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Tampa Bay Oral History Project  
Oral History Program  
Florida Studies Center  
University of South Florida, Tampa Library

Digital Object Identifier: T43-00004  
Interviewee: Scott H. Emery (SE)  
Interview by: Ann Hodgson (AH)  
Interview date: June 17, 2015  
Interview location: USF Library  
Transcribed by: Megan E. Nowell  
Transcription date: June 29, 2015 to July 22, 2015  
Audit Edit by: Brendan Driscoll  
Audit Edit date: July 24, 2015 to July 29, 2015  
Final Edit by: Jane E. Duncan  
Final Edit date: August 4, 2015 to August 10, 2015

**Ann Hodgson:** Good morning. This is Ann Hodgson with the Tampa Bay Oral History Project and I'm here this morning with Dr. Scott Emery. Scott is the wetlands director at the Environmental Protection Commission of Hillsborough County. Welcome Scott, it's so good to have you here with us today.

**Scott H. Emery:** Good morning, thank you very much.

AH: I'd like to start just by asking you, how did you become interested in the natural world? How did you and your family get to Florida? What's your history?

SE: Okay. Well, I was born and raised right next to a wildlife refuge in upstate New York so I didn't have any, other than my brother, I didn't have any playmates, but I did have this, I guess it was about 500 acres as I recall now, right literally in my backyard kind of thing. So I, at the very early age, I started after school kind of exploring out in there and that's probably the basis for it. And my mom and dad pushed education pretty hard for both my brother and myself. My mother wanted us both to go into medicine. My brother became a medical doctor and I stayed in the research area for ecology.

Spent my childhood right next to that wildlife refuge and then went to college, got my undergraduate degree in Massachusetts at Williams College. And they had an experimental forest there, and so I spent a lot of time doing work out in the experimental forest.

And then got my master's down at Clemson, and they have a huge amount of land holdings. And I ended up moving into the aquatic realm when I got to Clemson and then for my doctorate at Stony Brook, State University of New York. At Stony Brook I started working on sharks and ended up publishing a handful of articles on large sharks, mostly great whites and makos and things like that, and dissected some of the largest great white sharks that have ever been caught.

And I was pretty well set, I thought maybe, to get myself a professorship when I got the PhD. And then the year I was about to graduate, the navy, who had been funding a great deal of research in sharks, flew a bunch of us great white shark researchers out to the University of Southern California where we each gave papers, and they, at the end of it, the head of the Naval Research Foundation got up and said, "I have good news and bad news."

He said, "The good news is that the navy will continue to fund research directly related to developing effective shark repellants." And about two of the 50 of us said, "Yay!" He said, "The bad news is that the navy will no longer fund a lot of the more basic shark research that's not directly related to developing effective repellants." So most of us in the room went, "Uh-oh."

Fortunately, I guess, in hindsight, I also had started working part-time as an ecologist for a big engineering firm in the New York metropolitan area because I needed to pay my student loan bills and everything. So they ended up, they either would transfer myself and my wife-to-be to Alaska, where I was doing a lot of work up in Alaska, loved Alaska, boy, it was spectacular country, or to Florida, where the company my wife works for, she's a hydrologist, and the company she worked for would've transferred us down to Florida. We both didn't like the New York metropolitan area, and so we decided to come to Florida.

So we came to Florida with my wife's company and I transferred out of the shark business because it wasn't going to be a way to bring in grants anymore. Fortunately, because of my consulting work, I'd done a lot of wetlands work in Alaska, Central America, a lot of the Northeast, some in Texas. So I was developing, kind of got in on the ground floor of the wetlands, water quality, water resources aspects around the time that NEPA, the National Environment Policy Act was coming in. And EPA was kind of created and Clean Water Act. So I got in on the ground floor there.

So we moved down here in January of 1984. And then my—I was able to obtain a position at something called the West Coast Regional Water Supply Authority<sup>1</sup> as an ecologist for them. They were a relatively young organization. They'd only been around for six years, I think. And it was an experiment in regionalizing the development of water supplies for Pasco, Hillsborough, Pinellas, and the cities, the three county area. And I found myself embroiled in something called the water wars very, very quickly. I was an ecologist there for, and a water quality specialist, for about a year and then they made me the first director of environmental services there. And so I developed a lot of the monitoring programs for the well field areas, and the whole concept of well fields was new to me.

If you're not in Florida most of your water supplies are mostly coming from surface water reservoirs, that's the traditional way. But down here in Florida we're largely groundwater-based in terms of where we get our public water supplies from. And back in — the first well field was actually developed, a big well field, was developed around 1930, actually right where I lived. We've lived for 30 years in the same house out in Odessa, since July of 1984, so it'll be 31 years in the same house. And it turns out our house is right next to this big well field that's actually in Hillsborough County but it's owned by the City of St. Petersburg.

And that was the well field that really started the whole water war business in the Keystone Civic Association, which is a very active, local, civic association, developed, at least in part, to try and battle the citizen perceptions, which turned out to be totally correct, that the well fields were causing all the lakes out in this area, and there's a lot of lakes, we live on one, the water levels in the lakes were becoming depressed. And also in the wetlands, not too many people go into wetlands in Florida, except crazy skunk apes like me, but the lakes were very visible and you could see that there's a lot more shoreline than there used to be and people couldn't enjoy them and waterski like they wanted to.

And so there was a visual obvious something going on. And then, when St. Petersburg developed another well field called the Section 21 well field, which is now in Lutz up in Hillsborough County, and then Pinellas bought a lot, well, actually leased a whole bunch of land up in the far northwest corner of Hillsborough County and northeast corner of Pinellas called the Eldridge-Wilde well field. And then St. Pete bought another section of land up in South Pasco just north of Lutz Lake Fern Road in Hillsborough and developed a third well field for them. So there were three well fields that were owned by St. Petersburg, none of them in Pinellas County. And then you had the Eldridge-Wilde well field, mostly in Hillsborough County, that was owned by Pinellas County.

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<sup>1</sup>The West Coast Regional Water Supply Authority was formed on October 25, 1974. The authority was charged with dispute resolution among Tampa Bay communities regarding well fields, shared water resources and over-pumping.

And so the citizens who lived in Hillsborough and Pasco were getting more and more upset with this, and so the legislature created the West Coast Regional Water Supply Authority in 19—I think it was '77, '78 timeframe; I could be wrong on that, to develop regional water supplies for the region in a way that minimizes adverse environmental impacts. And that was my role to try and figure out how to do that. And so I spent eight and a half, nine years as the director there, the director of the ecological service, and then they reorganized and I became the first director of resource management there.

I ended up with like, two-thirds of the organization. I operated the well fields after the last couple years I was there. And that was kind of interesting because they allowed me to rotate the wells around and try to develop a little program that would try to minimize the rate of change in the aquifer systems to minimize the rate of decline in the wetlands and the lakes. It was a tremendous learning experience for me. I remember I had a nice long talk with one of our colleagues who's retired here at USEF, Mark Stewart, who was a geologist here for many years.

And I asked Mark, I said, "Mark, was it a matter of the hydrogeological science of what would happen when you'd sunk a well 700 feet down and you cased it to 200, that it was just hard to believe that you'd have that kind of an effect from pumping that deeply underground on surficial systems." And he said a lot of it was that it was just difficult to understand that you'd have, even with 2-300 feet of dirt, sand, rock between you and the bottom of the lake, you're still having an effect. The draw down was more substantial.

I've been fortunate that over the 31 years I've been here, I've been kind of involved in the development of the hydrogeological sciences and the ecological water resource aspects of being able to determine, pretty accurately now, that when you put a well in, you pump it at a certain rate, what's going to happen to the surrounding wetlands and lakes and rivers based upon the basic hydrogeology of the area.

And for me it was a tremendous learning experience because I didn't know anything about groundwater, but now I know an awful lot about hydrogeology, more and more than I probably should know. I'm probably a little dangerous now. So, through those years at the water supply authority I ended up spending a lot of time going to the different lakes and wetlands in the three-county area, and that just peaked my interest in the subtle beauty about the abundance of life in Florida. I mean Florida is—I said this at Rich Paul's funeral, you don't have the Grand Tetons here in Florida. We don't have tremendous mountains and vistas, but our beauty here is more subtle. But if you spend a little bit of time looking at it, it's a spectacular, spectacular ecological place to be.

When I left the water supply authority, I started my own little consulting firm, a one man, one person; it's always been a one-person consulting firm. I fired myself a couple times. And quickly was able to secure a contract with Hillsborough County and ended up becoming the water resources advisor to the county administrator, Fred Karl, at the time. And I ended up following through for almost 20 years and I had that contract and then became the advisor to Dan Kleman—who was Fred's successor—and then Pat Bean, all the way up until I took the job at EPC [Environmental Protection Commission], so about three and a half years ago. In addition, I was able to do a lot of work for three or four of the different water management districts in the State of Florida, became a consultant, did a lot of work for SWFWMD<sup>2</sup>, Southwest Florida, St. John's, Suwannee, and some with Northwest.

And all of it, well, not all of it, but an awful lot of it was related to indirectly or directly with developing minimum flow in levels methodologies. So how do you determine what's a—we used to call it safe yield in the old days or sustainable supplies. But now we call them minimum flows and levels, and that determines the level to which you can take water out of something before you start causing significant ecological or hydrologic harm. And that's been an awful lot of fun. As you know, you've been out with me on a number of the wetland areas, and we'd go out to some pretty spectacular wetland places that no one else ever goes. And we've actually done, I think, a great deal of good work.

I've participated in a number of methodological improvements, I think we've made in determining—being able to go out to a site, not having to have put in a staff gauge and monitor it for 30 years, but go out to a site and just use the hydrologic and ecological factors out there to be able to get a pretty good idea of what the water regime is. Using soils as well—hydic soils<sup>3</sup> and non-hydic soils, and get a pretty good picture of, not only the health of the wetland system, the hydrologic health at least, and the vegetative health, but to also get a pretty good idea of what might be causing the problems, if there are.

I developed a little method that SWFWMD likes now, where we're able to go out and measure the distance between the lichen line at the base of cypress trees, for example, and where the normal pool indicators, like your buttress inflection points<sup>4</sup> are, and if this

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<sup>2</sup>Pronounced "swiftmud", the Southwest Florida Water Management District manages water and other related natural resources for their continued and sustainable use.

<sup>3</sup>Hydic soil is soil which is permanently or seasonally saturated by water, resulting in anaerobic conditions, as found in wetlands.

<sup>4</sup>Buttress inflection points refer to the point of most dramatic slope change (inflection) in the swelling (buttress) of the Pond Cypress trunk which indicates the waterline and aids in the assessment of normal pool (average wet season water levels).

lichen line, because lichens don't like water, if they're underwater for a day or two they die off; and so you get this really nice lichen line on the trees. So that's kind of, almost, a minimum flood level. And so what you really want to find in a healthy wetland system is that lichen line needs to be, maybe, four to six inches above the normal pool, which is, kind of, defined as where the water sits for about a month or so in a typical wet year. And what that tells you is, the wetland can fill up above its normal pool by maybe a half a foot and then it's to the lip and then it starts sheet flowing everywhere.

If, when I go into a wetland now, if I see that lichen line down here, really close to the normal pool, I automatically know there's probably some type of structural alteration. There's probably a ditch somewhere. I don't have to walk the whole two or three mile circumference of the wetland, I can probably pretty well tell you that there is a ditch somewhere that's causing that wetland to drain out. And I can usually pretty well tell you, based upon the normal pool, about where the elevation of the base of that ditch is. And so I kind of enjoy doing that. It's fun, it gives you a quick look at it. And so then you can go back and you just look at Google Earth or some of the other aerals and you can determine, Yup, there's the ditch. Look at that, just like we said. I've enjoyed that aspect of it a lot.

I've gotten involved in a lot of the riverine and springs MFL [minimum flows and levels] work too, sometimes as a consultant to the water management, sometimes as an advisor to Hillsborough County or one of the other local governments who would hire me to make sure that whatever's developed by the water management district, you know, passes scientific muster. So, through that, I've been to thousands of wetlands in this part of the state. Very few I have not stuck my nose into, at one point or other, in this part of the state.

I also had an opportunity for portions of two years to do a lot of the water quality and benthic sampling in Tampa Bay for the Environmental Protection Commission before I took a job there, they were having difficulties with their sampling boats at the time, and so they hired me to do it for them. So I bought this used boat, fixed it up so I could use it as a scientific sampling boat and then spent portions of two years out there, and I learned an awful lot about Tampa Bay from those two years, actually doing the field work out on site. And it's a pretty spectacular piece of water, body of water.

And it's not the—and then I also am kind of proud of all the time that I have gotten to know the Cone Ranch, now called the Lower Green Swamp Preserve, about a 13,000 acre ranch. It was originally going to be purchased by the water supply authority, where I was director, to be Hillsborough County's first real big well field, because in the '80s and '90s each local government had their own well field. St. Petersburg owned their three well fields. Even though they weren't in St. Petersburg, they owned them.

Because Hillsborough County developed later than Pinellas and the city of St. Petersburg, it didn't really have its own major well fields until the '80s. And I helped them develop two or three of their own, but the ones that we developed for Hillsborough up until Cone Ranch had been, instead of what we call dedicated well fields, where you'd set aside say, a couple square miles of property, you'd have what we call dispersed well fields, where you'd just buy an acre of land and you put a well there, and then you go down half a mile and you'd buy another acre of land and you put a well there. So Hillsborough County had two of those and they were looking at the Cone Ranch, to buy that, to be Hillsborough County's really big well field.

And so I started doing ecological work out there back in 1986 and had been privileged enough to have them worked out there ever since. First, for the water supply authority and then when the county decided they, they actually did the purchase. We actually, we purchased it at the water supply authority and then transferred it to Hillsborough County ownership. But then Hillsborough County, when they hired me as a consultant, they told me to keep working out there. So I've been very, very privileged. And you've spent a lot of time out there with me. It's got a lot of potential. It's a heavily ditched and drained agricultural property for the most part, but it's got an awful lot of potential to be restored.

And then you and I worked on the management plan for the county back in, we finalized in 2009, 2010 and I'm pleased to say that they are going gangbusters implementing a lot of what we put in that management plan. So I'm very, very proud of that. So this is going to be—our kids and grandkids are just going to go out there and they're just going to be wowed. They're just going to be, it's just going to be almost like the Green Swamp. Anyway that's kind of, that was, I think, a highlight of my 30-some odd years here.

I have gotten embroiled because of the water wars and the politics of it. I learned a lot at the water supply authority about the economics of water and water supply. An awful lot of people would say well, you know, Why didn't St. Petersburg just stop pumping the well fields?

Well, point of fact, public health and safety requirements say that if you turn on your faucet, by law, you better have water. And so even though I was running the facilities at the water supply authority, I did not have the power to turn off a well field, even if it was causing environmental damage. The best I could do was rotate my pumpage around, so we all used to try and stay a well field ahead, so I always had an extra well field so I could rest some wells here and then go over there. And that's an expensive proposition to do that. It's hundreds of millions of dollars involved in water supply development, either groundwater or surface water. And it takes seven to ten years to develop a big regional water supply facility.



So you have to plan in advance, you have to do a lot of speculation or projections of what your population and water demands are going to be, and elected officials have always been very, very reluctant to raise water and sewer rates. Now if you look at it technically or engineering-ly, scientifically, water's cheap. You can turn on your water on your faucet and you can get clean, safe, drinkable water for probably, say—well, it depends on the jurisdiction area—but say \$3 per thousand gallons. A thousand gallons of water is, let's see, seven pounds per gallon. That's 7,000, so that's three and a half tons.

So you can get three and a half tons of clean, potable, drinkable, safe water delivered to your faucet for three bucks, four bucks, something like that. You can't get anything else delivered to your house. You can't get dirt delivered, three and a half tons of dirt delivered to your house for three or four bucks. You can't even get contaminated dirt delivered to your house for three or four bucks. So, it's incredibly inexpensive.

And a lot—but still, water and sewer rates are something that elected officials do not like to deal with and it's—in the '80s and '90s, the local commissioners and councilmen I used to work with would say, “Scott that's, we call that the third rail of local politics. You don't want to touch that third rail and propose increases or you're going to get electrocuted. Meaning you're not going to get reelected.”

I think part of it, people don't talk much about it, but I think part of it is the fact that the water portion of your bill is not all that big but they use how much water you use to calculate your sewage treatment bill, and that's the bigger chunk of it because treating dirty water is more expensive than treating clean water. So when you get your water bill that they, the two of them are together and, say it's 100 bucks, maybe 70 of it, dollars, is for the wastewater and 30 [dollars] is for water, but most people don't separate it out mentally.

And it's still an incredibly good deal but it's difficult to get the public to understand that water is a very, very precious commodity, and that our environment needs to have their fair share of it as well as us. And so we went through the water wars. I've testified a handful of times during the water wars. I ended up leaving the water supply authority largely because the new executive director who had come in did not have the environmental sensitivity or bent that my first boss did.

My first boss, Gene Heath, was there for most of my tenure and he did the best he could absolutely do to balance the needs of the environment with the demands for water. His successor wasn't nearly as sensitive to our mission, which was to develop water supplies

and minimize adverse environmental effects. He didn't buy into that as much, so it became more problematic, being an ecologist working at the utility, to do a good job.

And I kept asking for continuing to have an extra well field, keeping that well field in advance so I could keep rotating around. And then he said, "Nah. We're not going to do that anymore. We're just going to, we've got a permit from the water management district. And if we have a permit from the water management district to pump a 190 million gallons a day, well then, by golly, that's their responsibility." And he and I used to disagree about that. And when it became clear that I wasn't going to be able to rotate my pumpage around and minimize the effects, I resigned.

That's not what I put in my resignation letter at the time, but that was the basis for it. And then I became a consultant for the water management districts in Hillsborough County to try and effect the change in how we did business. And what I'm about to tell you is a story that very few people know, but I was a consultant for Hillsborough County. They even gave me an office in the county center that they wanted me there during board meetings in case they needed to talk to me about something.

So, one day I get a call from Ed Turanchik, who was one of the county commissioners then, to come down to his office. So I came down to his office and sitting there was Jack Latvala who at that time was, see, I think he was, I'm not sure if he was a Pinellas County Commissioner or in the senate at the time, but they sat me down and they said, "Scott, we would like to talk to you about how you modify the water supply authority so it works better."

And so for about an hour, kind of like I'm doing now, I just kind of explained to them how the water supply authority that I used to work for worked, and what I thought you could do to make it better. And to make a long story short, the old water supply authority, each well field was owned by an individual government, member government. If you wanted to develop a new water supply, either ground water or surface water, desal [desalination], anything like that, you had to, each member of government could say that they were going to participate financially or weren't. And so it was very easy for a couple of the governments to say, "Well we don't want to participate in a desal plant."

So they could just shut the whole thing down and you'd never have a desal plant. And so each member of government owned the water coming out of a given well field. And each of the well fields, the cost coming out of each of the well fields was different. The older well fields, the bonds, the public bonds that had been issued to pay those things to develop the well field, had been paid off. So your older well fields, to pump water out of the older well fields and deliver it, was cheaper than a new well field where you still had to pay off the bonds.

So that created a situation where even if the newer well field was more ecologically sound, we did it in a better way then, you still pump, you still, there was an economic incentive to pump the old well field harder because it was cheaper. And so you might say, “Well what difference does the price make?” Well, say it costs 30 cents, physically, to pump 1,000 gallons out of one of the older well fields. The utility still charges the two to three dollars. So they’ll make \$2.70 profit. That’s not really profit to them, but then each municipality or county can then utilize that extra money for other things that they have to do. So it was each member of government liked to have the older well fields pumped harder because it was less expensive for them.

So one of the things that I said to Turanchik and to Latvala is you have to make the water from all the sources, surface water, groundwater, cost the same, so there’s not no longer an incentive to pump the older well fields harder or to take groundwater versus surface water. So there should be one flat rate for any water that’s supplied by the water supply authority, and that’s what it is today. And another thing I said was that the old voting system needed to be modified so that each county had three votes. You could have two county commissioners in a city, like we do City of Tampa, and two county commissioners.

Or you could have, if a given county didn’t want to have a city kind of thing, but each county would have three so you’d have nine total members, so you wouldn’t have a tie and that majority vote rules in all cases. So a member didn’t have veto power, and that’s what they do now. Now we have nine members on the board and it’s now called Tampa Bay Water. So, there’s no difference in the sources of the water in terms of cost. All the member governments turned over or sold their individual rights to the well fields to Tampa Bay Water, so Tampa Bay Water now owns these facilities. So no member of government has a veto kind of thing, and that’s worked well, and I think the nine member voting membership with majority rules has worked quite well, too.

Very few people know that that’s, kind of, how the whole thing started. But the old water supply authority that I worked for had an awful lot of good things, aspects to it, but it was flawed. And I think the new Tampa Bay water, I call it new but it’s been around for, what, 15, 17 years now and doing well. I think it’s a much better arrangement.

AH: Scott, we were talking about the transitions in water management and well field management in the Hillsborough or the tri-county area. Let’s continue the discussion and talk a little bit about what has happened in terms of well field management and what changes we’ve seen.

SE: Back in the '90s we had the latest round of the water wars and it was nasty because there were hundreds of millions of dollars of well field infrastructure involved. And we had on one hand—and I was representing Hillsborough County. We had Hillsborough and Pasco and the water management district on one side, and we had Pinellas, St. Pete, and the water supply authority on the other side fighting over how much water they should be able to get out of the different well fields. We wanted them to be reduced. Pinellas, St. Pete, and West Coast [Regional Water Supply Authority] were saying, “No. We’ve got a permit, and we have a valid permit and we want them renewed.” So it was nasty.

But the hearing officer who wrote the recommended order, one of his comments under the findings of fact was that the impacts that we were experiencing from the over pumping in the well fields was adverse by any definition of the term adverse. Because one of the arguments was, “Well, what constitutes adverse?” So on the technical side of things, our side, I think, clearly won the battle in terms of the legal thing. However, under the legal implications of the hearing officer’s proposed order, the hearing officer said, “Well, but on top—even though, yes, there are adverse impacts under any definition of the term, but the water management district knew about these impacts for years and didn’t do enough to reduce them.”

And so our side was thinking, Hmm, the inability to have reduced the well fields earlier may be hurting us, Pinellas and St. Pete, and the water supply authority had said, “Whoa, clearly we’ve lost the scientific aspect of it.” So that forced us to get together and we came up with the Tampa Bay Water model, which I just mentioned before the break, that’s kind of how we started it. And the Tampa Bay water model combined with something called the governance agreement and the partnership plan, which took a number of, 18 months to 2 years to hammer out.

It was a group of 18 that did it and I was a member of the group of 18. And we hammered out both the governance agreement and the partnership plan, and both have been very successful to this day. And so as a result it forced Tampa Bay water, which was the newly created son of West Coast [Regional Water Supply Authority], to develop alternative water supplies: surface water and desal, and to reduce the pumping in the well fields. So before the Tampa Bay Water creation, West Coast had permits from these different well fields for about 190, 192 million gallons a day.

And they were pumping about 150 or 160 million gallons a day, actual pumping. The agreement required them to reduce down to no more than 120 million gallons a day by a certain date and then three or four years later to bring it down to no more than 90. So we actually knocked the pumping from the well fields in half, a little bit more than in half, over about a ten-year timeframe because we put up the big surface water reservoir on, we put the largest desal plant in the United States online. And as much as I had been out in the wetlands for—since the mid-'80s, probably as much or more than anybody else.

Even I have been astounded at how rapidly the wetlands in and around the well fields have come back when they've reduced the pumping in the well fields. It's been, it's been nothing short of spectacular. In fact now, at my job at the water supply, at the Environmental Protection Commission, we're not getting any complaints about low water, we're getting flooding complaints all the time. (SE laughs)

It's almost funny, like you all want to call the water supply authority and say, "Hey, can you turn the well fields on a little bit? The water's too high here." It's been—the recovery—hydrologic recovery, and also how fast the, at least the herbaceous wetland vegetation, has come back in a lot of these systems has surprised even me. I knew there'd be a rebound but I didn't anticipate the level of rebound that we've received, so it's tremendous. We actually have wet wetlands all over the place and so it's been a success. And Tampa Bay Water has kept their part of the deal. They have kept the pumping from the well fields down to 90 [million gallons a day] or below. They've been using the surface water systems very efficiently.

Another thing though that I want to think is important to mention is that the whole three-county population of the three million, three and a half million, whatever we have in the counties, three counties now: Pinellas, Pasco, and Hillsborough. We have collectively lowered our use of water, our per capita use of water, substantially, in the past 20 years. I think when the water wars first started, in the early '90s, the average was probably, maybe 170 million—170 gallons per day, per person, somewhere in that area, and the goal was to get it down to 150 in certain areas and down to 130.

I know in Hillsborough, the per capita in Hillsborough has, at times, fallen below 100 gallons per day, per person, which is spectacular. And you don't hear of people having to not water their lawns and you don't have to hear of people not taking showers. So there has been minimal inconvenience to the population of the three-county area, and we've been able to extend our current water supplies well into the future just because we're not using, we're using about half of what we used to use 20 years ago, and that, I think, is tremendous. And I think the citizens of the three-county area need to be applauded for that.

And I think California could take a page or two from us on how to do that with their current water crisis. But the recoveries have been very good in the wetlands and the lakes, so anybody who goes around and looks, drives around in the three-county area and looks at the lakes today will notice that they're a lot higher than they, a lot of them are higher than they've seen them in the past. And some of that in and around the big well field areas is due to the major reduction in the well fields. So I'd also like to mention that

the water management district concept is one that is relatively unique in the 50 states. I'm not saying it's totally unique but it's relatively unique.

And the folks who were the architects of putting that together, back in the '60s, should be applauded because I think the water management district concepts, which are based not on political boundaries, but on basin boundaries, either surface water or ground water basins, some concept. So it's their political subdivisions but they're based upon natural, ecological, hydrological boundaries, not politically drawn boundaries, and that in itself is a very unusual thing for a political animal.

Second thing is, each one of them has a governing board. And I remember talking to a former state senator and arguing, as a young whippersnapper, at the age of 30, "Well, they need to be elected if—they need to be elected by the people because they have taxing authority and they should be elected."

I remember he, he's dead now but he was a very wise man and he just looked at me and smiled and he said, "Scott," he said, "You don't want to get politics any more involved in water than you have to. And these people are appointed, they're not paid, so there's no incentive for them and their job is to make the best decisions, for the long term water resources, for their particular basin or area."

And I was skeptical but now having 30 years of hindsight, he was right. He was right. That's maybe one of the few exceptions to this where it's better to have them appointed so they don't have to run, they don't have to pander, they don't have to work up votes. They're there, and it's a lot of work, these people aren't paid a penny. It's a lot of work for them to make these decisions and a lot of their decisions can then be modified over time. So the whole concept of water management districts allows the leadership to continue with, to modify previous stances as we learn more and more about the proper ecological and hydrologic aspects of the water resources.

I think those folks who started the water management districts were just brilliant. I don't know if they knew they were brilliant because they actually started as flood control for the most part but they've evolved into a very sophisticated approach to water management. And I'm very proud that I've, maybe had a little, small part of the evolution of the system. But anyway, so our ecological systems in Hillsborough County and Pasco are coming back very nicely, very, very nicely, and I think that's something that we can all be proud of. And a lot of the folks who went through the nasty water wars, and they were nasty. There were threats, there were all kinds of nasty things going on, and sometimes you'd go home at night and you wonder why the heck you're doing this.

So, as the water wars died down and the Tampa Bay Water became successful and as I got older my wife kept saying, "Where are you going today?" And I would say, "I'm going out to the Green Swamp to do some research up there." And she would say, "How can I get a hold of you?" And I said, "You can't because there's no cell phone service." And she would say, "What if you don't come back?" And I would say, "They'll eventually find my field vehicle." And so I was in my high '50s at the time and she didn't want, she didn't want that.

She said, "Scott, please start going out with other people when you're going." I was looking for something that was less field intensive even though I love it, and the Environmental Protection Commission position at Hillsborough County, the wetlands division position came open, and so I applied for that and I got it. For the last three and a half years I have become a regulator, which is a somewhat new role for me and it's something that I'll probably be never totally comfortable at. I'm not, by nature, someone who likes to tell people what they can't do.

But I now have a crew of about 20, 25 folks, mostly scientists, a few engineers, and I've been able to bring in some outside grants, contracts, mostly from the water management district. They've still wanted to be able to use me because of all the 20 years they used me as a consultant, and so they'll send me to work and me and my crew will do it. I don't get paid for it but we'll go out and we'll do a lot of the wetlands assessment for the water management district. We will do, and we're about to do a five-year wetland assessment. Every five years SWFWMD will go out to about 400 wetlands that no one ever visits and do a quick and dirty look to see how they're faring. And I was fortunate enough to have done a lot of those for them over the past 15 years.

And so they are going to ask us to do a lot of the fieldwork for them this time around because I know where they are. I've been able to bring to my, some of my staff some things that they weren't able to do before because our staff is largely regulatory and has been confined to Hillsborough County for the most part and we are, that's still our focus. But doing a little bit of outside work on other wetlands allows my staff to get a better, a bigger picture of what a big, healthy wetland system looks like versus something that's isolated and surrounded on four sides by a highway. And I know my staff enjoys that and they have come to me multiple times to tell me they really feel that they're growing in respect to their knowledge as scientists and so that's been somewhat rewarding.

The regulatory realm of wetlands permitting, either for EPC or for the water management districts or for DEP<sup>5</sup> or for the Corp of Engineers<sup>6</sup>, is always, by definition, controversial because in contrast to say, a water quality issue or an air quality issue, which if you're a regulatory person who is trying to improve the water quality, you're not telling someone they can't build something. You're telling them that if they do build it, they have to make sure they don't pollute the water, they have to keep certain parameters below a certain set concentration, which is normally set by law. And it's a matter of using the appropriate technology to clean up the particulates in the air or what you're putting in your discharge in your water.

Wetlands are different in that you're actually telling someone what they can and can't do on their property. And especially in the United States, which is a country that's based largely on private property rights, and I think rightly so. It can become very problematic to tell somebody that, "No, you can't build that warehouse you want to build because you've got a wetland over there." And so it's been, it gets controversial. And so we have become pretty adept at trying to help an applicant when they come in saying, "Okay, I want to put a warehouse out here." Well, we'll actually work with them to see if they can't orient it in a slightly different way so they miss that wetland or only take a short portion of that wetland and it's getting, I think, better in that most of the consultants and a lot of the businesses know that if they come to us early, then we can work with them.

But if they just come in and say "I'm going to put that warehouse there" and just fight us then we have fights and we go to an administrative hearing, and it can become expensive and time consuming and create problems for everybody, including our board. One of the things that I have really, really pushed on, since I've been there, is the getting out in front, getting way ahead of the curve and keeping our ear to the ground. So if a developer or industry even has an inkling that they want to do something, we'll try and get in touch with them and sit down with them way, way in advance. And most of them have been very receptive to that, so I'm pleased with that aspect of it.

But it's always going to be, it's always going to be complicated, it's always going to be controversial. In fact, one of the long-term issues that we've talked about is the idea of sprawl versus maximizing infill. Well, everybody hates sprawl. It took me almost an hour to get here today and I'm only about 12 miles, 13 miles away but because of the traffic problems. So, the county commission and the planning commission and the city councils in our area are all, I think rightly so, wanting to minimize sprawl and try to increase densities in the urban service areas, that means infill. Well, if you think about it, each area

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<sup>5</sup>The [Florida] Department of Environmental Protection is the state agency responsible for environmental management, protecting our natural resources and ecosystems.

<sup>6</sup>The [US Army] Corps of Engineers is an agency under the Department of Defense, charged with the design and construction of public works such as dams, canals and flood control projects all over the world.



that's already been developed has storm water ponds on it and it may have some wetlands that we saved on it and parking lots.

But that's probably about all that's there. And so if you're going to go back and maximize that infill you either got, you can't take the storm water pond because you need storm water treatment, you either go up, you either build up, which is problematic in a lot of cases because of zoning, or you've got to look to take that wetland that was saved the first time. My agency is going to become, I think, embroiled in a number of these things as we say, "Well no, that's a wetland and you can't take it." But the impetus is on trying to maximize infill and minimize sprawl. So that's going to be, I think, a big challenge to us and to me in going forward into the future decades.

I'm not sure exactly how we're going to handle that but I'd like to be able to say, okay, well that wetland under the state's UMAM<sup>7</sup> score is, if it's a half-acre wetland you're going to have to give us half acre of mitigation type of thing. I'd like to be able to multiply that somehow. To say, okay, the location of that wetland in this urban environment gives it special benefits. It makes it more important, and so if you want to take that wetland, then you're going to have to give me say, three times that amount of mitigation. I've been told that, legally, that's going to be difficult to do, but I'm still figuring out how to do it anyway. So, I'll keep you posted on that.

So you and I have actually been out in a number of the nicer wetland areas in this part of the state, and I think you'll agree with me that there's a vibrancy out there, there's a beauty out there. And there's ecological and hydrologic diversity out there that are important to maintain and protect. And I hope that as this county looks to put another 600 thousand people in here to 800 thousand, I heard, just the other day, they're looking between 600 and 800 thousand more residents in this county alone by 2040. I just really hope that the folks don't lose the sense of importance of maintaining a natural environment as we go forward.

I do want to talk a few minutes about the Institute for Environmental Studies and USF. You and I have both been long-term board members in that organization and I think I've watched the environmental movement morph and mature from the early days of NEPA [National Environmental Policy Act]<sup>8</sup> back in the '60s, '70s to today, and we've come so far. We don't have rivers catching on fire anymore. We don't have thermal inversions in Pittsburgh that actually kill people because of the air quality. We have, we have really,

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<sup>7</sup>The Uniform Mitigation Assessment Method is a uniform mitigation assessment method developed within Florida and graded by the Florida Department of Environmental Protection. UMAM is designed to provide a standardized procedure for assessing the ecological functions provided by wetlands and other surface waters, the amount that those functions are reduced by a proposed impact, and the amount of mitigation necessary to offset that loss.

really done a tremendous job of cleaning up our air, cleaning up our water and our rivers and streams and bays. It's just been astronomical.

And so now I think we're almost to a point where for a lot of it, it's going to be: How clean is clean? And you're going to get to a point where the marginal cost versus marginal benefits of trying to clean something up further, it's more subtle now than it was when you and I were much younger. And so it becomes on one hand, it becomes a more interesting challenge but on the other hand it becomes, I think, more difficult to convince the population that you need to continue the vigilance, you need to continue the studies to make sure that we're not doing harm. But I also think that we don't give ourselves enough credit for all the wonderful things we have done. I've been to Europe a couple times and I've not been impressed.

I mean, we have, I think our environment here is much more diverse, much more complex. Our water is much better than you have over in Europe, and clearly, from what I hear from folks who live in China, who I've talked to and worked with, clearly we're far superior to them and to the Soviet Union. About the only place I know of, that I've been, that I would think would be competing with us would be New Zealand. You know and we have 300 million people and they've got 3 million people.

I think we need to give ourselves a lot more pats on the back for all the wonderful things we have done over the past 30, 40 years. And the Institute for Environmental Studies, which for those who don't know, it's a research institute at USF and it's made up of representatives from the private sector, and the university sector in geology and chemistry and ecology and botany, public health. And we get together periodically and we discuss interdisciplinary type of research projects. And we have done some together, which I think are very useful and very valuable and I would hope that that type of approach stays with this university into the future because I think it's valuable. Let's see, what else would we want to discuss here?

AH: One of the topics that we actually did talk about at our last Institute for Environmental Studies meeting was looking more extensively at resource economics at valuing natural resources. We could start that conversation. We are going to change the tape here in about five minutes but why don't we talk a little bit about how that might affect the future growth in the tri-county area that you were just referencing and how it might be used to manipulate some of the planning?

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<sup>8</sup>The National Environmental Policy Act of 1969 was one of the first laws to create a nation-wide framework for protecting our environment. Its basic mission is to ensure that all branches of government consider the environment before taking any action to significantly alter it.

SE: Excellent, yeah, that's real excellent. That's very—okay we'll start. I think that one aspect that we natural scientists have not been very good at is making the case that a natural system, be it a wetland or an upland or a lake or whatever or a bay, has real economic value and that you can put it in a capitalistic system, and I'm a capitalist. I think capitalism is the best form of economic system that we have in the world. But capitalism is normally a relatively short, say five-year time frame for profit versus loss. Natural systems show their value in much longer time periods, in terms of keeping our air clean, providing oxygen, assimilating nutrients so that your bay has fish in it, so you can consume the fish safely.

Those are longer-term type of things that capitalism has, historically, not been able to quantitatively value adequately and I think we, as environmental scientists, that's something that we really need to help the economists on. We really need—I love the concept of natural resource economics. I think if we can make that part of traditional economics, then that wetland that that developer wants to take, now has a monetary value, not just an ecological value. There's a monetary value to that that you're going to lose the nutrient assimilation, you're going to lose the pollution adsorption, you're going to lose the oxygen production, you're going, you can actually document all the values of that wetland and then you can translate those into money.

And I think if we can start to get to that point, then people will say, Wow! You know, everyone understands that Tampa Bay, for example, has value. We like to go boating on Tampa Bay or we like to fish on Tampa Bay, we like this. But it's been more related to non-quantifiable pleasure related things than it has been to dollars and cents, and I think if we can get to dollars and cents, that just provides more impetus to the value of maintaining our natural—

AH: I'm back with Dr. Scott Emery. Scott is the wetlands director for the Environmental Protection Commission of Hillsborough County. Scott, we were talking, as we started to change the tape, about resource economics and I wonder if you can tell us a little bit about how is really landscape scale improvements in wetlands across the tri-county area, have had an effect on water quality locally and in Tampa Bay?

SE: We all are aware, pretty much, of the vast improvement in the water quality of Tampa Bay. A lot of us don't bother to think about the fact that all the input that's coming from uphill, down into Tampa Bay, which was the cause of the contamination to begin with in a lot of cases, and now is contributing greatly to the improvement in the water quality in the bay.

And if we think about natural resource economics and being able to translate say, the value of a healthy lake or wetland that's uphill or upstream from the bay but that does,

indirectly or directly, contribute water to the bay, either via surface water runoff or indirectly into the streams and rivers and runoff, or through ground water runoff in the water table, into the bay. If we maintain and improve the natural habitat conditions and the water quality conditions and the ability of our wetland and lake systems and riverine systems and flood planes to assimilate nutrients to adsorb contaminants, then we are providing a tremendous benefit to the health of the bay.

And we should be able to quantify that in dollars and cents. And it may be something that maybe 15, 20, 25 years from now we've gotten to the point where we don't have to create a separate storm water pond for every development to treat water. Maybe we can make it such that we improve or enhance or expand a portion of the flood plain along which that storm water pond might run into the river and improve the system that way. And so instead of having to have a bunch of little storm water ponds that really only function as storm water, we can actually do multitasking and create, not only the ability to continue to improve the quality of the water, but to create habitat at the same time.

Now you can't do it in all cases, but I could see, I could see multiple instances where you might be able to do something like that and to continue to have an improvement of the bay, and a habitat wildlife corridor aspect of it that 50 years ago we never even thought to worry about. So, I think there's a lot that we can still do and I've urged some of my young staff, younger staff, to look, seriously look into environmental economics or natural resource economics to take a course here or there or to look for seminars or conferences because I think that that is going to be one of the ways of the future for the environmental arena.

I don't see our discipline as a rapidly expanding field. We're not like healthcare, you know, we're just—there's not going to be three times the amount of ecologists in 10 years that there are today. But I do think that environmental economists or natural resource economists are going to be in bigger and bigger demand as, as I said earlier, you start having to deal with, "Okay, if we want to lower the nitrogen levels in the bay another half a part per million, how much is that going to cost?" Because we've picked the low hanging fruit. We've done the easy stuff and we've done some of the hard stuff.

I think it'll really become—it is reducing the—then we have to quantify the benefits that we're going to get in the bay, in dollars and cents terms, from lowering the nitrogen another half a part versus the cost from all the upstream things we're going to have to do to affect that half part reduction in nitrogen. And I think that type of approach will actually help bring support to the environmental arena because it'll take some of this stigma that we tend to have that we're just a bunch of tree huggers away and we can, because we can create a hard case that, well the benefits of lowering that nitrogen another half part per million are X, Y, and Z, and the economic value of that is A, B, and C. And so that may outweigh the additional cost of more upstream controls.

Or we may find it doesn't. But at least we'll have, we'll be talking the same dollars and cents. It'll be the same kind of thing if suddenly we all talked in terms of carbon credit. If we started saying everything was based upon carbon, which is kind of an interesting concept.

The difficulty I see with going to just talking about everything in terms of carbon units versus dollars and cents is that there seems to have been— a lot of the citizens now think of carbon as bad. Carbon is neither good nor bad, it's just a very commonly occurring element on our planet and quite frankly it's the basis of all organic life. So it's important. But you need to have a common currency of some kind that we can talk with the folks in the economics system. So I'm looking forward to that.

AH: You mentioned earlier that you'd spent a couple of years helping EPC before you became the wetlands director there, with water quality monitoring throughout the bay. And of course, the Bay Studies Group, as their research program was closed down, was able to donate those archives to the library here. How would the many years of water quality data that EPC has collected be integrated into a more landscape level tool that we could use to analyze these possible economic benefits?

SE: It's interesting. One of the things I've noticed about being at EPC is, EPC does not toot its own horn much. And I think that's because, at its heart, it's a regulatory agency, and regulatory agencies by nature don't want to toot their horn because they might get in trouble if you blow a bad note. However, EPC has, when you see things from the Tampa Bay Estuary Program or the Bay Studies Group, chances are 90 percent of that data was collected by EPC. We've had one of the longest running monitoring programs, water quality and benthic programs, in the nation, if not the world, in Tampa Bay, that EPC has done 30 years or more.

And we now have for the past, probably, decade or more, we have multiple water quality monitoring stations up in the streams and rivers and the lakes, that we provide the data to the Tampa Bay Estuary Program and the Bay Studies Group and whoever wants the data. We provide it for free. And I've mentioned to my counterpart in the water division multiple times that he ought to just start just tooting his horn a little bit. That you know this data and this analysis is brought to you courtesy of data collected by EPC. I think monitoring, people will say, "Well, I wouldn't do monitoring." Well, it's cheap. It's a big bang for the buck and it's just like monitoring your own health.

If you don't monitor your own health, you know, you die and don't know why so it's the same; it's analogous to that. I could just give you an example. When the desalination plant was first going online down at Big Bend, [Florida] some citizens were just saying, "Oh my goodness, it's going to salt up the bay and it's going to ruin the ecology." And we had, we did some modeling, mathematical modeling of the bay to try and determine whether it was going to have any effect at all or not. The models tended to show no, it was not. Well, the bay's pretty shallow and so even I was a little skeptical because as people like to say, all models are wrong, some are useful.

Fortunately, they started up that system, that desal plant, at the same time that EPC had me doing the monitoring out there. So I would, a couple times a week, park my boat less than 100 yards offshore from the discharge from that facility where the brine was put in the cal [calcium] and discharged out, and I was astounded.

Even only 100 yards offshore from where that discharge was coming out, you couldn't tell the difference in the salinity between ambient, and it just was dispersed so rapidly. And so just that little, and that was very inexpensive monitoring. It was just a little salinity meter, and it was part of a bigger run I was doing so it didn't cost hardly anything at all to stop there and take the salinity readings periodically. But it just validated all the modeling work that had been done by, actually, some folks here at USF and by scientists at the water management district. So I'm a big proponent of continuing to monitor.

You have to reevaluate your stations, be they water quality or benthic sampling or vegetation sampling or soils, but I think a healthy environment, you have to continue an active monitoring program, and EPC is a very cost effective organization to do that. Let me fill you in on, related to the bay and just talk about a personal story or two, because my oldest son is a veterinarian and when he was in high school and college, he would, in the summers, help me out in the swamps all the time.

He loved it as much as I did and he actually used to volunteer for Audubon with you and Ann Paul. And he would come back from banding, he was banding roseate spoonbills one day for you folks down on one of the spoil islands, and he came back just, his eyes were just like this. He was just so excited. And I really think that those kinds of experiences were instrumental in him wanting to continue to do all the work he had to do to become a veterinarian. He just thought the natural world and everything from water moccasins to ibis—

He was helping me do some bird surveys. I did three or four years' worth of bird surveys for the water management district on 30 different lakes. So we would have to get up before dawn to be out on the lake at dawn and spend the day doing bird counts and bird studies, identifications as well. First of all, think of a teenager volunteering to get up at

three o'clock in the morning on a regular basis to go out and slap mosquitos, but he loved it. So we were out on a lake in Polk County called Clinch Lake. It's about a 2000-acre lake. We were the only ones on the lake early in the morning, and the way we would do the survey is we would, for a big lake like that, we would use my powerboat.

For small lakes we used kayaks. So, we were in my power boat and we were—it was just about an hour after dawn and we were the only people on this big lake, and we were going along the edge and he was driving while I was listening and observing and taking down, doing the censusing. Well, we stopped, at one point, to allow me to catch up on my notes. So he turns the motor off and it's just calm as glass. There's just not a ripple. And we're about 30 yards offshore. Big pine tree up here on the right, mature bald eagle kind of sitting on the pine tree. That's not all that unusual so we don't think too much about it. All of a sudden 15 feet in front of the boat, which had just stopped and was just sitting there, we see this giant splash.

And both he and I look, and it was an immature bald eagle trying to get a fish. Missed it, and so it shakes itself and it's struggling to get back in the air and it comes up about 15 feet and then it slams back down right in front of the boat again. Because it must have been a school of sunfish or something and they're right below the—

Missed, comes back up, shakes itself off, goes up 15 feet, slams in again, and this is from me to the wall. And I'm just—I wish I had a video camera you know, I'm just, I'm wild-eyed, and it's like something out of National Geographic. And my son's standing at the helm behind me, he's wild-eyed. Then, to make matters even more wonderful is the adult bald eagle hops off the perch, swoops down right in front of our boat, grabs the fish, maybe gets that much of its talons wet, flies back up, goes right back to the branch and sits there as if to say, "See Junior, that's how you do it." True story, I am not exaggerating any of it.

And if we can show these new 800 thousand residents how important our natural environment is, not just for fun stuff, but for cleaning up the water and making your drinking water cheaper because you don't have to treat it so much and not requiring so much storm water treatment because you got this or that. Then, I think there will be a deeper appreciation by these new residents for the type of thing that my son and I saw, and that a lot of people here, if they are willing to get up early and go to say, Lake Thonotosassa, they could see something like that. And it's just a matter of—but it's a matter of convincing people that it matters to them.

I think one of—back when we first moved here in '84, or it might have been '85 when we were—I was actually at this. It was an evening get together of some kind and I remember sitting next to this woman who lived in Carrollwood and she says, "Oh, you're a

biologist.” I said, “Yeah.” She says, “Well what can I do about all these damned frogs that are on my sliding glass door at night? They’re slimy and they’re ugly and I don’t like

them. How do I get rid of them?” And I said, “Well, you don’t want to get rid of them ma’am.” I said, “They’re the best, they’re the best mosquito eaters and the insect eaters you could possibly have.” She says, “They’re disgusting. I hate them.”

So we started talking, and I tried to convince her that it’s not a good idea for her to go out there and kill them, that she ought to attract them, if anything else. And then I looked at her at one point and I said, “Don’t you think that having natural habitat and for other species to be able to survive is an important thing?” And then I was thinking of something that might get to her and I said, “What about, you know, what about the Bengal tigers? Shouldn’t we try to make sure that we provide habitat for their continued survival?” And she looked right at me and she said, she said, “Sir,” she said, “When the last Bengal tiger goes extinct it won’t affect my life one iota.”

And I just kind of went, “Wow.” I was kind of dumbfounded and didn’t know what to say, but she was totally and brutally honest. And what I want to make sure we do, as environmental types, is convince someone like her or at least her children, that there is value, economic and intrinsic value in maintaining good water quality, good air quality, natural habitat, so that everybody might have a chance to see what my son and I saw that morning out on Clinch Lake. And with that I guess I’m about done.

AH: That was a wonderful summary, Scott. I want to thank you so much for being with us, today, here at the Tampa Bay Oral History Project. Thanks for all of your hard work and all of your insights. We’ve really enjoyed having you with us.

SE: Well I’ve enjoyed being here. This has been fun. Thank you very much.

***End of Interview***