal level to make it happen. But once it got steam of its own it was a process that no one could stop because everybody wanted to see it happen. I mean, I can't remember one opponent for the removal of the Embrey Dam, everybody wanted to see it done. It was a good thing. In that effect, it was easy once things kind of got going. It was a project whose time has come. It just got done. But it took about 20 years, really, of meetings, questions, media, efforts that started and then sputtered and ended, there'd be a year or two that goes by. Similar to another project I worked with called the Crow's Nest Natural Area Preserve in Stafford County, Virginia, my favorite place to go canoeing since the 1980s, one day realizing there's a 5-square mile area that nobody lives on that is a peninsula that is surrounded on three sides by water. Not a single structure on there, some of the biggest trees in Virginia. And the more I began to explore that property, the more I became convinced that there could be sizable community support to preserve that Crow's Nest natural area, which it is today, it's Crow's Nest Natural Area Preserve. At the time it was just Crow's Nest, it was private property. The caretaker of the property [01:36:00] gave me the keys to the gate. I'd go in on Fridays and wouldn't come out until Sunday. I got to meet the landowner and got a project off the ground with the Stafford Regional Airport Commission to preserve some land in Crow's Nest, to develop an airport, impact some wetlands, to mitigate by buying 10 acres at a 10:1 ratio. Seventy acres. Seven acres of impact, 10:1. Seventy acres of preservation. Seven and 70. 10:1. That was the first brick in the wall to preserve all of Crow's Nest because the State Department of Natural Resources began coming down, doing surveys, and finding that there were amazing biological qualities that Crow's Nest had. Seeing that project finally be protected and preserved, it was like Embrey Dam, it was kind of like that dream out there that you wish and hope for, but who do you talk to? You get the Trust for Public Land involved. You get the

Virginia Department of Conservation and Recreation involved. You get the U.S. Fish and Wildlife Service, they came down, they wanted to make it into a national wildlife refuge, but the funding sputtered. That kind of died on the vine. Then another group came in and picked up where we left off. Finally, with a patchwork of monies, Crow's Nest got bought and protected. It's a natural area. That project, more than any other thing I've ever worked on, I feel is my legacy that I can tell my grandson, something I feel I had a hand in. Of course, I didn't buy it myself. But I've taken hundreds and hundreds of people out there by boat. My wife used to ask me, "Why are you taking so many people out there? You're spending all your time and money on transportation." But there might be somebody along the way that can write a letter to their congressman and tell them why this area is so important, until we found the right funding agencies to come out and discover it and decide that they see this as fitting their mission. The Nature Conservancy came. The Virginia Department of Natural Heritage, they convinced their agency that there is extraordinary biological attributes at Crow's Nest, we need to buy this and protect it. But they needed money from five sources to put together enough money to buy it, to do the fair market appraisals, find out what that magic number was. Stafford County signed a contract. They purchased it with the help of the state and other funds to make it a natural area preserve. So it goes back to the same principles with working on the Embrey Dam. You've got a big project, you need to find out who the decision makers are, you need to find out if [01:39:00] the local population supports it, you need to find if there is worth. What is the worth in doing this to the environment, and then seeking out the funding to do this to make it happen. Getting everybody on board. It doesn't happen overnight. And the Crow's Nest project, like the Embrey Dam project, at times it felt like a roller coaster, up and down, up and down. The newspaper would have a story about Crow's Nest, finally preserved, but the deal falls through. So you form the Trust for Crow's Nest, and you meet, and you find the monies to get a lobbyist to get the Congress down here, you know, get Congresswoman Jo Ann Davis down here to see Crow's Nest for herself to understand why we want to protect this place. That's something that I did outside of my work that I feel very, very proud, that I put my effort into something that actually came to fruition. That I can go out there now and lead groups and show them some natural wonders of our little universe here in Fredericksburg, Virginia. If you look at a satellite map of the Chesapeake Bay, you know, done in colors, the last big chunk of green left is Crow's Nest, it's right there, it's a big, green chunk of land that hasn't been farmed or developed, clearcut down to the ground. It's going to be there forever, beyond me. It would seem like the great effort of our life should be to involve ourselves in an effort that outlives our life. We're just here, we're just temporary but we can do something that has benefits for future generations. That is, to me, the ultimate goal in life, to have that.

01:40:54

Rigelhaupt:

Part of what I'm curious about is that I can hear Hal Wiggins, the citizen, is a strong advocate for environmental preservation, and the Army Corps of Engineers was shifting in that direction during your career.

01:41:15

Wiggins:

Yes, absolutely. Absolutely. Ten years ago the Corps would say that we are not for or against environmental preservation. If you asked them that, any member of regulatory, where I worked with 40-plus people, would say that we do stand for protecting the environment. But we'll work with the public to find a way that they can do their project that has minimal impact on the environment. So I got lucky to find myself in a field office. I didn't just happen there, I had to work for that. But once I got in the field office, there were projects bigger than me I had to deal with. I mean, we didn't have internet, it was just me. [01:42:00] That forced me to look beyond myself and have faith that if you keep at it, keep working at it, you'll find a way, like anything in life. If you want it bad enough, it will happen. What I didn't know is that the area that I found myself in happens to be the most fantastic place one could live in terms of its natural resources. Every Sunday I go out canoeing on a different stream or river with my friends, we have a group that goes out. You're hard-pressed to find other places to do that, to escape in the outdoors. What I didn't know is that this area had a great amount of historic properties, rare species, and natural areas that are untouched, a few of them. I didn't know that, and I didn't know the rate of development was so prevalent, the suburbanization, in particular, of Spotsylvania County, Virginia and Stafford County, Virginia. Those were two counties that had me hopping every minute, I couldn't sleep at night. I'd be reading development plans, circling with a red ink pen, saying, "This can't happen, they're not going to destroy this stream." But you get up the next day, you work at it, you make the phone calls, you engage people, much like Nancy Milroy engaged me, Jess Rigelhaupt engaged me. You explain your purpose and your need. I'll help you any way I can, in my own little way. I began to realize that it's really true, you can think globally, cosmically, about your world but you can act locally. You can make a profound difference locally. Probably, the best thing that I've ever done, that I feel the most proud of, besides protecting dirt, land, water, is working with young people. Interns have come through me. I've gotten them started, I've given them a little bit of what I have, my knowledge. A little bit of what I have, the contagion, to go out there and protect the environment. You protect it by working with people, finding a way. That's kind of a generative thing with me, that these are like my children, that they go on. They carry the mantle, they see how important it is, and they make an impact in their regions of the country. And I hear from them, all over. It's amazing to see that because, you know, you can't protect something unless you love it, you can't love it unless you know about it and have been given the knowledge about how important it is. So you learn about it. Who's going to teach you that? Who's going to show you your way to see how important that is, and why that's important? Why that's important over there more than that over there. [01:45:00] Those are decisions we all have to deal with if we're going to live on this planet. But planning is the key, planning is the key. Where the environment is concerned, you have to tread very carefully and make sure that if you make decisions, they are not contrary to the public interests, as we call it. That it's not going to hurt somebody, it's not going to hurt an animal, it's not going to hurt a plant. You can't guarantee all that, but you have to make the best-informed decision you have at the time.

01:45:33

Rigelhaupt:

From my understanding, with a government agency like the Army Corps of Engineers, or any government agency, is things change as administrations change. If my math is correct, you worked, at least, under four different presidential administrations. What were some of the changes you observed from George H. W. Bush to President Bill Clinton to George W. Bush to President Barack Obama?

01:46:03

Wiggins:

Oh, um.

01:46:04

Rigelhaupt:

That's a lot to ask.

01:46:06

Wiggins:

Yeah. Well, I didn't like it the first couple of years at my job position to find out that our manual for defining wetlands was thrown out the window and nothing could be a wetland anymore. That made me want to go jump off the I-95 bridge, you know? But the government, in the way it changes, it changes very slowly. The 1989 Wetland Delineation Manual that was forged by five agencies was written out of law. There were no more wetlands. But the Corps of Engineers fell back on its 1987 Wetland Delineation Manual. For this reason, it made a lot of sense. Under George Bush there was another manual that would have eliminated wetlands. It just seems that all of the threats that have come from different administrations, there's a lot of bluster, there's a lot of threats, there's a lot of really weird things you see come through Congress. Federal appropriations that zero-out the Clean Water Act, you know? But none of them stand the light of day. They're going to get a veto or they're going to get a Senate look. It always seems that the Congress is going to try something, every year, you know, that's going to be deleterious to the environment. We have checks and balances in the government that keep things strong, and what I have found is that there have been adjustments, and there's been a pendulum. The pendulum can swing really far to the right, which means that, you know, you have to be a little more respectful to the landowner. But then the pendulum the next year can swing really far to the left, which means you really have to just close the door on environmental impacts. Somewhere down the middle, you know, there's a way [01:48:00] to approach it where nothing changes. If the public wants to see the environment protected, it will be protected. And I don't see that changing from now until the foreseeable future because the government has a lot of different parts that move together, and the media picks up on the most controversial parts. Sometimes it feels like you're flying through flak, that you're trying to navigate your plane and flak hits it a little bit this way, a little bit that way. But in balance, things don't change a whole lot, I haven't seen that. I've seen the regulations change a little bit here and there. I feel very strongly about the future of the regulatory program and where it began, how it began, where we are today. It can always be improved. As much as I feared waking up one day with no job and nothing to do, it never happened. I've had people tell me that they thought the Clean Water Act

ended 20 years ago. No, no, there's still people going to court, being charged with wetland violations who step over the line. Talking about politics and the way regulations and laws change didn't really affect my work, by and large, over the two-and-a-half decades in the Corps. Every day there is a new challenge, there is a new way to approach environmental regulation. The law is still the law, the regulations are still the regulations. Little tweaks, little tweaks, there have been little tweaks. But it's still the same. Someone has a wetland, they want to destroy it, we just say, "Let's find another way." That's what we are at task to do. That's all I've been asked to do. That's the only thing that I feel I was good at in the Corps, being able to talk to people, engage them, show them the science, show them why it's important to protect that wetland, make them feel they own a little piece of the Clean Water Act. Everybody's being treated equally. There's a 1,300-acre development out here called Fawn Lake, and there's deed restrictions on wetlands throughout that entire 2,000-acre development. People who buy lots, they can't fill the wetlands in the back. They find out about the wetlands, they call me asking, "What does it mean?" I explain it to them that those wetlands are intact. There's deed restrictions on projects all over this region that came from reviewing. In an initial project, a developer wants to build a road into the development, [01:51:00] they cross a stream, they need a permit, they need to put utility service through, they're going to get permits, but they protect everything else, the balance of that. To a homeowner who moves in, they don't know all this has happened. All they know is they've bought a lot that had a deed restriction on it. Well, that was put there by a developer to assist in getting his permit from the Corps for those small impacts.

01:51:26

Rigelhaupt:

How would you describe the removal of the dam after it was breached? Was it relatively straightforward because it had been planned, or were there things that came up when you were physically removing parts of the dam?

01:51:42

Wiggins:

Yeah, when the dam was, well there were three parts. There was the excavation of material behind the dam, the disposal at upland containment, then there was the breach followed by the deconstruction and removal of the dam. And one would say there was a fourth part of that, and that's where a little sliver of land was left that maybe should have been dredged. The Corps came back and dredged that, it was about 20,000 cubic yards. The Game Department has information they've given me to show that the fishery resource has been restored, to a large extent, upriver. That has not been there, historically, for over 150 years. That's very important. That's data that I have here with me, I saw this morning. I wanted to get a little prepared, I knew you'd ask me questions. What the public doesn't see a lot is measurements taken by agencies of the water column. What's in it? How has it improved? Fisheries improved tremendously. But what the public does see physically, again, is the silt, right? But I would never, ever, ever say that the removal of the dam wasn't worth it because the silt has been there since years before the removal of the dam. I know this, I've been in the region long enough, I found those articles. I spend a lot of time cutting articles out and making these really nice tableaus that I scan and

make PDF files. I've got hundreds, and hundreds, and hundreds of articles that I have archived of my work to include, probably, several hundred of the Embrey Dam project, and I've got stories of the silt before the dam was ever breached. But what has gotten in the media is that there's silt now behind the dam that has gone downriver. There's no mention of the dredge work that was done to remove the sediment before the breach because it's hard for the average person to follow all that history. So in my own mind [01:54:00] I feel that the removal of the dam was one of the great things that has happened in this region, and it happened with everyone getting behind it to see it happen.

01:54:22

Rigelhaupt:

Well I think we're coming up on time.

01:54:24

Wiggins:

Alright.

01:54:27

Rigelhaupt:

I have a sneaking suspicion this isn't going to be the last interview.

01:54:30

Wiggins:

Alright.

01:54:30

Rigelhaupt:

So I'm not going to ask my traditional last question, but is there anything, in terms of coming to mind, that is an important part of the story of the Embrey Dam removal that we didn't talk about today that you'd like to make sure we record right now?

01:54:49

Wiggins:

Not really. I think that there's information that I've witnessed, that I've given you. But I also have a book that I've taken together to create about the history of dam building on the Rappahannock River. What a lot of people don't realize is that the Rappahannock River navigational canal system that ran from Fredericksburg upriver for 53 miles, there were dozens of small dams on the Rappahannock River that fed water into raceways for boats to come down. It's just another facet of the Rappahannock that you can see visually. It's pretty powerful. And the Rappahannock being dammed at Fredericksburg was another component of that because the original Crib Dam gave water to the Rappahannock canal that provided commerce around the city. It's still right out here. It later became a water supply canal for the City of Fredericksburg,

for their intake. But there's so much history right here where we're sitting in Fredericksburg, on this property, Fall Hill. It's no coincidence that Friends of the Rappahannock is on a property that is extremely historic. I'm writing about Fall Hill, I'm doing a chronology and getting some anecdotal stories. How did this building get to be here? That's a story in itself. How did the Friends of the Rappahannock come by land over here? That's a story. Why am I here? Who owned Fall Hill? Who was Francis Thornton who came to Fredericksburg in the 1740s and built the mill? Who is Butler Franklin Thornton, does anybody remember her? I do. In my gallery next door I've got a photo of her on the wall. She used to meet with me and give me lemonade and tell me stories about Katina, the Indian girl who lived here. Her ghost still resides. Francis Thornton's hand servant. There's lots of little stories to go [01:57:00] into creating the interconnectedness of this region and right here. I just feel lucky to be alive and live through this period, and will live out my days, hopefully, right here where my son and I came to look for a Boy Scout project 30 years ago. So it's gone full-circle. I stumbled down here, met a man named Bill Micks, started paddling, started seeing things. And it contributed to me understanding how important the Rappahannock River is for our region. Thank you.

01:57:42

Rigelhaupt:

That's a fantastic place to end. Thank you.