RISE: Climate Change and Coastal Communities
Part 2 - Facing the Rising Tide
Final Script

0. Billboard

Narration:

When it comes to tackling tough problems, America is known for innovation and ingenuity. But there are some problems staring right at us, that we seem unwilling to face. Like sea level rise. We know the ice caps are melting: the Petermann Glacier in Greenland, recently lost a chunk, four times the size of Manhattan. But as this rising tide begins to lap at our coastlines, we're simply not acting.

> **TJack:** If indeed the levels of the ocean rise, we'll deal with it. ... You know, it's not like it's a big deal.

Narration:

There are many reasons why America is in denial about sea level rise. Families have planted deep roots at the water's edge:

> **Steve**: My father literally worked a lifetime to create a legacy to pass onto their offspring and future generations.

Narration:

And there are financial stakes as well:

> **TJack:** You bought a house for a million dollars, they're not gonna walk away from it.

Narration:

RISE: Climate Change and Coastal Communities. After this...

I. Intro

Narration:

RISE: Climate Change and Coastal Communities. Facing the Rising Tide. (Runs under opening water sounds)

MUSIC: Main

Wave breaks. Main music swells. Runs in clear for two phrases, then run low under narration.

Narration:

Sea level rise. We hear about it more and more. It's described like a looming disaster movie – in slow motion. Climate change is causing the seas to rise. But, what will this mean for all of the cities, towns, villages, farms along the world's coastlines? It may mean a big change: families forced to move off their land, communities broken apart, a way of life erased like

footprints on the beach. Are we willing to face this reality? So far, not many of us.

As the seas rise along the coast of San Francisco, the waters within the San Francisco Bay are rising as well, of course – affecting 7 million people who live and work in cities ringing the Bay. And while many of us do understand what's coming, there are countless reasons why we want to ignore it. Why are we turning our backs on the rising tides that threaten our coasts?

Music: OUT by now.

II. Introduction to Steve the farmer and Jeff the scientist

Narration:

Steve Mello's family has been farming in the Delta for three generations; his son is being raised as the fourth. The Delta is an extension of the San Francisco Bay, where the waters from the Sierra Mountains to the east and the ocean tides from the west mingle. But the waters from both river and tides are lapping at the levees protecting Steve's land.

Steve: Hey you copy?

Gary (on other end of phone): Yeah.

Steve: How's progress? You get the digger fixed yet, or no?

Gary (on other end of phone): I'm just about done with the first digger.

Steve: Alright, I'm going to be there in a minute and a half, two minutes.

Steve: We're going to go check on my son's progress on fixing a crack in the frame of a trenching machine. And that's what's on tap for right now.

Narration:

That's Steve Mello.

Steve: I'm Steve Mello, I'm a farmer here in Sacramento County California. Uh, this is Tyler Island. It is comprised of 8,500 acres of cropland. On this island, you have grapes, cherries, pears, alfalfa, asparagus, potatoes, corn, tomatoes – both fresh and cannery.

Jeff: In places like Tyler Island you cannot ignore the fact that conditions are changing...

Narration:

And... who's that?

Jeff: Okay so who am I, uh real quickly, my name is Jeff Mount, Dr. Jeffrey Mount. I'm a professor here at the University of California,

Davis and I'm the founding director of the Center for Watershed Sciences here on campus.

Music: Debate

Start music in the clear. Bring in and out of the Jeff/Steve argument.

Narration:

Jeff Mount worries that the levees protecting Tyler Island will wash away with rising sea levels, brought on by climate change.

Jeff: The likelihood of Tyler Island and Staten Island and Brannan Island and all those islands in that area, their probability of failure is steadily going up every year.

Steve: The environmentalists that say that the Delta is not sustainable long-term are full of hooey.

Jeff: Tyler Island will fail at least once in the next fifty years. Nine in ten probability that in the next fifty years Tyler Island will fail.

Steve: I don't believe that Tyler Island will flood for a hundred years.

Narration:

The farmer and the scientist see this same land from two very different perspectives.

Music: OUT by now

Steve (Driving): Uh what you're seeing is field corn. We're lookin' at corn, corn and more corn.

Jeff: We're in the conference room in the Center for Watershed Sciences. We are not in the Delta. But if we stand on top of the building we can see the Delta from here.

III. Steve and Gary work on the tractor

Steve: This is Gary who came back to the ranch after being away for a few years in the construction thing.

Narration:

Young Gary Mello. Steve's pride and joy. Steve met up with Gary at the shop, where his son is repairing one of the big trenching machines.

Steve: What happened is our frame broke on this uh dirtbox on the digger, and it looks like you got it fairly well gussied up.

Gary: All I've been doing is welding.

Steve: You're gonna have to uh.

Gary: I gotta get inside o'there.

Steve: Okay.

Gary: So why don't you stay here for a minute. Let me get in there. In case I need you to hand me anything.

Steve: Alright … This is where being skinny helps.

Gary: Mmhmm!
Steve: Okay here's the helmet. Here's the stick. You want me to turn it on?
Gary: Yeup!
Steve: Okay you ready?
Gary: Yeah.
Ambience: Welder on
Steve: Yeah when you're welding you have all the sparks going everywhere. And they lodge somewhere and start a little fire and you start feelin', "Boy something feels hot!" And then boy when you find out you're on fire, you should see people move.
Ambience: Welder stops
Steve: You went through that hole?
Gary: Yeah.
Steve: [laughs]
Gary: I told you! I used to go through, what was it, 14-inch pipes.
Steve: Hey I used to go through a hole like that too, my hips have gotten quite a bit wider since then. [laughs]
Steve: Sympathy growing pains when your mother had ya.
Gary: Uh huh!
Mello: Well okay, I'll see you later if you need anything holler.
Gary: Alright.

IV. How the Delta has changed over the years from manmade levees

Narration:

That's life in the Delta, from a farmer's view. Jeff Mount sees the land in a broader context.

Jeff: So, where is the Delta in California? Well, you'd be amazed how many people haven't a clue, including the people of San Francisco. It's flanked on the east by the Sierra Nevada, and all of that runoff from the west slope of the Sierra Nevada is gathered into the Sacramento River on the north and the San Joaquin River on the south. Where those two rivers come together – that's the Delta. And in that area, a tremendous maze of islands and, and levies and marshes. Then all that water in the Delta eventually moves to the west and into San Francisco Bay. So that's what the Delta really is.
Steve: In the old days prior to uh, the Europeans if you will, around here you had the Miwok and the Midus, and they were hunter-gatherers, fishermen. So uh, it was markedly different place.

Jeff: When you would come into the Delta from San Francisco Bay 200 years ago, you got lost. It was a maze of channels. And lining these channels were tall gallery forests with cottonwoods and oaks, um, surrounded by these would be huge immense tule marshes that would go just as far as the eye could see so that you could just walk over the tules they were so concentrated.

Steve: In order to farm, we put up the levees. They put up the levees, I was a little young for that.

Jeff: They then drained the land so they could plant their crops, and in the process of draining the land, they oxidized their soils. The land started lowering. So today, all your islands are basically holes in the ground surrounded by levies. In the central Delta some are as much as 30 feet below sea level.

MUSIC: Debate

Start music in the clear. Bring in and out of the Jeff/Steve argument.

Narration: It's those levees, running between the river channels and the sunken farmland that protect Delta Islands like Tyler from flooding. Most of the time.

Steve: We are on a levee that uh is holding back the Mokelumne River from inundating the land. On the right there is farmland that is lower than the levee. And on the left I see water that is ... Also way lower than the levee.

Jeff: You have eleven hundred miles of levees. All of those levees are on pretty rotten foundations. They just plopped dirt on top of what was there.

Steve: There're actually Chinese pottery and old bottles.

Jeff: They started with Chinese laborers with wicker baskets, dumping sediment where they could

Steve: They would put pottery in it to displace dirt. There was less dirt to take, less shovels to throw in.

Jeff: And there's all kinds of stuff in those levees. I mean there's literally stuff. So the thing to keep in mind about the levees of the Delta, they are not engineered levees. These are agricultural levees, they're not strong; they're not stout levees.

Steve: We maintain the levees much differently than the old timers did. And Delta levees can be raised uh over a period of time.

Jeff: If you live behind a levee, you are at risk of flooding. Because there's two kinds of levees: those that have failed and those that will fail. And they fail in a couple of ways. One is overtopping during the, during the winter here when you have high tides and high inflows.

The second way is that the water actually erodes the levee from the inside out. Finally, I want to tell you the most diabolical and difficult way levees fail um is beavers.

Steve: But the Delta is not as fragile as people would have you believe.

Jeff: They slip, they slump, they get holes in them. Rodents burrow in them. And you've got 1100 miles of them.

Steve: We in the Delta have built our levees up higher than they were before, broader than they were before.

Jeff: It's not like levee failures are rare events in this system – they've failed 144 times in the last 100 years. So, on average, about one a year. But it doesn't work that way. Levees fail in this system in clusters. I like to call them clusterfloods [laughs] I'm sure you won't repeat that! [laughs]

Steve: The people that are saying, "The sky is falling, the sky is falling" – I don't worry about what they say because we can handle most anything nature can throw at us.

Jeff: Let me put it this way – all the things we're fighting about today are worse under climate change. Increasing winter floods and rising sea level are increasing the risk.

Music: OUT by now.

V. Steve talks about the family legacy

Narration:

The risk from climate change is not only to the Delta levees – but also to an entire way of life. The Mello family is part of a farming community with roots in this land that go back generations.

Steve: My grandparents came from Portugal with the shirts on their back. And while my dad only had an eighth grade education, he was a very, very smart man. And uh, very hard worker. My dad basically built the company, uh, Mello Farms. Called it the Mello Ranch. It was his ranch, he bought it, he could name it what he wanted.

VI. Steve and Ann

Steve: Oh yoohoo!

Ann: Hello!

Steve: This is Ann … my better half … I'm going to wash up and I'll start making you some sandwiches. Whaddya got ?

Ann: Turkey, roast beef…that's about it.

Steve: And we have Dr. Pepper, Diet Pepsi, Mountain Dew…

Ann: I have extras…

Steve: And we have plenty of ice…

Other Music:

Nostalgic music up here. Run under Ann and Steve's next section.

Narration:

Steve and Ann grew up as neighbors.

Ann: I used to ride my bike from over there across these fields and go to his house to play with his sister.

Steve: You know, I've always hunted and fished, you know you ride bicycles, you do the simple things. You take a walk.

Ann: Right by my mom and dad's place, right there, the railroad tracks there, we'd go up there, we'd jump off of 'em. You'd go on the end of it and you could jump into the river from there, even though we weren't supposed to be doing that, well we did it anyway! And we'd get in trouble all the time.

Steve: There's no way in heck I was jumpin' off that bridge. [laughs]

Ann: We got really in a lot of trouble when they found out what we were doing and where we were going. [laughs]

Ann: The train would come on Sunday's. It would come every Sunday about two or three in the afternoon, and there was always a hobo that would get off, most of the time, not always but most of the time.

Narration:

Ann and Steve's childhood memories, shared over turkey sandwiches and Mountain Dew, begin to feel a bit like a Norman Rockwell painting.

Ann: My grandma lived there. She would leave out some homemade chicken soup in a glass jar, and he would come and get it.

Other Music: OUT by now.

Narration:

But life on Tyler Island is not always a picture of tranquility. The flood of 1986 ripped open Tyler Island's levees – and ripped apart the lives of it's residents.

Steve: The north fork of the Mokelumne River rose in 1986 and caused this island to flood for the first time since 1906. And as the levee broke, the water actually came over the top of the levee, so you can imagine the force of the water when it's falling 15 to 18 feet into the island.

Jeff: It is spectacular when a levee fails because the levee will unzip, it'll open up to the size of a football field uh as the water flows through it.

Steve: It looked like a roaring tumult of the biggest waterfall that you've ever seen.
Jeff: The velocity of the water is so high it'll scour a hole inside the island 30, 40, 50 feet deep and chunks, literally chunks of the peat will be hurled out into the island. It's really spectacular to see!
Steve: Way back at that time we had a Motorola radio system and I heard that we lost it – the island's gone. And when I came the next day, the next morning, uh, my house was not visible. The water was over the top of it. And it wiped out the most of the lower-lying buildings. Uh, you could see the tops of the grain bins. Uh we lost 5,000 tons of grain storage, three sheds, equipment sheds, and a shop.
Ann: You brought me out here finally to see everything.
Steve: Oh yeah…it was kind of traumatic. And she was pregnant.
Ann: It was scary. It upset me. Everything was floatin' around. Water everywhere. Garbage. I said, "There's our bathroom wall in another yard!" And people at work kept asking me, "You went back there?" "Yeah!" "Aren't you afraid?" "Yeah, you can't just think about that!" You have to just go on!
Steve: You know I was young, there's time to build back. Jesus crimony. And we were near the edge of bankruptcy, but through a lot of hard work we put it back together.

VII. Jeff and Steve "debate" how climate change will affect the Delta

MUSIC: Debate

Debate music weaves throughout the following discussion.

Narration:

Flooding has always been a risk for Delta farmers. And "The Big Flood of '86" makes for a thrilling tale. But Jeff Mount says that climate change is now a game changer.

Jeff: A lot has changed since 1986. There's two drivers, climate drivers of change in this system, um, one is coming in from the Sacramento River and the San Joaquin River. We are seeing a shift in the ratio of rain to snow, so floods are getting bigger. The second aspect is sea level rise. You start getting an increase in the frequency and an intensity of extreme high tides. And it's those high tides that do in levees in this system. And we think that we can actually see that in the record now. And that's having an effect on the Delta.
Steve: Sea level rise is not going to happen all at once, it's going to happen incrementally. And there is plenty of time to go ahead and continue to bolster the levees. The levees are sustainable.

Jeff: People in the Delta they fail to consider that the past is not a predictor of the future. It's going to be different tomorrow, and that tomorrow it's going to be a lot tougher to hold those levees together.
Steve: The safety of this island has never been in such good shape as it is, right here and now.
Jeff: What we the scientific community are saying is that your risk is increasing every year. We did all this risk analysis. And in the end we stepped back and we said if we go on with business as usual, you know a little band aid here, raise a little levee here, within fifty years, at least half of these islands will have failed.
Steve: Statistics can be used a lot of different ways. Okay, let's do a study and if that study finds what you didn't want to know then you just suppress it and fund another study until you get somebody that will tell you what you want to hear.
Jeff: ALL LEVEES FAIL. Okay? All levees do is they reduce the frequency of flooding – they don't prevent flooding. Flood control maybe the ultimate oxymoron. The moron's oxymoron.

Music: Out by now.

VIII. Steve's workers and their families depend on Mello Farms for work

Narration:

Those are fighting words. Steve Mello thinks outsiders, armed with their statistics, can't see the reality of his world. But Steve's perspective is also colored by his need to support his family – and other families as well:

Steve: Roberto is in the process of cleaning out the bottoms of the ditches.
Steve: We'll stop here and check with him and see what's cookin'.
Steve (In fractured Spanish): For now, work on the bottom part of six.
Roberto: Good.
Steve: Because here it's very different. In the two sides and in the center the dams and cut-arounds. So...
Roberto: Sure.
Steve: Thanks.
Steve: There's about a two, two and a half foot area of soft dirt that you need to excavate by hand. My son will be helping him tomorrow as will I. Gives the guys a little sense that if the Patron is ready to come out and dig with them that they can dig as well. And it helps work the gut off, you know.

Roberto (Spanish with overdub): We work many hours. And it's hard. It's hot under the sun. And the temperature, there are days when the temperature is up to 95 degrees. And one has to be able to stand being in the sun.

Steve: Roberto, he lives in ranch housing while he's here. And then when the season is done he goes back to Mexico to be with his family, but he sends most of his money home, very frugal, frugal person. And very hard worker.

Roberto (Spanish with overdub): My name is Roberto Guzman. I'm here for three years, two years, sometimes one year at a time. I must go to see my family in Mexico. There the situation is very difficult. The money you earn is not enough. So I send money to Mexico. So my family there can eat. [chuckle] It's very difficult for us poor people. But there isn't any alternative, we don't have any choice. The situation in Mexico is difficult. That's life.

Steve: Repercussions are not only for me and my family, but my men and their families and their extended families as well.

IX. Should we save Tyler Island or let it flood?

MUSIC: Debate

Debate music weaves in and out of the next section.

Narration:

So, lives, livelihoods, lifestyles are all at stake here. But whose responsibility is it to protect all of this?

Jeff: If we're going to go in and fix every one of these, we're looking at billions of dollars over time. And so there's a new policy by the state that says we're going to selectively sink our resources into protecting the important infrastructure first and the islands which have high economic value.

Steve: They talk about prioritizing uh what districts would be allowed to expend public monies and what districts would not. But there is uh inherent dangers wherever you live in the world.

Jeff: Somewhere between a quarter and a third of the islands of the Delta, it makes no economic sense to repair them.

Steve: If there's an earthquake in San Francisco, and everybody's house falls down, the Bay Bridge falls down, why should I pay for it? If LA uh has a big wildfire, why should I care?

Jeff: It's okay to walk away from a field, but you don't walk away from a city. Downtown, I mean San Francisco, the value of the land is so high, it's worth it to build big dikes and protect it.

Steve: We're not an empty slate out here. You know there is a vibrant economy. This is privately owned property that's still on the tax roll, still basically contributing to the local economy.

Jeff: Tyler is one of those that falls on the edge. It's producing good crops. But it is considered at reasonably high risk of flooding. One doesn't want to be the island God, but I'm ambivalent about Tyler.

Steve: Jeff Mount has got a PhD, he can say whatever he wants to say. I don't believe Jeff Mount understands the Delta, I don't believe Jeff Mount has spent enough time in the Delta.

Narration:

Putting a price on a family's history and heritage is not so simple.

Steve: My father literally worked a lifetime to create a legacy to pass onto their offspring and future generations. And uh, I've continued in his footprint. And I am trying to build upon and pass the legacy down to my son.

Jeff: And I completely understand why people love living down there. I get it, I completely get it. But, that said, the state is not necessarily in the business of supporting peoples' lifestyles.

Steve: The battle of farming is staying in business, right? Staying in business, making money, raising your family, moving forward…

Jeff: But at the state level, you have to make decisions that are best for the state of California.

Steve: When you sit on a tractor all day long, you've got a lot of time to think. If they think they're going to make this into wetlands. They have a heckuva lot to learn.

Music: OUT by now.

X. Wetlands not an option, but a decision needs to be made soon

Narration:

Steve's right – Tyler Island can never be converted back to its original state. The land is just too far below sea level today for wetlands to develop. Letting the levees go will turn this land into a flooded island, essentially a lake.

Jeff: I see three general options for the Delta. There are some parts in the central and western part of the Delta where we are going to transition to flooded islands. There is a large arc of the Delta from the south to the north Delta which is high-quality farmland and will be for generation upon generation in the future. We will continue to farm the Delta. Portions of the Delta that have not subsided will be ideal for

restoring critical habitat for the native species that we desire so much in this system.

Steve: There's two sides to this story, you need to take everything with a grain of salt including what I say, but I'll tell you what – what I'm doing is protecting the ranch.

Jeff: You will never get consensus. There will be winners and there will be losers, and somebody has to have the political fortitude to say, "This is the way it's going to be and we're going to try and compensate the losers." Um, so you can move on.

XI. Outro for Steve Mello's story

MUSIC: Main

Theme music starts here.

Narration:

Steve Mello has a family legacy to protect up in the Delta. It's really all about his son Gary.

Gary: After what, my seventh grade summer, I started working with him. I'd ride the wheat planter – wasn't very good at it, because the rope would pull me across the back of the wheat planter, I didn't weigh enough.

Steve: Gettin' outta high school, oh I said, "Don't think you're going to sit your skinny ass on my couch watching my TV." [Gary laughs] You stay here for five years, five years, he starts to get shares in Mello Farms Inc. And he will shortly be owning part of the company.

Time: 23:09

Station ID

MUSIC: Main

Theme music runs for 60 seconds.

Narration:

You're listening to RISE: Climate Change and Coastal Communities.

XII. Introduction to Foster City

Narration:

Even if we were to bring all greenhouse gas emissions to a screeching halt, today, the impact of climate change on coastal communities will be severe. Rising water levels, bigger storms, higher tides and waves. All hitting the shores of coastal towns around the world and along the coast of the San Francisco Bay. We need to figure out how to adapt. Now. But, for the most part, we're not.

Up in the Delta, northeast of the Bay, Steve Mello is watching out for his family's farming legacy. In the South Bay, near Silicon Valley, Foster City is part of the urban development ringing the Bay's coastline, where there are significant economic interests to defend. But waves are lapping at the levee which protects Foster City.

Heading over to Foster City is Paul McHugh – in a kayak.

Paul: The birds are flying, a lot of terns out this morning. Taking a turn for the better. There go some beautiful birds – some godwits, flying together, about four. Okay, I'm Paul McHugh, long-time San Francisco Bay Area resident. Long-time San Francisco Bay paddler.

Narration:

And long-time San Francisco journalist. Paul has been reporting on the Bay for over 30 years now.

Paul: This morning I'm paddling under a gray sky – high fog and reflecting off the water. Light wind from the northwest. And riding on a strong ebb tide, five knots or more. And uh, it's really helping me make progress up towards the uh, San Mateo Bridge.

Narration:

Right now, Paul is paddling out of Redwood Creek and into the South Bay, where he heads towards Foster City.

Paul: To my left as I paddle out of Redwood Creek, is Bear Island. 1300 acres of the Bay Area's original mud pie tidal marsh.
Once upon a time there were 160 square miles of marsh around the Bay. Early pioneers would come and just be amazed at the way that the great clouds of birds wafting off of those marshes would darken the sun. Their wings made it sound like thunder rolling across the Bay. Over the course of time, the Bay has lost so much of its marshlands to development. There's only about 15-20% of it left of what was here originally.

Narration:

Foster City was once a part of this vast wetland. A part of the Bay. Today it is a city of 30,000 people.

XIII. Meet the Foster Family

Woman: Hey, How are you?

Boy: Good, you.

Girl: Cooper!

Man: Come on Cooper.

Narration:

Meet the Foster family. They live, not coincidentally, in Foster City.

Lucie: Where did you go Shannon?
Shannon: Sevilla. Studied for a month.

Narration:

And they have a unique relationship with this place.

Lucie: So Pop Pop and Tu Tu, Pat and TJack, they're married…
TJack: Well, I'm TJack Foster Junior…
Patricia: I'm Patricia Foster, mother of most of these children here [aughter]
TJack: …and this is my progeny…
Lucie: They had wonderful children, Lee, which is my stepmother…
Lee: I'm the oldest daughter of uh TJack Foster Junior and Patricia Foster…
Lucie: …um and Jack, which is my step-uncle…
TJack3: I'm the husband of Laura Foster and the father of Jackson Foster the Fourth and I'm Jack the Third.
Lucie: And then my dad married Lee.
Greg: My name is Greg Sudmeier, I'm married to Lee Foster
Lucie: And then that made me and David…
David: David Neubert. The son of Lee Foster.
Lucie: …and Claire…
Claire: Claire Neubert. I'm the daughter of Lee Foster and sister of David Neubert.
Lucie: …and my younger brother Jeff, we're all stepsiblings. And then now I'm step cousins with Jackson and Shannon..
Jackson: Jackson Foster. I'm also known as Thomas Jack Foster the Fourth.
Shannon: Shannon Foster. I'm the daughter of Jack Foster and Laura Foster and the sister of Jackson Foster.
Laura: I'm Laura Foster, mom of Jackson Foster and Shannon Foster.
Lucie: So it's basically like the Brady Bunch times 10. [All laugh]
Paul (paddling)**:** We're paddling past Foster City and I can see the lines of white houses lining the streets. Basically, you had a mud flat that was turned into real estate. It was created in the 1960s by a developer who had a dream that he could create land. So what he did, pumped in some sand and mud from the Bay, built levees around it and then take all that piled up mud and put houses on top and put people inside and give them all mortgages and make some dough. And uh, you can see the levees that keep out the Bay waters. And they're kinda low actually. Not much taller than the top of my head. And I'm sitting in a kayak.

XIV. Touring FC with TJack

MUSIC: Tour

Tour music comes up in the clear. Then weaves in and out of next section.

TJack: We are going on a tour of Foster City starting with the town center

TJack: Foster City is four square miles, which is about 26, 27 hundred acres. There's a little over 30,000 people who live here.

Narration:

TJack Foster Junior, the patriarch of the family, created this city with his Dad out of – well – mud.

TJack: All of Foster City, all of Foster City, was on the old mudflat. And they call them mud flats, I guess there's a nicer name for them, tidelands or something like that [laughs]. We call them mudflats! [laughs] But they've been long gone.

TJack: This is the uh, what we call the town center on our map, it includes the industrial headquarters of Visa International, a number of distinguished tenants, including the Sony Playstation and others.

Narration:

Decades earlier, wetlands were already being drained for farms and orchards. TJack saw an opportunity to convert this land to a far more valuable use.

TJack: Mr. Frank Brewer essentially drained it in 1900 for the purpose of creating a dairy and a hay farm. And so he put the levees in all around here creating what became known then as Brewer Island. So, my two brothers, my dad and I, made the decision to purchase Brewer Island. We built it to sell and to invest in.

Narration:

Foster City has the distinction of being the only city on the Bay that was formerly 100% wetlands.

TJack: The way you create real estate down next to the Bay, is to build the levee, ensure that the water behind it is gone and then you start processing that land with fill. Nothing like this had ever been done before. It was really pretty unique and it was my dad, that uh, he said, well, we are going to call it Foster City. So there was no arguing about that. [chuckle]

TJack: Let's drive through Neighborhood One, which is our first neighborhood.

Narration:

Each neighborhood is a planned development, with houses all matching in design and style. The median family income here is over $130,000.

TJack: The crime level's extremely low and one reason, of course, we don't have any poverty to speak of out here. There are no classes in Foster City, if there's such a thing in America. And I think that helps everybody live and work together.

I'm proud because it turned out so well. It just really tickles me.

Narration:

TJack has created a community of 30,000 people. But can it survive the changes ahead?

Music: OUT by now.

Paul: Can you imagine if the level of water rising that has been predicted. And then you have a plus tide coming in the Bay, maybe a west wind pushing water as well. All of a sudden you've got a serious problem on your hands. What will happen to these places?

XV. Family is proud to live in Foster City

TJack: This is my son Jack's house. He and his wife Laura and kids Shannon and Jackson live here.

TJack: We'll send out for pizza. What kind of pizza do we want?

Girl: I like Sausage.

Boy: ... the supreme one.

Girl: Supreme's good.

Narration:

It's not just TJack who is proud of the city that he built with his father.

Jackson: It's always interesting when, I say, "Oh my name is Jackson Foster, I'm from Foster City." And then people go, "Is there any connection there?" And I'm like... "Yeah." [laughter]. And they're like "Wait what? That' so cool!"

Lucy: Yeah, they're like, "You know the creator of Foster City?' Um, that's what they always say. They always say "creator." And I'm like...

T. Jack 3: The almighty TJack

Man: In the beginning there was swampland. [laugh]

Lee: But when I was young, I mean they gave you a lot of grief, it was going to fall into the Bay. It was...

TJack: You know, a lot of derogatory things about coming in, filling the Bay and you know a lot of terrible things being said about it…

XVI. But climate change is just around the corner

Narration:
Back in the '60s, people were upset about filling in the Bay. Many still are. But today there is a new threat to Foster City: rising seas and high tides, brought on by climate change.

Healy: Climate change is actually expanding the volume of the ocean. The oceans are getting warmer and the actual molecules are expanding, it's called thermal expansion of the world's oceans and some sea level rise is attributable to thermal expansion.

Narration:
That's Doctor Healy Hamilton. She works on climate change issues at the California Academy of Sciences.

Healy: A second way in which climate change is causing sea level to rise is simply through the melting of very, very large ice caps over land masses that as it melts, and goes into the sea, contributes directly to rising levels of the world's oceans.

Narration:
But sea level rise is just part of the problem.

Healy: Climate change is turning up the energy on the global climate system. That means when rain falls we have more rain fall, more intense waves, more wind, bigger tides. All of these are causing higher storm surges, coastal inundation, faster erosion. The word is climate disruption. It's climate disruption.

Narration:
State officials think that Foster City is headed for trouble.

Travis: Okay, I'm Will Travis, I'm the Executive Director of the Bay Conservation and Development Commission.

Narration:
Travis, as he like to be called, has got a tough job. He's got to figure out what to do with coastal cities, like Foster City, built along the edge of the San Francisco Bay.

Travis: So based on the scientific scenarios of what we can expect in California over the next century, areas like Foster City, which are low-lying, are facing difficult decisions in the future. It will be extraordinarily expensive to protect that area forever in the face of sea level rise. It will be extraordinarily difficult to abandon it. It will be extraordinarily difficult to do most anything else about it. What the ultimate, final conclusion we come to, I don't know. But it will probably be one that changes over time.

Narration:
How sure are we that we actually do have a problem on our hands?

Healy: The way that we measure the levels of the ocean has become increasingly sophisticated over time. Today, we use laser altimetry. That's planes that fly over an area and they measure the height of the sea level relative to the sea floor. In addition we use satellites that can provide a reference to changing ocean heights.

Travis: Whether we are dealing with Foster City or anywhere else on the face of the earth, it is important to understand that you don't deal with sea level rise once and then be done with it.

Healy: The projections for sea level rise into the future keep changing. but it's certain that it is coming. So although we don't knew exactly how high the sea level is going to get by exactly what year, we know that sea level will increase significantly.

Narration:

Paddling in his kayak, along these levees, Paul's point of view is up-close and personal.

Paul: So what we see now, those houses and homes behind the low levees, will either be houses and homes behind high levees, much more robustly engineered like the dikes in the Netherlands or we'll see rooftops that look like they're floating on the Bay and all those people will have to move to higher ground.

Yumi: We're on top of levee in Foster City. It's beautiful and peaceful city. It's nice place to live. Um if we don't have issue of sea level rise, I would live here.

Narration:

That's Yumi Lee. She's an architect with a special interest in Foster City.

Yumi: My name is Yumi Lee. I am a landscape architect in San Francisco, try to focus on sustainability and um the environmental issues. I'm also uh teaching at Seoul National University in Korea, um, graduate school of environmental studies.

XVII. Debate about the levees

MUSIC: Perspectives

Start music here. Run in and out of next section.

Narration:

Yumi's worried about the people who do choose to live behind Foster City's levee – in the path of sea level rise.

Yumi: The levee's doing its purpose right now, but I don't know how it will last. Levee always break. And we don't know how long this levee will stand. Um, it is possible this entire city might be under sea level rise impact, but I'm hoping the city steps up. Because there are

many other cities around the world, we're gonna have exactly same problem.

TJack: All the levees around Foster City are very strong, very safe and are certified by FEMA as a matter of fact – that's the Federal Emergency Management Agency.

Trav: FEMA has established that the levees around Foster City do provide adequate protection for current conditions and current anticipated storms. But they do not, at FEMA, take future sea level rise into account.

TJack: If indeed the levels of the ocean rise, we'll deal with it. We'll raise the levees like we did before. You know, it's not like it's a big deal. Just put in some more fill, put in some more riprap out there.

Trav: As we make levees higher we are building on soft bay mud. Essentially as you put a foot of fill on top you push the underlying structure down. So the more you put on top the farther it goes down, so the more you have to put on top.

TJack: Some things in life, including levees, improve with age. [Laughs] I mean people do too! At any rate.

Yumi: Everybody has a dream of having a house close to the water. I mean I want a house close to the water, looking at the ocean. Unfortunately, that's becoming the environmental problems.

Healy: Climate change is increasing the intensity of storms, amplifying the wind, and forcing more and more water over our low-lying areas. We already have sea level rise. Here comes one of those intense storms and we will have extreme flooding and with increasing frequency.

Music: OUT by now.

XVIII. Foster City is a great place to raise a family

Narration:

Should we have built this city on landfill? It may be a moot point, by now. But the question of what to do with Foster City, in the face of sea level rise is not.

T. Jack 3: Laura where did you put the coupons? How much do I owe you?

Pizza guy: $83.54 and...

T. Jack 3: Is that with the coupon?

Narration:

Families are invested in living here – culturally and economically.

David: Foster City is really like, it's very community oriented

Pat: No crime.
Lee: I mean it's a very tight community and if you have kids, every weekend you are in Sea Cloud Park with either Little League or soccer or one of those sports.
Shannon: I still like always hang out with my friends in Foster City. They're like some of my best friends.

XIX. How do we save Foster City?

MUSIC: Perspectives

Perspectives music in and out of this next section.

Narration:

TJack's family isn't concerned. But others are trying to figure out how we are going to live with sea level rise.

Travis: We have been calling for new development and planning for the shoreline of San Francisco Bay to be resilient and sustainable to sea level rise.

Narration:

That's Will Travis again, from BCDC – or the Bay Area Conservation and Development Commission. He went looking for an answer to this puzzle – and found a lot of them.

Travis: So what we decided to do is hold a design competition, which is something where you can offer up $10,000 in prize awards and you get $100,000 worth of free advice. Well we got that free advice 130 times over; we had 130 submissions from 18 nations.
Yumi: I was interested in this Rising Tide competition because I live in the area that is uh prone to the flood. And I wanted to know about uh San Francisco Bay in terms of what will happen with the sea level rise. So I wanted to learn about it.

Narration:

Yumi Lee submitted a design to BCDC's competition. And she was one of the six winners.

Yumi: When I was looking at the solution for the Rising Tide Competition, I couldn't find one solution that works for everywhere, so I had to come up with um three solutions.

Music: OUT by now.

Narration:

Yumi's three solutions covered three different scenarios around the Bay. She argues that some places are just vital to the area's economy – like the airports, the financial district – and we'll just have to protect them whatever

the cost. They'll get wrapped in high levees. Other areas that are still undeveloped can be restored to wetlands. The third scenario...?

Yumi: The most difficult solution is for the cities around the shoreline that is already developed with many people living in there, what're we gonna do?

Narration:

She took Foster City as an example.

Yumi: Is there any way that we can save the city, make it more sustainable or make it more safe?

Narration:

Yumi developed a plan that would move people off Foster City's low-lying lands. Then some of this land would be raised up, and high-density apartments and businesses built on this high ground. On the rest of the land, the low-lying land...

Yumi: …Create some open spaces where the water will be inundated.

XX. Foster family's reaction to Yumi's proposal

Narration:

TJack's family was less than enthusiastic about this idea.

T. Jack: …moving you guys out of your houses and filling the ground up higher and then moving you into high density housing.

T. Jack 3: That's the silliest idea I've ever heard in my life.

TJack: …If that were, made a lot of sense, we would've done it that way in the first place (laughs). But it doesn't make any sense.

T. Jack 3: You know, it's a pipe dream, it's ridiculous.

Shannon: So what are they going to do about all the people that live here?

Jackson: I mean, this is my home and I don't think I would enjoy...

Shannon: I don't think a lot of people wouldn't like that...

Lucie: I feel like unless this is an actual life threatening issue of us being flooded, then ya, obviously we're gonna have to leave. But they are just trying to, just trying to like, 'oh this a solution to a possible problem,' no, no, no, no, no! Possible? I'm sorry, I'm not moving.

Shannon: I've never felt like unsafe here at all. Like I always feel safe here.

TJack: She doesn't really believe that what she thought of (laughing) made sense, does she?

Laura: And this is a lot of homes and a lot of people to do that to.

TJack: Well, I'll be glad to talk her out of it, I bet I can persuade her in no time at all. It makes no sense. And then she can persuade me what we did here makes no sense.

XXI. TJack and Yumi face off

Narration:

Yumi took the challenge and agreed to meet with TJack.

TJack: We'll go into the conference room. Okay?
TJack: Well congratulate you on being a winner.
Yumi: Oh thank you! [laughs]
Yumi: It's great to have a city named after your name.
TJack: [laughs] Well if you start your own city you can name it anything you want to. How did you happen to just focus on Foster City?
Yumi: I looked at the shoreline cities and then tried to find out where the most impact will happen. So I picked Foster City because it was 100% built with landfill. And uh…
TJack: Oh I see…
Yumi: Yes, there are many cities like Foster City. My country back in Korea, or Indonesia. Everywhere, you have the same problem. New city built with land fill. There is a hidden problem. There is a future problem. To sustain this Foster City with the current rate of sea level rise, um, we have to come up with a solution. So this proposal shows a possible reconstruction plan of the Foster City.
TJack: See I disagree 100%. If you're going to reconstruct it, how are you going to get people to give up their homes?
Yumi: To be honest, I don't know the answer…
TJack: Well, as a practical matter, I don't think that people are gonna, you know, you bought a house for a million dollars, they're not gonna walk away from it. They gotta be bought out of it.
Yumi: Yeah I totally agree.
TJack: And so it makes, that would be very expensive. Plus the fact that they like living out here. They like their lifestyle. You'd have a hard time selling this plan in Foster City.
Yumi: It probably will be difficult
TJack: [laughs] It would be impossible!
Yumi: …if I'm living…
TJack: …absolutely uneconomically feasible, and uh, it wouldn't work because underlying Foster City, and this is true of most of the mudflats, are 60-80 feet of mud. And as you put weight on it, it sinks.

Yumi: The other option is we just leave it as it is.
TJack: [claps] there we go! Now we're talking! [laughs]
Yumi: Yeah, no. I've been thinking there're many options. Probably will be okay in 10, 20 years. Okay, maybe we'll abandon entire city. Maybe people decide to move to somewhere else.
TJack: How much sea rise does this anticipate?
Yumi: The number's been changing all the time. No one knows…
TJack: It's all environmental. The Save the Bay people – all they want to do is save the Bay. They use every single tool that they can to save the Bay, including scare tactics when rising waters and everything else…
Yumi: I don't know. I don't consider myself as an environmentalist to begin with. I'm responding to what's going to be happening, as a designer…
TJack: Nobody knows what's going to happen Ms. Lee. You don't know and I don't know. It's an issue that I do feel kind of strongly... You know to me it's, it's it's it's a tragedy…
Yumi: It is difficult.
TJack: …the way we're uh we're squeezed.
Yumi: When I look at the city, it's a really beautiful, peaceful place to live…
TJack: What I call environmental zealotry is now governing our planning rather than good common sense and economic necessity. You know, that's not the American way…
Yumi: Well, what is the American way? I mean there's like...
TJack: The way that uh I think would be far more economical would be to uh to raise the levees around Foster City. In my opinion, they can keep raising 'em just a lot, just a lot.

XXII. Yumi and TJack's Post Mortem

MUSIC: Perspectives

Perspectives music in and out of this next section.

Narration:

TJack and Yumi were pretty polite to each other. But once outside, Yumi had some stronger opinions.

Yumi: I totally understand that he doesn't want to believe that the whole city will be in jeopardy. They only want to look at the one year, two year. It's very hard to imagine and plan for something that is 10 or 20 years. But that's exactly what we need. The people of the Foster

City should start acting. It's survival! It's not development. It's a survival issue.

Narration:

TJack did have some good arguments. And Yumi's idea may not be practical. While BCDC chose her plan for their competition, Travis sees this as just the beginning of the conversation.

Travis: So if you look at Yumi's proposal which was dealing with Foster City, maybe it's just too difficult to deal with an area that's been developed where you'd have to move people, but maybe it's a concept that could be explored and it could work for the redevelopment of other areas in the future.

Yumi: There might be engineering challenges to make the high ground. Maybe it's not feasible at all…

Travis: I wouldn't take any of the proposals too literally. We were asking for ideas, we weren't asking for solutions. We want to use these to inspire people to think differently about how we deal with the problems in the future.

Narration:

The hard truth is we don't know what to do with places like Foster City.

Travis: It's going to make very difficult decisions for a lot of us. This is going to be a complicated messy process.

Yumi: I think the least we can do is not creating same problem again and again. When we know that it's a problem. That's what I learned through this competition.

Travis: Most assuredly don't allow anything new to be built in a low-lying area because we'll have to spend a lot of money protecting it in the future and probably ultimately we'll have to abandon it anyhow**.**

Music: OUT by now.

TJack: You know, Bay Development and Conservation – how many developments has the BCDC approved? It's a conservation group, but it does happen to be uh, staffed by employees that we taxpayers pay for.

Narration:

TJack's argument is an economic one. But spending money on facing this issue now, may be the cheaper route.

Travis: For every dollar we spend preparing in trying to reduce the impacts, we save $4-5 dollars as to what it would cost for us to deal with the damage and impacts after the fact. So it's an extraordinarily good investment. I use the analogy of people who say, "Well the sun

is shining, so why in the world should I spend money now fixing the roof on my house?"

XXIII. Close

Narration:

Doing nothing now means passing this problem – and its costs – on to the next generation. Healy doesn't know how this is going to play out.

Healy: I think we have a hard time as humans looking into the future. It's hard for us to understand just how big and how serious this problem really is. We aren't wired to understand the implications of sea level rise. But we don't want to wish this on our children and our grandchildren.

Lucie: I really believe in going green and learning more natural ways to use energy and recycling, and I feel like the world could do more of that just to be cleaner, you know what I mean?

Jackson: Yeah, our school started composting this year…

Lucie: [chuckle] I try to pay attention to what the world's saying about it all but um, I haven't really fixed on an opinion yet, so...

TJack: I'm gonna take this lady home.

Pat: Take some pizza.

TJack: Okie doke, you guys**…**

Lucie: We are gonna watch a movie or something.

Lee: Ok, that's good.

Lee: Taking off. Bye sweetie

TJack: Goodbye you all.

MUSIC: Main

Theme music comes in here.

Narration:

The Mellos and the Fosters are just two families living along the shore. Their stories are personal, but the challenges they're up against are not unique. Human society has built along the shores of waterways throughout the world. How will we handle sea level rise? We don't know, yet. But we must start asking the questions.

Paul (paddling): And so the tide ride comes to an end. I've run out of water. I'm gonna have to climb out of this boat and hope that the mud is not too deep. And if it's not too deep and if it's firm, then this little trip will have a happy ending.

Narration:

RISE: Climate Change and Coastal Communities. This program, Facing the Rising Tide, was produced and directed by Claire Schoen. Associate

Producer and Editor, Erica Mu. Original music by Jonathan Mitchell. Special thanks to Jan Stürmann, Stephen Most, Laura Klivans and Scott Koué. Funding for the RISE series came from The Lia Fund, Nu Lambda Trust, The Eastman Fund, The Awesome Foundation, Helen Engelhardt and Janine Lieberman. To hear all the stories in the RISE series and to learn about climate change in your area, please visit us online at searise.org. I'm Claire Schoen.
Music: Up in the clear. Then out.

Time:
(Including ½ sec silence before/after each section)

Billboard:	1:00
Newshole	5:00
First half	23:11
Station ID	1:00
Second half	28:49
TOTAL	**59:00**