CITY OF BELLEVUE
BELLEVUE PLANNING COMMISSION
SPECIAL MEETING VERBATIM TRANSCRIPT

March 24, 2010 Bellevue City Hall
6:30 p.m. City Hall Room 1E-108

Presentation by the Washington Sensible Shorelines Association

Ms. Tebelius: Good evening. Could I get your attention? Wow, what a great attendance. How many of you are residents of the wonderful city of Bellevue? Hey, give us all a great hand for tonight. Wonderful. How many of you live along one of the bodies of water? There we go, that's the audience tonight.

Well my name is Diane Tebelius. I'm a resident of the city of Bellevue and I live on Lake Sammamish near Vasa Park and The Little Store. What a unique place in one's environment. And I'm going to be your MC or moderator tonight. And this program is being presented by the Washington Sensible Shorelines Association. It is an organization that was founded by concerned homeowners who wanted to participate in the development of regulations that affected the shoreline of this city. Now, to your left and to your right –

Audience: We can't hear back here.

Ms. Tebelius: You can't hear me?

Audience: Much better.

Ms. Tebelius: Can you hear me now?

Audience: Much better.

Ms. Tebelius: Thank you. Alright. I'll just talk into the mike. On your left and on your right are a number of – are two posters. They're both the same thing. Those posters, if you can't see them very close, if you're not very close, they tell you about some of the acronyms that we have in the city when we are dealing with the update of the Shoreline Master Program. I mean, whoever knew what the SMP was, does anybody know? Shoreline Master Program. Well I know you know because you deal with it all the time, Dave. So there are lots of little words that you're going to hear tonight that are very common in development of the language of Shoreline Master Program, which is as I said the SMP. So if you have a chance and you want to go up and look at those posters, you can get an idea of what we're talking about.

But we are very lucky tonight to have this opportunity, and the reason we have this opportunity is because the Bellevue Planning

Commission has graciously given us this time, and they are sitting before us right here in front of us, and are going to listen to the presentation. The Chair of that Commission is Pat Sheffels, and I would like to introduce you to her and give her the floor.

Audience: Applause.

Chair Sheffels: Thank you, Diane. For those of you who don't know, the Planning Commission deals primarily with land use issues and the Comprehensive Plan. We are a set of volunteers who are appointed by the City Council –

Audience: We can't hear you.

Chair Sheffels: And I would like to introduce the ones that are here right now. Hal Ferris is the Vice-Chair of the Planning Commission. Jay Hamlin, Kevin Turner and Daniel Himebaugh. And we're here to listen and ask some questions if we want. Thank you.

Ms. Tebelius: Let's give them a great hand.

Audience: Applause.

Ms. Tebelius: Well there's one person – one other person that I want to thank tonight, and that is the Planning Commission has a staffer from the city who works with them all the time and actually has been most gracious to help us in preparing for this program. And I want you to thank him immensely with a warm welcome, and that is our own Paul Inghram. Would you stand please.

Audience: Applause.

Ms. Tebelius: So we are really lucky tonight because not only do we have some of our Councilmembers from the city of Bellevue, but we have Councilmembers from the city of Redmond. We have residents from the Rosemont Homeowners Association, West Lake Sammamish Association, Meydenbauer Bay Neighbors Association, Newport Shores, Vasa Park – what a gem in our city, a private park – Sisters of St. Joseph Peace that is on – if you don't know where that is, it's a wonderful place on Lake Washington – and the Meydenbauer Yacht Club. And thank you all for attending.

So, let's take it away. We've done a lot of work to present testimony relating to the shorelines. And you've heard – for those of you – how many of you have attended a Planning Commission meeting before tonight dealing with the shorelines? Okay, so I'm speaking to an audience tonight that understands some of the things that have happened. But there have been hearings before the Planning Commission for many months. And many of us have participated in those hearings and have testified. And so as a result of that testimony, we asked the Planning Commission to give us

the opportunity to bring our side of the story to the debate. And so we're going to start tonight and we want you to hear the rest of the story. Let's take it away. Kevin, can we dim the lights. Paul?

Video Presentation:

And uncertain future. Phantom and Larson lakes are an integral part of the greenbelt area that generates the water source for the Kelsey Creek watershed. This watershed is the depository for most of the water off Bellevue's east hill. Phantom Lake is the third largest of the five Bellevue lakes at roughly 63 acres. The city of Bellevue is one of approximately 46 property owners on the lake through ownership of two city parks, the Lake Hills Greenbelt on the west end and Robinswood Park on the east end. The state of Washington owns the water portion of the lake.

In 1883 Samuel Todd purchases this parcel of land and divides it into tracts. The boundaries of these tracks join in the middle of a single lake, covering the area of Phantom and Larson lakes and everything in between. This map is from the late 1930s. Farmer Henry Thode undertakes to farm part of this wetland area and spends roughly seven years hand-digging a trench from the lake's edge east toward Lake Sammamish. He completes the excavation in about 1894. Where Phantom Lake once drained north into the Kelsey Creek basin, the outflow is now redirected a half mile and carves out Weona Creek on its way to Lake Sammamish. The completed outflow reroute lowers the lake as much as six feet, and creates two lakes from the original one. Fog vapor rising in the morning from this new outlet resembled a human figure and inspired the name, Phantom Lake.

In 1942, local farmer Frederick Beck was having financial difficulty. He started a boat rental business to supplement his income. In the course of business, some of his customers helped themselves to food grown by the other farmers on the lake. When conflict arises between the landowners, he spitefully agrees to sell his property to the state upon his death. As part of the deal, Beck negotiates a beneficial deal on his taxes.

In 1956, the swales on both sides of the Eastgate airfield were filled and used as a landfill dump to help reduce updrafts on the runway. The landfill was active until 1964, and important because runoff from this area drains into Phantom Lake.

In 1966, the Beck land was purchased by the state and is used as public access for fishermen. With this access comes an increase in trespasses, littering and vandalism. Members of the Phantom Lake Community Club, wishing to stop this invasion, launch a lawsuit against the state and win. Several important rulings come out of this. Number one, the state as a property owner has equal but not greater rights of usage. The state must limit the public use of the lake and not infringe on the rights of other landowners. Number two, an injunction was placed against the state's lake use, and the state must submit a plan to regulate public access. Number three,

because they are an equal landowner, the state may not stock the lake with fish. Eventually, Washington state decides to deed the former Beck parcel to the city of Bellevue.

Margaret Jackson, an 84-year-old plaintiff in the lawsuit, testified that when she moved to the lake, it was very rough country. The first settlers and residents painstakingly cleaned debris from the lake, then cleared and improved the land by filling areas of the surrounding property. The lake residents hauled sand, put in beaches and maintained them. None of this improvement was done at public expense or by public agencies.

In 1970, Interstate 90 is constructed passing through Bellevue's Eastgate area. The much larger roadway changes surface and groundwater flows significantly. In 1972, a special study of Phantom Lake is undertaken by the Bellevue parks department. In 1973, a shoreline trail around Phantom Lake is proposed by the city. At a parks department open house Lake residents rise up in disapproval of the plan. They gather 500 signatures in opposition, and the trail plan is subsequently removed from the upcoming parks levy under threat of failure. This lake trail idea is promoted by the new director of the Bellevue parks department, Lee Springgate. Mr. Springgate is an admirer of the Frederick Law Olmstead concepts that envision systems of parks and interconnecting parkways to connect certain cities to green spaces. Also in 1973, the parks department first introduces their vision of Bellevue as a city in a park.

In 1979, Phantom Lake homeowners initiate a lawsuit in an attempt to stop the development plans of Cabot, Cabot and Forbes from proceeding with the Eastgate/I-90 Business Park concept. The lawsuit fails to stop the development. Later that year, the I-90 Business Park master plan specifies a detention system with a maximum 19.2 cubic foot-per-second drainage flow into Phantom Lake. In 1980, I-90 Business Park construction begins. Key conditions of the rezone call for the safeguarding of Phantom Lake. A state-of-the-art water detention facility is designed to handle one hundred year storm events. That December, clearing and grading in the I-90 Business Park causes substantial runoff into Phantom Lake.

In 1982, the no motorized boats regulation is initiated on the lake. In 1983, the Eastgate airfield is closed permanently. In 1984, a two million dollar grant was obtained to study the health of Phantom Lake. Eight hundred thousand dollars is used for a scientific lake study to determine whether the use of aeration and alum treatment would be beneficial. The remaining $1.2 million was reallocated and used for the 156th Avenue flooding study, and for design of a weir dam at the original western outlet.

In 1984, a culvert inlet to Phantom Lake is doubled in size to 42 cubic feet per second. Also in 1984, Phantom Lake produces its

first major algae bloom.

In 1985, a weir consisting of an earthen berm and a plywood skirt are installed Phantom Lake's western outlet. In 1986, increased phosphate levels in Phantom Lake point to the landfill leaching chemicals methane and phosphate into stormwater runoff. Additionally in 1986, the Boeing company holds a third holding pond to its property, which also overflows into Phantom Lake. In 1987, the wetlands area of Phantom Lake are overcome with excessive runoff and overflow, flooding 156th Avenue again.

A city initiated study by King County Metro of Phantom and Larson Lake basins is completed. Their map shows the previously reported surface altitude of 256 feet has increased to 258 feet, and a depth of 41 feet. This is an increase of two feet in altitude over the 63-acre area. Talk about a rising tide. In 1988, runoff drainage into Vasa Creek is diverted to Phantom Lake.

In 1990, a Metro sewer lift station fails and creates a backup, pressurizing lines, lifting up manhole covers, and overflows raw sewage into Boeing Pond A, and then into Phantom Lake. This catastrophe results in a major fish kill in the lake. In 1991, alum treatment is initiated and an aerator is placed in Phantom Lake to improve the deficiency of dissolved oxygen and alum, and to seal heavy metals in depths. In 1992, toxic blue-green algae is found in Phantom Lake. In 1994, unprecedented levels of flooding take place on Phantom Lake. These photos were taken out the same window before and after flooding.

In 1996, the aerator project is unsuccessful and has inadvertent effects due the blending of separate layers of lake water, which increases the algae blooms. Apparently the wrong design was specified by the consultant, which brought water from the bottom layer to the top. It is abandoned and remains in the lake today. Also in 1996, King County passes Weona Park on to the city of Bellevue. With that transfer goes the serious erosion problems from Phantom Creek which threaten to undermine the 168th Avenue roadway. Later in 1996, runoff causes Phantom Creek to overflow without warning and fills a Lake Sammamish resident's basement with three feet of water and depositing a gravel delta. The flooded resident dies within six months with fungus in the blood.

In 1997, a one million dollar Weona Creek stabilization project is presented, and launched soon after. Also in 1997, resident Rudy Elmer files a lawsuit against the city of Bellevue over Phantom Creek's drainage into Lake Sammamish. Elmer argues that Phantom Lake should revert to draining out the original western outlet, previous to the hand-dug outlet and western earth berm.

In 2005, the frequency of toxic blue-green algae blooms increases on the lake. In 2006, the city of Bellevue adopts the shoreline

ordinance, Ordinance 5681, thereby designating Lake Sammamish, Lake Sammamish and Phantom Lake as critical shoreline areas. Additionally in 2006, three Microsoft buildings are constructed in the Eastgate Office Park, with a one million gallon, state-of-the-art bulk detention system. In 2007, detention system holding pond A overflows into Phantom Lake again.

In 2008, lack of maintenance on the Phantom Creek outlet and 168th culvert results in the loss of more shoreline trees from prolonged high water conditions. These high water conditions influence wetland-designated areas significantly.

In 2009, the city of Bellevue begins their Shoreline Master Program update, funded in part by a grant from the Department of Ecology. Citizens concerned about added constraints and loss of property rights form a citizen action group, Washington Sensible Shoreline Association, to monitor and influence the city process.

Video Presentation:

Lakes Washington and Sammamish are rich in history. This history is packed with projects and actions that have altered, possibly forever, the system's aquatic environment. As we trace the timeline of these actions, ask yourself, do these reflect adequate knowledge and understanding, well thought out plans, and every bit as important, a justifiable need for shoreline residents to drastically alter their properties.

It was the Civil War era when discussions began on building a navigable connection between Lake Washington and Puget Sound. The US Navy endorses the canal project years before Custer's last stand. US Army Corp of Engineers plans the project. Seven years later the Klondike gold rush begins.

1906. Work beings on the ship canal. Until 1912, the Cedar River emptied into and became part of the Black River, which then emptied into the Duwamish. November 1911, the Cedar River floods Renton. The following year the town dug a canal to reroute the course of the Cedar to the north so that it flowed directly into Lake Washington in hope of avoiding floods in the future. The Cedar has flooded five times in just the last nineteen years, the worst being 1990 when millions of dollars of damage was done to Boeing equipment at the Renton plant. Since then, it is regularly dredged, yet the most recent flood was 2009.

1916. The ship canal and locks opened causing Lake Washington to drop 8.8 feet. The Black River dries up trapping hundreds if not thousands of salmon in the dry river bed. The flow of water from the south end of Lake Washington is now reversed. For uncounted centuries Lake Washington emptied to the south into the Black River, which joined the Cedar and then the White River. The Cedar now empties into Lake Washington. The confluence of the Black and White created the Duwamish River. We know the White as the Green River today. If you're confused, think of the

fish.

1917. As the first US troops are deployed in WWI, back here at home the salmon figure out their new commute into Lake Washington, to the Cedar River and in the Sammamish River into Lake Washington and Issaquah Creek.

Vasa Park is formed in 1926 by a private citizen with land purchased from a local farmer. For 85 years this privately owned park has paid taxes while providing recreation for the public.

1935. The Issaquah salmon hatchery is built. For history in the 30s we look to a present-day document, the petition to list Lake Sammamish kokanee as threatened or endangered. Quoting directly from that petition, a fish weir is built and used to channel kokanee into holding tanks and prevent them from reaching the 32 miles of spawning territory beyond. When it was determined that there was no commercially viable use for the kokanee, and that the ponds could be used for another more lucrative fish, they were drained, leaving all the trapped kokanee to die.

In the 1940s, the state took further steps in the demise of the kokanee. Quoting again from the same petition, an estimated fourteen million kokanee eggs are removed from Lake Washington, as are thirty-six million kokanee fry by the Washington Department of Fish and Wildlife to stock other lakes in the state. The WDFW also introduces into the system the pikeminnow, cutthroat trout, bass and yellow perch, all of which are known to feed on young kokanee in the lake. In the Sammamish lake run synthesis report, a study paid for by the city of Bellevue, an interesting comparison is made with Alaskan lakes. Quoting now directly, cutthroat had a twenty-five times greater predation on kokanee sockeye than did pikeminnow. Beauchamp et al, 1995. In addition, Cartwright et al, 1998, it is estimated that between thirty-two and one hundred percent of the sockeye fry planted into an Alaskan lake were consumed by cutthroat trout. The available data from Lake Sammamish appears to be consistent with these findings.

That report, finished in January of 2009, has chilling timing. The barrels you see in this photo are filled with rotenone, a poison to aquatic life. In the fall of 2009, the state of Alaska dumped these drums in lakes they had stocked with the predator fish pike minnow in hopes to undo what they'd done.

The Washington Department of Fish and Game stocked Lake Sammamish with four different species of predators, including the pikeminnow. This introduction of predators, the removal of eggs and fry, as well as the willful destruction of adult spawning fish, is the reason for decline in kokanee. The state in their application of best available science did these things, not the homeowners.

In 1964, the US Army Corps of Engineers straightened the Sammamish Slough. While this led to lower fluctuations in winter water levels, it also removed some thirteen miles of fish habitat. Ultimately, sockeye salmon found new places to spawn in the straightened Sammamish River and its tributaries. Current work on light rail over the Sammamish Slough is certainly something the city were shut down if it were a private citizen project. Nineteen Sixty Four did see a positive change, though. That was the year the city's sewage was no longer dumped into the lake.

1970s. A collection of expressways and toll roads augmented by new construction are connected to form I-90. It's believed the I-90 culvert on Lewis Creek was installed at this time, creating a barrier for fish going upstream. Since the only portions of Lewis Creek in Bellevue are upstream of this culvert, the city will have to cooperate with the city of Issaquah to rectify this blockage.

1980. The deadliest and most economically destructive volcanic event in the history of the United States. The catastrophic eruption of Mt. St. Helens drops incalculable tons of acidic volcanic ash on the state of Washington, including its salmon streams and rivers.

The city of Victoria, British Columbia, has been pumping raw sewage, heavy metals, and household and industrial chemicals into the water between the Olympic peninsula and Vancouver Island for decades. In 1990 they increase the discharge pipe to 48 inches, the same size as the Alaska pipeline. As of this writing, they have two such pipes with the only treatment being a screen with grids. Victoria and six of its suburbs pumps thirty-four million gallons of raw sewage into the Strait of Juan de Fuca each day. As a comparison, the Exxon Valdez oil spill was 10.8 million gallons. This makes the Victoria sewage discharge into the Strait, a volume equivalent of a Valdez spill, every seven hours and thirty-seven minutes. All Lake Washington and Sammamish coho, chinook and sockeye swim through the Strait to sea and back.

The 1990s would further mark the decline of the kokanee. While kokanee spawning in Issaquah Creek still numbered over fifteen thousand in the mid 70s, the killing of these salmon by the state hatchery drove their numbers to zero by the 1990s.

2001. The Issaquah salmon hatchery counts 35,259 adult coho salmon returning to the hatchery. It is a record. 2007. The hatchery counts 13,432 adult chinook salmon returning to the hatchery. It is a record for the kings.

In review, the US Army Corps of Engineers has reversed the flow of water to and from Lake Washington by changing the course of one river and drying up another. In addition, they have removed some thirteen miles of fish habitat. The Washington Department of Fish and Wildlife removed thirty-six million kokanee fry, plus fourteen million kokanee eggs, from Lake Sammamish. An entire

year's run of adult kokanee are trapped then killed before they can spawn, and four different species of predators is planted in the lake.

All of this is done by agencies that have appeared in front of the Bellevue Planning Commission. Rather than admitting their own culpability, they seek regulations against homeowners. In spite of their actions, Victoria sewage discharge, and volcanic eruptions, total salmon returns for the last twenty years have exceeded the hatchery's goal. With all of the information available, it is unnecessary to inflict further regulations on the homeowners.

Audience: Applause.

Ms. Tebelius: I want to thank three people in this room who have put together with a lot of experts, and that is our own Brian Parks right here.

Audience: Applause.

Ms. Tebelius: Mike Lunenschloss, who when he's not in a tie is up fishing in Alaska. He's in the back of the room.

Audience: Applause.

Ms. Tebelius: And our own Lori Liefert who lives on Lake Washington, also in the back of the room.

Audience: Applause.

Ms. Tebelius: Well, we started this process, and you have seen a wonderful timeline. Are you glad you are not a kokanee salmon? Because I'm telling you it is tough out there, trying to figure out how to get past the locks and avoid those little sea lions who try to eat you every time you try to climb up the locks, get into Lake Washington, then just swim around trying to find out where your spawning grounds are at. This process, as I said, started when we looked at what we were being asked to do as homeowners, from changing the size of our dock, to putting different covers on the docks, to putting trees in the middle of our beaches. That was not what we felt was acceptable. And to the Planning Commission, we would suggest when you see tonight, the evidence of science does not satisfy any of the best available science, and it does not prove that any of these remedies that the homeowners are going to be required to do do anything for recovery of the salmon.

Now, I would remind you – I thought I would bring a story to you about a homeowner who said a couple of years ago he was asked by the city of Bellevue when he needed to do the re-topping of his deck – dock – to put glass prisms on that so that it would diffuse the light to help the fish below. At great expense and thousands of dollars in design and materials and permitting, he did that. And that chandelier of light shower has not worked. And in fact,

nothing has happened. It has not helped. And at the expense of the homeowner they were required to put that permitting in place. We would suggest that there is no science to justify that kind of requirement.

We have a homeowner now who wants to put a new boat lift in. And he's being required to put an 80-foot fir tree in the middle of his beach. All of you who live on the water, you have to ask why.

Audience: Laughter.

Ms. Tebelius: If you go to the King County website, you will find the following statements. And I'm just going to summarize. It says that as development has increased around the watershed – and we have a huge watershed, it goes all the way from Everett on down past Renton – that as development has increased, the pervious surface has decreased. And so as a result there is not enough land to absorb the water that needs to be released into the streams over a period of time to help the fish. That is not the fault of the shoreline homeowners. We have done nothing relating to that.

And so tonight what we want to start off with after this timeline is introduce you to an incredible scientist whose name is Dr. Gil Pauley. Aw, he's up there already. Now let me tell you about – a little bit about Gil Pauley. Well first of all, he is a fisherman, a fisher expert. He has a PhD in fisheries. He has authored over one hundred papers in fish science. He has actually been the consultant for – how many of you are aware of the Boldt decision? Any of you? He was the consultant for the courts on that Boldt decision. That is the most significant fishing decision in federal court in the United States in our generation. He knows his fish, and tonight he brings to the Council his views on the fish science that has been presented to you. Dr. Pauley.

Audience: Applause.

Dr. Pauley: Thank you, Diane. I'd like to thank the Planning Commission for giving us this time.

Audience: Can't hear you. Turn the volume up a little.

Ms. Tebelius: You're going to have to get real close to the mike.

Dr. Pauley: Ok, that won't allow me to wander, will it?

Ms. Tebelius: No.

Dr. Pauley: Ok. My name's Gil Pauley, and I've lived in Bellevue for a long time. I've lived on Lake Washington since the mid-80s. And for over forty years I've spent my professional life as a fishery scientist and teacher. Twenty-four of those years were at the University of Washington. And as Diane said, I was the federal

court technical advisor on all their salmonid issues for fourteen years under the Boldt decision. And I just kind of started looking at things and reading the reports the city has and I seemed to not like what I saw.

So what I'd like to start out with tonight is to kind of discuss just a little bit of basic science to people like Mike that are just going to go oh my gosh, because it's very basic, but many of you that don't fish or haven't read any stuff on fisheries, hopefully it'll kind of get you to where I can talk with you then about a couple of concepts that are little more complex, and hopefully you'll understand them. And then what I'd like to do is kind of try and relate this to things I've read in the best available science report and then make some recommendations at the end.

Okay, what I'd like to do as I mentioned is talk about the basic science –

Audience: We can't hear you in the back.

Dr. Pauley: Okay, sorry. I'll try and holler. Usually I can be heard pretty good. And then talk about how the science is used and hasn't been interpreted correctly. Much of the science that's been done is fine, it just hasn't been interpreted right. Or there isn't any of it.

So to start out with fisher basics, our lakes here have a variety of fish in them. Some of these are desirable, and some of these that are desirable are food fish to be eaten, others are sport fish. Among the desirable ones that we have in the lakes, and not all of these necessarily exist in all three lakes that we're going to talk about, we have the salmon in the lakes, the various trout, we have two bass, we have yellow perch, and black crappie. We also have a number of less desirable fish which are non-edible, non-sport fish. Many of these are predatory on young salmon. Two of those that are are what are called caudids or sculpins. You may think of them, you've heard the term bullhead. Scientifically, though, a bullhead is a small catfish, and this is a different fish. Also the pikeminnow which used to be called the squawfish. In the lakes we also have a number of ocean-going fish called anadromous fish, and they go out to sea and then come back into fresh water. And these include a variety of salmon and trout that are found in lakes Washington and Sammamish. Other ones that we have in the lakes are the sockeye salmon, the chinook salmon, the coho, sea run cutthroat trout, and the steelhead, which is an ocean-going rainbow trout.

And in these lakes we have some stocks of fish that are threatened, such as the chinook. We also have kokanee which are being reviewed to be listed as endangered. And we also have fish in addition to the anadromous fish that spend their entire lives in the lakes or in sometimes the streams that run into the lakes that we term as resident fish. And among all these fish, there are a lot of

fish that eat each other, okay, and these fish are called Piscivores fish, or predators.

Okay, anadromous fish, the ones that go out to saltwater and come back, they return to their natal birth waters to spawn. And they all have a different cycle. That timing of this is based on the different species of the fish and the geographic location. And in any given river, for example, for example the Queets River out on the Pacific Coast, has I think it's five different species of anadromous fish, and within those there are various races of the fish that come in at different times. The progeny of these fish, or the young fish, they will return back to the ocean, they'll rear and grow to an adult size, and then come back into fresh water to spawn. And then the adults, once they spawn and they have young fish that go back out into the ocean, the cycle is completed and it starts over again.

Now one thing you should keep in mind is we don't have to have crystal clear water and tree-lined banks to have salmon. This is a picture from the Copper River, and you'll see it's a very kind of ugly color because it's glacier fed. There aren't very many trees around it. It has probably the finest run of sockeye salmon that we know of in North America. In fact it's the only river that I know of that when the fish come into this area for sale they name them by the river of origin. And I'm sure a lot of you have bought Copper River sockeye, right? Okay, and they sure don't say Hoh River salmon when they bring those over here, so this is a very famous river. It also has chinook and coho in it.

So now I'm going to talk a little bit about a little more complex thing, because sometimes we'll get upset because one, the salmon runs aren't the same every year, or they're not going up constantly in numbers, okay? Salmon runs fluctuate every year for every species in every river system. It's just a basic fact of life. And there's a lot of things that influence that fluctuation, and a lot of things of those influencing factors we don't know a thing about, okay? Now where a species is threatened, often we've instituted hatcheries in some cases, such as the chinook on Issaquah Creek that comes and flows into Lake Sammamish. So the key to survival is the ability of the fish to return to their home waters to spawn, to have their progeny survive and reproduce back in that same water after they've been in the ocean. Very simple process.

This is what's called a spawner recruit curve, and it's a tool that's used to predict what salmon runs will look like. It's a very valuable tool that was used in all the years I worked with the Corps. It's used for every single species of salmon and steelhead in every single river. And on the bottom here we have the spawners that come in in any given year. And I've left numbers off of here because I want you to try and understand the concept. The numbers really don't matter. But if you had five hundred or ten thousand here, it doesn't matter, the concept is the same. And then these are the young fish that are the progeny of these

spawners on this line. And what you have to have, regardless if you have five hundred fish that come in as spawners, to have equilibrium in the population, this line right here, you have to have that same number of fish coming back as progeny. So when you have this line like this, that means your population's in equilibrium, if you have five hundred here and five hundred coming back. Okay?

So, the thing here is that each of these points is two years. That X up there is a sample point for two years. In other words, that represents the spawners of one year that came in and spawned, and then the number of fish that came back later and spawned in subsequent years. And that time is variable, again depending on the species of fish, what river it's in, and geographic location. So there's a lot of stuff that goes into that. But each data point here is two years, okay? It's the adults that spawn, say today, and the ones that come back two years from now, or three, whatever the point is we're looking at. Anything above that line is good. That means that's excess fish and we can keep those, we can fish for those, we can eat them. Whatever we want to do. The bottom under that means it's poor, the returns were not as good. So right on the line you've got equilibrium in the population, but under that is not good.

Okay, so what you have is some years are good, some years are poor. And if you look at a diagram of any river system over a period of years, this scatter dash right here will look exactly the same. The numbers on the two axis will be different, but where the points are is going to be almost the same. Doesn't matter if you have five hundred, ten thousand, doesn't matter. If you do Bear Creek, if you do the Skagit River, you're still going to have sets of points on here, and the ones above means the runs were good that year, and the ones below means we had a bad return. Okay? But the thing that I want you to do here and look at is the take-home lesson here, is that this is a tool that's used in all river systems for all salmon and steelhead, and there is fluctuation in all of those fish every year. That's just normal, okay?

So again, to repeat that, all salmon species have fluctuations year to year. These fluctuations occur in all salmon streams year to year. And the fluctuations in some years result in good returns above equilibrium, sometimes poor returns below, and in a few instances right at equilibrium.

This is the same diagram or bar graph you saw in Brian's timeline. And here you can see that this is actually the expectation the hatchery would like to have, and this is a total of nineteen years, or eighteen years, on the hatchery returns for chinook salmon. And you can see that the totals of the salmon that came in actually exceeded those goals over that nineteen years by three times the estimated amount that they wanted. In fact, this last year the goal was met and then they released several thousand fish into the upper

Issaquah Creek to spawn naturally, and there are also fish to spawn naturally on the lower part of the creek below before they get to the hatchery. Coho, the same thing. They had an expectation for the goals for the fish, and that goal was exceeded by four times in that time span.

Now they just briefly mention kokanee, which is a non-anadromous sockeye. In other words it doesn't go out to the salt water, it's landlocked. And the primary spawning areas for kokanee and in Lake Sammamish are on the east side of Lake Sammamish. The Bellevue shorelines do not, I emphasize not, have kokanee spawning grounds. It requires a upwelling in the area to wash the eggs and get enough oxygen to them, and so that doesn't exist on the Bellevue shoreline. I talked with Hans Berge whose done I think twelve years of work on kokanee on Lake Sammamish and he indeed indicated that that is the case. So there is no spawning of kokanee on Bellevue shorelines. They do exist. There's a small run that goes into Vasa Creek in Bellevue.

Audience: Not anymore.

Dr. Pauley: Not anymore, huh? Another thing is, and I want to mention this right now because I'm going to talk a little bit about trees. Terrestrial insects supposedly are fed into the lakes by trees. Kokanee do not feed on terrestrial insects. They eat small crustaceans, which are related to the shrimp family. The ones they primarily eat in Lake Sammamish are the daphnia and one other little critter over in Lake Washington.

Now, like Diane was saying it's really pretty amazing that these little guys can get through the maze that they have to go through to go through from Issaquah Creek, let's take that one because it's the furthest away, go down through Lake Sammamish, go out through the Sammamish Slough, through Lake Washington, through Portage Bay, through Lake Union, through the Chittenden Locks, into Elliot Bay, out into Puget Sound, through the Straits of Juan de Fuca, and into the ocean and grow, and then come back through all that and spawn and repeat the cycle. And along the way they have all these things that they have to meet. So the Bellevue shoreline is really a miniscule part of this whole process.

Audience: Laughter.

Dr. Pauley: They have to go through all kinds of birds of prey, they are attacked by sea lions, otters and killer whales. And then we have the biggest predator of all, fishermen, both commercial, sport and the tribal fisheries. They encounter toxins, sewage, heavy metals. They have diseases and parasites which actually was one of my specialties when I was doing research and teaching in addition to fisheries management. They run into lack of food in certain situations, and in talking with Hans he said he thinks that's one of the problems with the kokanee in Lake Sammamish, they get a

squeeze because of the lake stratification and they don't have enough to eat. Water temperatures are a problem, and there are a lot of other environmental things. When these fish get into the river, there's silting, there's flooding. And one thing that a lot of you don't realize is that fish when they come into the river, they have to have a certain amount of water to get into the river. Because if the river's too low they can't get in either. So it isn't just a case of flooding. So actually the fishermen when they net fish, for example, they need to have what they call freshets, or new water going out, and raising the level of the river to get those fish in.

Now, we come from that into the fish predators in the two lakes, okay? And as you heard earlier, the cutthroat trout, which is a very desirable sport fish, is a huge predator of young salmon, both in the lakes and out in salt water. Rainbow trout are big predators of young salmon. The caudids, those little guys, the bullheads, they are huge predators of young, little tiny salmon, the fry and very, very small sockeye. Pikeminnow, which was introduced into the lakes by the government, they are huge predators, all along in our lakes and also along the Columbia River and Snake River systems. And then we have the smallmouth bass and the largemouth bass and the black crappie in Lake Washington. Those bottom three are members of the centrarchidae family, which is the sun fishes, and they also eat their young. So if they get hungry they just cannibalize the little guys. Okay? And that's kind of important for a concept I'm going to show you in a minute.

So all of these fish have been put into the lakes, with the exception of the native trout, and probably the caudids. The caudids also – there's a different caudid called staghorn sculpin that is a predator in the estuaries as the fish enter saltwater. So there's a lot of caudids out there eating these guys, too. Another thing now to keep in mind is predation is a very, very natural phenomenon in nature. That's just the way life is there, okay? And if we have an imbalance in one fish species, it's going to affect another fish species. And that balance was impacted many years ago when the two bass species were introduced into our lakes here, Lake Sammamish, Lake Washington, and in Phantom Lake where they have only the largemouth bass.

This a photograph I took many years ago when I was a young man back on Lake Sammamish. And we were doing a study there. The fish on the top is a smallmouth bass, you can tell it by the vertical bars and the sort of dusky belly on it. It also has a very small mouth. The large mouth has a big long line down the side, a silvery belly, and a very large mouth. Both are predators, okay? But, this is an interesting thing, they don't target salmon, okay? But they're very opportunistic. It's sort of like if you were sitting somewhere and you had to go out and run around and look for your meal and you had, you know, McDonald hamburgers, and all of a sudden these filet mignons started coming by, which ones are

you going to take, okay?

Audience: Laughter.

Dr. Pauley: But in the absence of young salmon, in our lakes here and in many other lakes, crayfish are the preferred item. That's the big diet item of small mouth, and to some degree largemouth bass. In Lake Sammamish, caudids that I mentioned, they eat salmon. Well guess what, the bass eat the caudids too, so they are actually doing a good thing in there, they are not all bad. Besides that, they're a real good sport fish, okay? So the diet items when the salmon aren't there are primarily crawfish and caudids, and to some degree aquatic insects, not terrestrial insects. I want to make that point very clear. This is a picture I took, again when I was a young man on Lake Sammamish, and this shows a smallmouth bass heading up, taking his favorite diet item here, a crawfish. And they would sit and eat those all day if they had access to them on a regular basis. But when the salmon come by, they are just too easy to get, so they shift to those for a little while.

But now, one thing has to happen – in effect, three things have to happen for the bass to eat the young salmon, and all three of these things have to happen at the same time, okay? And one is – and it really doesn't have a lot to do with docks, I might add too, okay?

Audience: Laughter.

Dr. Pauley: That the salmon have to be in the area at the time the small mouth are getting ready to become active and spawn in the spring, and that's at a time when the water temperature gets around fifty-nine or sixty degrees, okay, or fifteen degrees centigrade. Also, it occurs at a time when the little salmon are moving out along the shoreline and the bass are moving in from deeper water into the shoreline to spawn, okay? The third item that has to happen is the fish have to be small enough that the bass will eat them, and generally that means they have to be under about four inches. On occasion they'll eat a bigger one, but their preferred food size is about three to four inches, okay, or even smaller. So all three of those things have to happen or they are not going to be attacking salmon. This in fact that been shown by both Dave Pflug and myself, we published a paper in 1984 on this, on Lake Sammamish, and it's also been shown by a number of other authors, Fritz and Pearsons in 2006. There's been a lot of work on this on the Snake River, which has both salmon and smallmouth bass.

Okay, one thing we need to be careful of is what are the actions that we might take that may alter or impact the predator/prey balance, okay? One thing you have to keep in mind, though, before we talk about that is it really is not practical to eliminate the bass. In fact, it's impossible. It's not just impractical, it's impossible. And the reason is the lakes are too large. The populations are too

well established. And they're a very popular sport fish. And if you tried to eliminate them you'd have four times as many people in this room as there are here tonight.

Audience: Laughter.

Dr. Pauley: Okay. In the predation balance, the things that we know from my and Dave Plfug's studies on Lake Sammamish and those of other scientists are that the black basses, which are the small mouth and the large mouth, are territorial. In other words, at a very young time in life they set up a territory, imprint on that, and they defend it. They move down into deeper water and come back, but they defend their territory. They orient very heavily to structures. And those structures can be manmade like the docks, but they also orient very heavily to trees, rocks, logs, drop-offs, anything that's natural in the lake, because they're in a lot of lakes that don't have docks, okay? And our work on Lake Sammamish, we did a study – tagging study – which hopefully you'll find interesting. I'll show you a couple of pictures from that in a moment. Ahrenstorff just published a paper in 2009 that's really an excellent paper on this issue of orienting on structures and territorialism. Stein in Lake Washington in 1970, he actually found largemouth bass prefer rocks and logs over docks. Isn't that interesting? And trees. So, what do I mean by orient? As I said earlier, they imprint. In other words at a very young age they imprint. Birds imprint. Fish imprint. Lots of animals imprint.

These are two pictures of maps from our study on Lake Sammamish. And this work was published in the California Fish and Game Journal in 1983. And what we did was we sampled 240 smallmouth bass in Lake Sammamish and we tagged those bass with tags that are kind of primitive by today's standards. But we moved those fish, those 240 fish, all over the lake. Now those sections that you see up on the lake, those are our sections. They're artificial, they're not the bass sections, okay? We defined those sections based on the type of vegetation that was present, the type of substrate, and how steep and fast the bank and the water dropped off in depth. We found – the largemouth bass were found primarily up in Ten E and this Fourteen West area, and then down in here in the southwest area. And then there is an overlapping area in these three areas down in the south over here – I don't know if you can see it, this is where they overlap over here. The rest of the lake is predominantly small mouth. And so we took fish from almost every section and moved them around in varying distances. And we also took another 238 fish that we tagged and put them right back where we caught them. Okay? And in this experiment where we moved them around, what you'll see here is that this fish moved from Ten West, we moved it over to Three East. And when we recovered that fish guess what, he was back in Ten West right near where we caught him. This fish we moved from Eight East down to One where the boat launch is. That's where all the tournament fish went, the small mouth and

largemouth bass, after a tournament. This fish went all the way back up to Eight East. We caught that fish on the very same fallen tree that was in the water up there when we retrieved it with its tag.

And this was pretty much the situation. A little over 40 percent of the bass we got back – and I think we got back about 150 bass with tags – about forty percent of them were either in the area in which we originally caught them, or what we called moving toward it and were in the adjacent area between where we let it out and where we originally caught it. Hope that makes sense. Of the ones that we released back into the same area, so let's say that if we had released a fish, caught fish in this area and released them back here, and caught them in this area and released them right back in that area, eighty percent of those fish stayed in the area. And I believe all but one fish that we retrieved was in an adjacent area on each side. So they stay very tight to their home range. And the reason we did this study was the Department of Game at that time, which the state had two different departments, and Game was responsible for freshwater fish, they thought that all these bass that were being released might just camp out in front of Issaquah Creek and eat the little young salmon that are coming out of the creek. It wasn't happening. They were going right back where we got them.

So now, let's take a hypothetical example with the things I've explained to you and see what might happen if we change the shoreline, okay. Now let's take a shoreline that has nothing on it except three docks. And in year one we have an established – that's a hypothetical year one, it could be ten years ago, it could be today, it could be five years from now, it doesn't matter. And those docks all have established populations of smallmouth bass because they've imprinted on those docks, and that population is there. And if one dies, another one will go in there and take its place, okay, but there's some equilibrium there. Now, what happens in year three? We probably still have about the same population because there are only so many places those fish can set up as territories. And that's the carrying capacity of the body of water, okay? Now guess what? If you do what the city of Bellevue wants you to do and put trees in the water, now what's that going to do? Or large woody debris as it's called. Okay, in the first year, it depends on when you put it in, you may or may not have a fish on the trees, alright? But in year three after the populations are established, and you have nice ten- to twelve-inch smallmouth bass in the lake, this is an established principle, you will have an increase in the number of bass because they like trees and logs and rocks as well if not better than they like docks.

Okay, so some important things to remember about large woody debris, or trees – it has a lot of names in the literature, course woody debris, course woody habitat, small woody debris, I mean on and on and on and on. It's all the same stuff, okay, it's putting trees and branches and logs and things in the water. The best paper

that I've seen recently is this one by Ahrenstorff that was just published in 2009. And this is a very good scientific paper and statistically valid. That's another thing, that for science to be valid it needs statistics, okay? When you put large woody debris or trees in the water, it will increase the number of bass in the lake. That's a given. It will also reduce the home range of the bass. So all of those bass that are hanging around the dock, they have some home range that they'll move around in. We don't know exactly what it is for any one bass, but it's there and they will move around, and they won't go outside that home range. They'll stay inside of it.

And so here's what we might look at as some hypothetical home ranges of those fish we looked at. And they will have overlapping areas, okay? But they will still have a home range that's associated with the major piece of structure they imprint on. And what they will do here is they will forage in these areas for their favorite food, the crawfish. And these will come in here and forage for crawfish, okay? Now, what happens when we plant those trees they want us to plant, okay? Look, the population increases, the home range is smaller, it overlaps but it's smaller. These bass in here now aren't going to go in here because these guys are territorial and will drive them off. So now their home range and cruising area is reduced in terms of getting their preferred food, okay? And so we've created additional ambush points for the salmon. And we did one other thing, because now they can't cruise and get the crawfish which they really like, so now they really become opportunistic when the salmon come by and they are going to eat more. Because the crawfish is very high energy for them relative to the salmon, and now they have to go out and feed and get more food, so they are actually going to eat more salmon. Okay, so they become more selective on salmon because they can't cruise for the crawfish. And again, that's an established principle with bass. So they are going to increase their consumption on the available prey, which now becomes salmon more in those restricted areas.

Now, a couple other points about trees. We talk about trees and docks, and we talk about trees give shade, but docks give shade too. In fact, Chapman in his paper in 2007 he says docks are just a surrogate for trees as shade, okay? And if you actually use the type of docking that allows the light to go through it, that's really much like a diffused tree shade.

Okay, terrestrial insects. Remember I talked about that, I wanted you to remember that? They contribute almost nothing to the salmon's diet throughout their life. And Dr. Tessa Francis gave a talk to the Planning Commission last year and she indicated about insects coming out of streams and into a couple of lakes. Two things. Terrestrial insects are more important in the streams. They are virtually non-important in the two big lakes. They make up an insignificant amount of the food of the salmon and trout in Lake Sammamish and Lake Washington. Also, the two – Now, she did

a very good study, I'm not criticizing her study, but she worked on small lakes that have no anadromous fish in them. And resident trout tend to eat terrestrial insects more than do anadromous fish. Again, it's not the major part of their diet either. But salmon of all species eat virtually no insects, okay?

Okay. Another thing that's talked about is well if you plant great big trees with the idea that they'll fall in the lake later, that that'll influence the shoreline temperature. It isn't going to influence the shoreline temperature in a lake this size. It just isn't. You've got too much wave action, wind action, and streams coming into the lake, and a variety of things that influence the temperature. That small amount of shade that a tree gives, or a dock even, isn't going to change the temperature very much, if any.

Another thing that a lot of people don't realize is that some kinds of trees are toxic. Cedar in particular. How many of you put cedar paneling in your closet? You know why you do that? To kill the insects, okay?

So, the take-home message here is that docks offer shade like trees, terrestrial insects that are going to come from the trees are going to be an insignificant amount of diet of salmon in these two lakes. They aren't going to influence the temperature in the lake. And depending on the type you plant, you may end up planting a somewhat toxic tree. So, docks themselves aren't really the problem. Remember I told you there are certain events have to happen, all those three events have to happen. None of those involve a dock being there, if you'll recall. Because it can happen if you have rocks, trees, logs, whatever. There have been studies on the Wells Dam reservoir in the Willamette River that indicate development and docks aren't that big a problem for salmon, okay? One of the things is they move through the area very, very rapidly. And again if you'll remember the big lifespan we talked about, going through all the lakes and the locks and out into the Strait of Juan de Fuca and out into the ocean and back again, their time in the fourteen percent of shoreline of Lake Sammamish that Bellevue's is miniscule, it's like a drop in a big fifty-five gallon drum. It's real small.

Okay. The bass will orient on other structures. So it doesn't matter if docks are there or not. If you pulled out every dock on Lake Sammamish, or just in the city of Bellevue, and you put trees back in, they're going to just hang out on the trees. They're going to hang out on any rock that bigger than a foot in diameter out there. They're going to hang out on the drop-offs. They're going to hang out on the points. In other words, they hang out on structures. And docks just happen to be a structure. But it's not really the problem. Remember we talked, they're opportunistic feeders. They do like crayfish, but if they see a bunch of salmon swim by they'll eat them. There's no doubt about that. So if you increase the number of bass in the lake, you're going to increase

the predation rate on those young salmon, and that is going to happen if you put trees in the water, or large woody debris.

So I spent quite a bit of time reading several of the documents of the city's. I'm going to focus – I looked at the dock and pier report, which is actually a pretty good report. And then I looked at the best available science and I looked at the update for 2009. There's not a lot of update on the science in 2009, so I'm going to focus mainly on the 2005 report, which I think is the one that's been used to promulgate the regulations in Bellevue.

Okay, one of the things I see is a failure to present opposing science in the scientific views. They use an enormous amount of non peer-reviewed literature. It's called colleague reviewed but it's very different from peer reviewed. And you're going to have just a little short talk about what peer reviewed means. But it's very important that science be peer reviewed. It has no validity really if it isn't. There's a lot of misinterpretations of scientific citations in that report. There're inconsistent statements and conclusions. And there's conclusions without supporting science. So following are just a few examples, because I don't have time to go through all of them. But there's a few I'd like to show you that I found in that report. And the way it's set up, if you look at it, it shows a report name up here. I do have one from the dock and pier report. And then the page over here and the topic here. Okay, the bolding and underlining is mine. Other than that, they are verbatim quotes from the best available science report given to the city in 2005.

Okay, in this particular one it says bulkheads is likely to primarily affect chinook salmon, increasing their predation risk. That statement is a conclusion that's speculative at best. There is not a single paper that I have found that says bulks will increase the predation on salmon, okay? Also, it also talks about an increase in substrate particle size, and then it says it primary affects – it's likely to primarily affect – the juvenile chinook salmon survival by eliminating their preferred habitat. And then there's a contradictory statement in the report itself following that, and the authors immediately question whether they have the facts needed to draw that earlier conclusion. Do bulkheads in Lake Washington and Lake Sammamish and Phantom Lake cause increased sediment size or coursing, thus eliminating chinook rearing habitat, and sockeye, so on and so forth. Okay, so they just questioned what they said was a fact.

This same example – Bulkheads are in-water structures, okay? A rock wall on a lawn is not a bulkhead. A concrete wall or riprap bulkhead sits in the water. And so they in this same thing under identification of data gaps, okay, they say no studies were found that address the cumulative effects of in-water structures, also over-water but I'm emphasizing in here because of the bulkhead, structures in Bellevue's Phantom Lake, Lake Washington and

Lake Sammamish. Okay? This is example two under recommendations. The cumulative effect analysis is essential. It is known that the effects of docks and piers blah blah blah are incremental and cumulative in nature, and they cite Jennings et al, 1999. I read that paper three times and I cannot find a single reference to a dock or pier in that paper. So any conclusions drawn from that statement are totally invalid.

Example three, okay? Bulkheads needing any, I want to emphasize the word any, type of maintenance – I mean if you move a rock or something, okay, repair it, retrofit, whatever – should be considered for removal and replacement with vegetative large woody debris, which is called bioengineering, okay? And you'll see that term in the next slide. This recommendation is based on a conservative interpretation of the best available – that's not conservative in my mind. It's a huge expense to any landowner that's going to do that, okay? Then the report says – there's a lack of data for this, because the effectiveness – on a subsequent page – the effectiveness of alternative shoreline armoring – which is bioengineering or the large woody debris stuff – the techniques are unknown. And they say that in their own report. And then they go on to say these questions should be answered through lake-specific studies. I don't know of any studies that've been done on these lakes regarding that, and I've looked through the literature and I can't find them.

Example four. This is from the bulk and piers report. I'm not so upset with the statement here, I'm upset more with the interpretation of it. The permanent removal of woody debris during bulkhead or pier construction reduces the availability of complex refuge for small fish. True. That's a true statement. But what's not stated is that woody debris also houses large predators, so if you take that out you've essentially gotten rid of some habitat for large predators too, and that part of the equation is not put in this statement, okay? As I pointed out earlier, the habitat for predators is also the same.

Example five. Over-water structures create habitat for species that prey on salmon. Tabor et al, and they cite two reports from 2004. Tabor is a very good scientist, okay, I don't doubt his work, I doubt the interpretations. Conflicting statement in the same paragraph. However, no studies were found that specifically examine salmon mortality due to predation associated with over-water structures. Interesting. Same paragraph.

Okay, example six. Available pertinent literature is limited, that means it probably wasn't there.

Audience: Laughter.

Dr. Pauley: Nonetheless, inferred and hypothetical associations can be made based upon available scientific literature. Well that implies there

was at least one paper, okay? And this is conjuncture of science, and it's not really based on science when they're saying they are inferring hypothetical associations. This goes on throughout the report, this type of statement. And it's all the way through the report.

And my last example goes back to the shade and trees. And that is that canopy and shade by lake vegetation – and they're talking about trees here – can moderate water temperature along the shoreline. And this is up on page seven of eleven under Lake Washington and Lake Sammamish ecological functions. Then, in the bass report on page 730 it says in large stratified lakes like Lake Washington and Lake Sammamish water temperature moderation is unlikely to be driven by riparian vegetation. And that's the truth. That statement's true. The one before it isn't, okay?

So in summary, in this report – it has not been peer reviewed, that's one of the big problems, okay? It doesn't have enough science either in it to make these promulgations to rules. It's failed to present opposing science and opposing science views. It hasn't used peer-reviewed literature. It's misinterpreted scientific citations. It's made inconsistent statements and conclusions. And it's made conclusions without supporting science.

So what's essential before adopting some regulations? Okay, I think most landowners, they want a nice beach, they want a nice environment, and they'll probably be happy to work with the city, but the regulations should be reasonable and based on good science. Okay, a better understanding of the dynamics of the system is important, okay? I just read something by Hans Berge who worked on the kokanee I think for twelve years. He's got twelve years of data and he makes the statement that I need more data because I don't really have enough to make the statements that really are definitive. He's a really good scientist, and he's got twelve years of data and he's saying there's some tentativeness to his science, even after twelve years of data. I think that's important. There should be a more rigorous balanced approach to the science and its interpretation, and not just what's on the agenda, what are the conclusions that we want.

Okay, inclusion and consideration of the opposing science should be – and consideration for alternative actions. In other words, if you take that bulkhead out, maybe you just terrace it. Because you know that same paper they cited about docks and piers, they actually in that paper talk about riprap bulkheads and they indicate that a bulkhead that's vertical, and if you taper it to forty-five degrees, you have much less of an impact on the environment and you actually have an increase in biodiversity in the rocks because of the critters that will go inside those crevices. And also I might add that riprap rocks are not the same as a concrete wall because riprap rocks have crevices that absorb wave action, and so the

force of the wave is dissipated in those cracks. A concrete wall is a very different thing. And I think in here they're using everything to be like a concrete wall.

And we should have controlled testing and evaluation. And that means experimental and control areas with statistical tests as the hypothesis. Is it or is it not? And true peer review of the relevant reports that come out. And that means people that aren't related to the city, and you say boy, that's going to cost the city a lot of money, well all these things you're putting on the landowners cost them a lot of money, okay? So this is something I think is really important. And in fact, when I would be on the committee for a PhD or a master's thesis, this is something that you do, you rigorously go through their work. And this probably wouldn't pass, okay?

Audience: Laughter, applause.

Dr. Pauley: So, I want to thank you again, the Planning Commission, for letting us speak. And I hope I can answer some questions later.

Audience: Applause.

Ms. Tebelius: Does anyone now know why we had him?

Audience: Laughter.

Ms. Tebelius: And hey, he's a resident of Lake Sammamish. I would have loved to have learned about fish when he was a professor. Some of you have asked why did we have a fish expert up here. In 2006, under the critical areas ordinance that was passed by the city of Bellevue, they placed all the shoreline under that critical areas ordinance. And as a result, the kinds of things that you are seeing up here are the kinds of items that they are asking homeowners to do if they have to repair their dock, repair a bulkhead, do certain things within so many feet of the water. And that is why we had Dr. Pauley come up and talk about the science, because all of those regulations were premised upon the things that were happening on our property dealing with waterfront and affected the science. And he's here to refute that. And I just want to remind the Planning Commission members, I've said it before in front of you, and to the two new members, there's nobody who cares more about the lake in front of their land than the landowners. Nobody.

Audience: Applause.

Ms. Tebelius: So, next we have Norm MacLeod. I want to bring him up here to talk a little bit about peer-reviewed science, because I think it's really important for the Commission members to understand this. Now Norm was born in Vermont and he actually has a degree in forestry. And after that he spent most of his career in the Air Force in aerospace medicine. After he retired in the late 80s he moved

up north, and since then he has founded an organization that is called the Environmental Sciences Peer Review Institute. Ladies and gentlemen, Norm MacLeod.

Audience: Applause.

Commissioner Ferris: I don't know how much longer – I mean it sounds like you have a lot more to talk about, and we've not been able to ask any questions.

Mr. MacLeod: Oh, I'm going to be five or ten minutes.

Commissioner Ferris: Well I was asking not you specifically, for the rest of your agenda for the evening.

Ms. Tebelius: Let me figure it out. I'll be right back to you. Short.

Mr. MacLeod: Short, okay. This is going to be a teaser on fully independent, rigorous peer review. In five or ten minutes you can't do it justice. I'll be happy to come back and speak with you at length if you wish. And any other groups that would like me to. So I'm going to talk about cars.

Audience: Laughter.

Mr. MacLeod: We have a variety of quality of cars. You have a Yugo and you go all the way up to a Ferrari, or maybe you start with a Trabant and you go up to a Rolls Royce, and the Trabant proves that people in the same field, or in this case the same country, can produce a wide range of quality. The same is true in science. Now, when you do the Shoreline Master Program update, you get a body of science referred to you by the Department of Ecology. Some of the studies as Dr. Pauley indicated are good quality studies. Others are not. And you, as – if you're not a scientist, you're not in those fields – you probably don't have a real good measuring stick to be able to figure out what is real and what is not. And the same – as if you like Mustangs and you like Corvettes, and you can't decide which one you're going to buy. But you've got a pot of money and you're going to get one of those puppies. Okay, so you start reading reviews. Those reviews that you read are not the ones that come to you from GM or Ford, those are the ones that come to you from all of the other motor journals that you like to subscribe to and read, and that you – written by people that you trust. Now, what happens if you find out that one of those people that you trust writes a good review about a Corvette. You buy the Corvette and then about six months later you find out that he was bought off by GM.

There are inconsistencies in the scientific fields. We do need to be fully aware of exactly what you are looking at. Now, fully independent peer review, as Dr. Pauley indicated, is the peer review that comes to you through people who do not work for the

Department of Ecology first, are not paid by the state of Washington second, and are not working for consultants that are paid by the Department of Ecology or any other entity in Washington. So what you need to do is you need to find a group of scientists – senior scientists – who are regularly published in the field, like Dr. Pauley. They will be doing peer review as well.

Now, if you want to have a really good picture of what bulkheads do, you might want to put together a study. And you could probably do this before your next round of updates for your SMP. Now, those studies might include a section of shoreline with hard armoring, concrete wall type. One with the dumps of rocks. And the other with large woody debris. And a control beach of absolutely nothing done to it at all. But that will take years. It will cost money. It is something you should do for the future to refine your knowledge. At this point, however, you should be looking for a way to obtain solid peer review of the science that you have in front of you. You want to know which parts of that science are good. You want to know whether the conclusions that they draw in a synthesis – a synthesis is where you take a bunch of studies and put them together and draw certain conclusions from them. And a lot of the stuff you got from the Department of Ecology is of that nature. You need to have that reviewed too.

Now, when we cite, say, an independent peer review, we don't mean okay, I've got a study, I work for the Department of Ecology, I've finished the study, and I give it to the guys down the hall to see what they think of it. You don't take it across the – over to Olympia from Lacey and give it to the Department of Fish and Wildlife to see what they think of it. That's not real peer review either. What you do is you go to a body, a journal or something of that nature, or like our organization, the Environmental Sciences Peer Review Institute. What you do is you give it to them, and they have a referee, a referee panel, or something of that nature that sits between the study authors and the people that do the reviewing. The people that do the reviewing tend to – typically will do it independently of each other and will come back to the referee, and then it goes back to the authors, and they get to respond to the draft. That can go back and forth a few times until everybody's finished. You've gotten the most good you can out of it. And then peer review report comes out. Then you will know whether the science you have in front of you is of the quality that you wish to use for your policies.

As citizens, the folks in your community deserve to have that level of rigor, that level of due diligence, before you formulate a policy.

Audience: Applause.

Mr. MacLeod: Now, people think of science and they think the dollar signs come out. Peer review is oftentimes done pro bono by the scientists who are performing it. In an organization such as ours, there would be

an overhead cost for the administrative overhead and things like that, but that is not really a big problem in terms of expense. The other things we can do are things like science audits. We can go back and look at the science studies, we can see did they follow the scientific method. If they didn't follow the scientific method rigorously in building the science, there's probably not much point in going through a full review. You want to have the good science. You want to do the due diligence to prove to yourselves that that's the science you have.

Now, again, I would be more than willing to answer questions later. And would be more than willing to come back and go into more depth with you. Thank you.

Audience: Applause.

Ms. Tebelius: Commissioner Ferris had indicated – we had told everyone we would be about an hour and a half, and we're over. So if you would indulge us, we'd like to put a presentation on and then we'll let you ask questions of our experts, if that's okay.

Commissioner Ferris Yeah, I just wanted to know what your anticipated timeline –

Ms. Tebelius: Well, we have one presentation on armoring, and Mr. Thorpe here is doing a case study, and Mr. Klinge is doing a little bit on the law. So we'll try to condense it so you can then ask questions of the experts. So everybody, speed her up.

Yeah, go ahead.

Mr. Thorp: Good evening, ladies and gentleman. You follow somebody with three or four PhDs, a couple of masters, you think well you're just going to have to keep it really simple and, uh, do the case studies. So, I thought – I kept telling myself tonight as we are leaving on a plane tomorrow for a vacation, I told my wife that I – oh, it's only about 50 people and it's like a class, it's going to be simple. So, uh, thank you for all coming out. Thank you to the Planning Commission members. I've appeared before you, I've worked with your staff. I'm Robert Thorpe, I'm a certified planner and principal of RW Thorpe and Associates. We've been in practice for 34 years. And before that I was a city planner at Mercer Island for five years. I had the good fortune of working on both, as a staff member with the city of Kirkland, on the model shorelines program. It was the first model developed by DOE. And following that the SEPA guidelines. I, uh, developed shorelines programs for Mercer Island, for Beaux Arts, Medina, Yarrow Point, probably forty or fifty communities. We have been doing this type of a critique over the last seven or eight years on critical ordinances, critical areas ordinances, and shorelines. I'm going to try to be brief because the hour's late. But there are the case studies which the Planning Commission will have a chance to look at.

What we try to do is look at this and we work both as consultants for public agencies and private people getting docks. I live on Mercer Island. I work on issues there. Advise the Council on issues there. So we try to come with a kind of middle-of-the-road approach of what is practical and what is reasonable, a balancing of the environment and the ecology and economics. And so that's our thought in these processes. We have landscape architects, environment scientists, I teach these classes at seven universities. And so, happy to appear here this evening.

What we wanted to do is look at using the experiences like the Thurston County prep panel where in fact the studies of experts like this, the county commissioners took the critical areas and the shorelines off the table four years ago, and it has not reappeared. So they've said, wait a minute, we're getting some things from consultants. And I think there is some myths here that go on. When you go to these meetings – I go to Issaquah, I go to Mercer Island, I go to Tukwila – and you testify, the consultants will tell you, well, if you don't do it this way, DOE is going to make you do it. But if you ask the DOE representative, sir, no, it is your local program, we're not going to interfere. So what the consultants are saying, what DOE, is something else.

There are other myths that go back to the early plan. Shoreline management requires public access. Read the law. It does not require, it encourages. And I'm going to talk about semi-private recreational tracks that are all over the lake. People have four or five hours up above and they put them. That's what is called public access at the local level. So that's another myth.

Another myth is some of the science is best available. And I think some of the experts – and I've heard this – whether it's in Thurston County, whether I've heard it in Olympia – Okanagan County – in small communities, is there's this kind of body of things that get built by the consultants who have large fees to do these things, and they keep passing this down that we have to do this. So what's the best way to look at this? Look at the science, give some tools to the Planning Commission and the staff. But I think the best way to do it is look at what happens to you as an individual property owner, whether you own a small dock, whether you are part of the Meydenbauer Bay area, whether you are part of a neighborhood association, what happens.

So what we did is we wanted to look at five case studies. We wanted to see what is their impact on value, use, permitting and time and cost, reasonable probable outcome, and what's the effect on residents' reasonable expectations of using water. Everybody here who has a boat or is near, I live a block from the water, I live above a park in – on Mercer Island. Everybody values that view, that access and that. But how – what is the expectation when you have waterfront property. I think this is where sometimes the

regulations don't take this into account. So, we have five case studies. We're going to go through them very quickly.

The first one is a simple – is a house on the lake, and it is a primary residence. It has a studio and a cabana, and they have a long walk way. It's over a hundred steps down. And in this situation the house is a primary residence, thank you, a primary residence, and the cabana is a guest house. In this case, because – if the house is uphill, and the cabana – and in between you have a series of steps, over a hundred steps going down to a patio area. This is – the family is aging, they want to be able to use this and use it safely. They're in a situation where when they apply for permits they get several different interpretations from different staff members as to how the code reads. They want to – they found wood rot in the cabana. They're told they can't repair the cabana. They're told that they can't replace the walkway. And they're told that they can't replace any of the plants. And all they want to do is to enjoy the use they have there. The cabana serves as a guest place and is essential to the living quarters because of the size of the house and the use of the dock, and they want to put in a barbeque. Here's a myriad of things where they've been told they can't do it, or they have to go through extremely difficult regulations.

The next one is Meydenbauer Bay. Many of you are familiar with it. The Planning Commission is because of the park plan there. I'm not going to spend a lot of time on this. But here's a situation where – I have four case studies that are about private sector, and one that's about the public sector. The one that's always troubled me as I've worked for both public and private is sometimes Puget Power can go out and build a substation and not put in any landscaping around it, but the person who builds a park or something next door has to do immense landscaping. Or builds an apartment project. Here we have a situation where there are proposed structures and piers that may not meet shorelines. Because it's a public agency, can they live by a different set of rules than the private property owner? It's kind of a question that I ask the Planning Commission, I ask others, is what's going to happen here? Is it a fair playing field? Does everybody play by the same set of rules? So here in this case study, there are preferred alternatives, structures in the buffer, new structures in the buffer, new moorage facility, no buffer, new grading materials and proposed uses which all may or may not meet Shoreline Management Act. How's the code going to come out to reflect that? And how's it going to be balanced with the other case studies we've looked at?

This is a case study that I find very, very interesting. It's a unique park. Diane spoke a little bit about it. I've done projects for cluster housing in this area and when it was in the county. And I've known this area. Many of you that are over the age of thirty may have gone to dances or things when you were young and remember events. But right now you have a situation that's owned

as a private entity. They cannot repair buildings. They cannot repair lifeguard facilities, they can't repair anything. They can't really expand any recreational vehicle parking or anything. So you have a dead hand on a thing that provides – this is a five-acre park with about 540 feet of waterfront, and you can't really improve it. So does it stagnate, and eventually they say we can't do anything else, and they sell it to somebody to build houses. If you sell it to somebody to build houses, automatically the first 200 feet is a no-build zone. You have to replant it with riparian vegetation. Can't use it. So, what does the property owner do? They can't improve it, they can't sell it for residential, and it's an essential community – it's a historic area where people remember things for years and years and years in this area that they went as kids and learned to swim and all this stuff. Here's a thing where even though it's private it serves like a public entity. The city doesn't have to pay taxes to take care of it. So here's something that's crying out for fairness in this system. Here's Vasa Park. You can see the conditions of the buildings, some of the things. You'd have to –

And here's the case study that I find very, very interesting. This is one that really troubles me, because I see this on Mercer Island, I see it other places. Here's a property owner – I forget, it could be Lake Sammamish or it could be Lake Washington – this is a hypothetical. You have an existing house located here. And the property owner wants to build a second – or divide a second lot. It has plenty of room here. And so they have to provide a twenty-five foot native growth protection easement along the entire front of their property. Not only do they have a twenty-five foot shoreline, they also have a buffer setback. So it ends up being fifty just so they can do the short plat.

And the final one is a residential dock. And this is somewhat – this will really tell you what a lot of the people in the area are concerned about. This is a site that has – it had two hundred and fifty square foot moorage, home was built in 95, a four-foot pier, and forty-five foot long. They've requested to add six hundred and twenty square foot to the dock and put a simple, level boat cover in. They had to do a – and to do a new pier. The costs were over two hundred and fifty thousand dollars just to do this.

So, and one of the problems that we have seen – and this isn't just Bellevue, every city, you talk to one staff member, they interpret the code one way, another staff member another, so there aren't written directives of the director about how these things are to be done. So this is the problems we have in conclusion. What you find here in these situations is, what these case studies show, there really is no transitional areas next to the lake. There're bulkheads, docks, landscaped areas, so you don't have like a stream, or you don't have like a wetland area, which are appropriate for buffers, but not the edge of the lake. There's time, there's various decisions, and most times now a landowner has to hire a biologist, a fish expert, a dock designer, a planner, engineers, and an

attorney. It's very expensive, and it's very unpredictable. So the question is, you know, are these regulations relevant? Do they have a nexus to the problem? Are they proportional to the benefits? And are they cost-effective? And could regional fixes on public properties in large scale take care of this and offset the minimal impact it would have from each property. So thank you for listening.

Audience: Applause.

Ms. Tebelius: We'll probably have Bob come to another Planning Commission meeting to give the full report. I want to introduce you to Richard Johnson whose family homesteaded Lake Sammamish in the 1880s. You're going to see a study on armoring on the lake so that you get an idea of what is happening. The study was done by a crazy man who lives on Lake Sammamish whose name is Dallas Evans. He sits over there. He went out, he has taken a picture of everybody's waterfront, everybody's property on Lake Sammamish, at the highest point in the winter during the storms. And Scott Sheffield back there who's taking a picture went with him. And I have yet to figure out why. But tonight you're going to see their report.

Audience: Applause.

Mr. Johnson: Thank you. I am not an attorney. I'm not a planner. I'm not a scientist. I'm one of you. I'm one of your neighbors. So's Scott, so's the crazy man, so's the lady in yellow. So, we found this to be particularly egregious, and we're just kind of go through this really, really quickly. And, okay – oops, there we go. And now I've got to go back. Real quickly here. There was an RFP issued in June 2007 to do an inventory of the Lake Sammamish shoreline. These are quotes lifted directly from that RFP. This is really important that you understand this so you can understand what was being asked. The city has a variety of existing data sources that will be used. Create a broad characterization – oops, okay.

Audience: Laughter.

Mr. Johnson: We're particularly interested in where specific functional deficits exist, where future restoration would be most effective, and assume that the consultant will have a lead role and present it. In other words, take our data, generalize it, agree with our conclusions, and be our authoritative voice in front of the Commission and the Council. Okay. As a citizen I've got a problem with that. I've got a problem with my money being spent like that.

Here's what they claimed. Seventy-one percent of Lake Sammamish is claimed to have armored shoreline. Eighty-one percent of Lake Washington. Lake Sammamish is claimed to have thirteen of overwater cover per foot of water front. Lake

Washington, eighteen square feet. Now, that works out to a nine hundred and seventy-five square foot dock on every property on Lake Sammamish. We thought that was a little high. So we did our own inventory. Do we have the standing to do that? Can citizens actually do that? The WAC says yes you do. Private individuals or organizations dealing with pertinent shorelines of the state consider all plans. So we did that. That's our scope.

Okay. Lake Sammamish goes up and down a lot. I think I'm trying to go too fast and I end up slowing myself down. Alright. Lake Sammamish goes up and down a lot. In 2006, the height was 30 feet, and there's a way that this is all measured. And the minimum was twenty-five foot seven three. What you see here, alright – really, really quickly, I'm trying to get through this as fast as I can – this is 2009 in the dark blue, and the other line was a four-year average, okay? Now, according to the Corps of Engineers, we talked about this, bulkheads are touching the water, upland they are retaining walls, they have no shoreline impact. In the studies, the city of Bellevue and The Watershed Company, they don't acknowledge that. They use very imprecise terms, armoring, hardening, okay? They use a GIS system, and you're going to see the problem with that here in a minute. And we used Bing maps. If you're not familiar with that, Bing maps have much, much, much better resolution. They're publically available. Anybody in this rooms that's got an internet connection and use the same maps that we did.

Okay, guess what we found. The claim of seventy-one point four percent, well actually in the spawning season when the water level is low, it's seven point four percent. Okay. Slight error. Very, very slight, right? At the high water mark, it's about thirty-six percent. How do we know that? We've got pictures. The resolution counts. The low resolution picture on the left, well that's GIS. They actually had somebody walk along the shoreline clicking when they thought it was boulders. Yellow when they thought it was a vertical wall. And blue, that's the ordinary high water mark, okay? These lines, the white lines back there, that's the two hundred foot setback. Alright? Well, here's an example of one that we found. I'll go back for just one second here. Okay. As you can see, this is claimed to have vertical walls or rock boulders. There are none along that entire section. Just not there, folks. Okay?

There we go. Okay. This is one of the most beautiful beaches in all of Bellevue. Everybody that drives past there or goes past there gets really, really jealous of it. As they should. It's a gorgeous, gorgeous sandy beach. And it's claimed to be very, very hardened. Well as you can see, the winter lake level, the dock's almost under water here. There's the retaining wall way back there. It just simply isn't there. They missed one. This section, this actually is a bulkhead. In the winter that does actually touch the water. They missed the whole thing. We corrected that. We put that back into

the study to make sure that the numbers were indeed accurate.

Okay, here's another one. I love this one, because, yeah, these guys, these are all vertical concrete walls. As you can see there, they've got beautiful, beautiful sandy beaches. And the shallow sandy water goes out here. Over there, these two houses, they have rocky beaches and they don't have any bulkheads, okay? They have a nearshore drop-off. A little bit closer look – I'm very associated with this, this is my house, alright. This little kayak here, that's fourteen feet. Alright. You can see the ordinary high water mark, and you can see how far it is from the ordinary high water mark down to the water level in the summer time. You can see in the winter, that little fire pit there, that's just about where the water comes up to this year.

Here's another one that we really like because the dock is completely under water here. It's listed as hardened, okay? Well guess what? What back there, that's the hardening, you can see even when the docks are under water it's nowhere near. Nowhere near. Summertime, you can see the water down there.

We've already been through this with Gil, so we'll not waste any time. But just to say, the intuitive connection, what intuitive connection, okay?

So why do we care? You can't make good decisions from bad data. It flat out can't be done, okay? The shoreline armoring data inflates any possible impact by tenfold. So how can any responsible decisions be made from this data? The answer is, it can't, alright? And at the end of the day why do we have to have these? December 4, 2003, Lake Sammamish crests well above the ordinary high water mark. That's Dallas's Whaler, and you can see it's just about getting torn lose. A lot of the shoreline owners lost all of the plantings that had to be planted. I lost plantings that I was required to put in to get my dock installed. Two years in a row, at a significant cost to me. Okay? Because of that. That's not the shoreline owners that are doing that. That is stormwater management that is doing that, folks. That is what happens when you overbuild and you don't correct for that in making the development people put in adequate management for the stormwater. And then to come back around and to tell us that it's the shoreline owners responsibility to build the buffers, to take care of that, I cannot for the life of me connect those dots. Thanks.

Audience: Applause.

Ms. Tebelius: For those of you who've not made the connection, one of the requirements of the CAO is to make plantings on our waterfront. And this is why we showed it, because in terrible storms, when there's not control of the runoff, those plantings are not going to survive. And the homeowners are responsible for that. So we're going to end tonight with a lawyer, what else? Charley Klinge is a

partner in Groen Klinge and he is a land use attorney. He's been involved in this for over twenty-two years, and ladies and gentlemen, Charley Klinge.

Audience: Applause.

Mr. Klinge: Good evening, everyone, Chair Sheffels and Planning Commission. So I'm going to talk about the key issues in the Shoreline Master Program update, and just for a few minutes here. So I think if I push this I'm going to get my next one. There we go. First thing to understand is you need to distinguish between the Shoreline Management Act and the Growth Management Act. They're two different things. The focus of the Shoreline Management Act is to manage development on the shorelines, not prohibit development. Under the Shoreline Management Act, single family uses, including recreational docks, are a priority use of the shorelines. The focus of the Growth Management Act is to plan for population growth and also to protect specified critical areas.

The next important point is that shorelines are not critical areas just because they are shorelines. Rather, the city must determine whether any fish and wildlife habitat, conservation areas or wetlands are within the shoreline jurisdiction. That's up to that two hundred foot line from the ordinary high water. If so, then the updated Shoreline Master Program will govern protection of those areas. But as we saw in the earlier presentation, the critical areas appear to be the streams like Issaquah Creek and the Cedar River where the salmon are actually spawning.

The next thing is sorting out the information and making a reasoned decision. The state regulations known as the ecology guidelines direct the Planning Commission to review the most current and accurate technical information available. But they're also to consider all information provided by interested parties, and even non-technical information based on citizen observations and other data that some might call anecdotal evidence. In considering all of the information, the ecology guidelines do not require a certain result, but rather they provide that the city must sort out the conflicting information and make a reasoned decision.

The next thing to understand about a Shoreline Master Program is that it's not all about land use development regulations. It's also about non-regulatory programs. As an example, a non-regulatory program would be a program to improve treatment of stormwater runoff from city streets.

The next thing is that development regulations can only impose mitigation of impacts caused by projects. And the mitigation must be based on impacts to the currently existing shoreline functions. Mitigation only, not enhancement. The ecology guidelines encourage enhancement as part of the non-regulatory programs.

The city's draft shorelines analysis report says the same thing at the bottom of page 26 and top of 27. So why can't development regulations impose enhancement requirements? Because to do so violates property rights. The key rule is up here on the screen. The state law holds that requirements must be, quote, reasonably necessary as a direct result of the proposed development, end quote. This state law implements constitutional principles by requiring a nexus, a connection and rough proportionality between the impacts caused and the conditions on the project. In short, mitigation is allowed, but going beyond mitigation of impacts and imposing enhancement or restoration violates property rights.

The next issue is to discuss buffers. There's a lot of misunderstanding about buffers, what they are, and when they are appropriate. Buffers are designed to be vegetation conservation areas that are needed to protect native vegetation where it still exists next to defined critical areas. As noted above, the lake shorelines are not critical areas, so buffers are not appropriate. The city's current rules misuse buffers. The current rules call a landscaped yard a buffer and then presume that the yard functions as a natural shoreline. Then in turn, that justifies shoreline enhancement to compensate for the assumed harm to the buffer, the yard, no matter how trivial the project. But the premise is wrong. Building something in a landscaped yard or on a patio is not the same as clearing native vegetation from a natural site. The city rules must recognize this distinction. The city's own studies –

Audience: Applause.

Mr. Klinge: On the screen is a quote from the city's best available science. The riparian shoreline of Lake Washington is highly altered from its historic state. Current and likely future land use practices preclude the possibility of the shoreline functioning as a natural shoreline to benefit salmonids, the salmon. And it's got similar statements about Lake Sammamish and Phantom Lake. The ecology guidelines are clear that vegetation conservation, the buffers, are not required of shorelines, especially where the shoreline is altered. In fact, what the ecology guidelines say is, on the screen, like other master program provisions, vegetation conservation standards do apply retroactively to existing uses and structures. The best example is the city of Redmond. Redmond adopted a Shoreline Master Program without any buffers. They just have a building setback. The Department of Ecology approved the Redmond Shoreline Master Program because it was consistent with these guidelines. Bellevue should follow Redmond's example.

Let's move on to those case studies and get his wrapped up. The case studies demonstrate situations in which the current city rules go beyond mitigation and either prohibit reasonable projects or require that enhancement. These are real-world examples. Fixing a cabana or widening walkways will not impact shoreline functions. Repair of an existing structure is even protected under

the Shoreline Management Act. You're supposed to be allowed to do repair and maintenance of all structures. But that's not allowed under the city's code. In fact, there's a condominium association on Meydenbauer Bay trying to widen their walkways to provide a safe path, and they cannot get a permit after thousands of dollars and many months. Dock expansions can mitigate their impacts in modest ways and should not be required to also alter their bulkhead to enhance the shoreline.

In another example, a property owner – this is a real example – removed a hard-surface patio and replaced it with a pervious grass surface. He was cited for violating the law and was required to install shoreline enhancement plantings, even though what he did would seem to be an improvement to ecological function. Vasa Park would be prevented from providing recreational access to the shoreline under the current rules, and that would conflict with the city's Comprehensive Plan which encourages shoreline access. The city's steering committee – actually, I'll skip over that one. We talked about Meydenbauer Bay, it doesn't comply with their own rules.

The final important example is the city's current rule for repairing bulkheads. State law exempts bulkhead repair from permitting requirements, and the regulations expressly state that repair may include replacement. Yet the city requires permitting and has different rules for major and minor bulkhead repairs. First, under city rules there's no meaningful definition of what is a minor or major repair. Second, repairs deemed major are not allowed. The entire bulkhead must be replaced with what is called soft shoreline stabilization measures. That basically requires terraces planted with native plants, which means losing usable land where you have to terrace it back. However, since the rules are unclear, staff is highly inconsistent in implementing minor versus major repair. Most people would expect a repair of one hundred and twelve feet of bulkhead a major repair. Well, the city of Bellevue park department did a one hundred and twelve foot bulkhead repair at Newcastle Beach Park, and the repair was declared a minor repair with no soft shoreline stabilization requirements.

On another project at Newcastle Beach Park, the park department tore up grass within the twenty-five foot buffer to install a pipe, and argued that tearing up and replanting the grass was no impact on shoreline functions. The permitting staff agreed and waived the requirement for shoreline enhancement, the same requirement imposed on various private property owners. Now, actually we agree with the reasonableness of the park department actions. But the rules need to be changed to ensure that private property owners get the same treatment.

Audience: Applause.

Mr. Klinge: In conclusion, the case studies and these other examples

demonstrate that changes are required to create development regulations that fairly identify impacts to existing shoreline functions and impose reasonable mitigation. Event ecology's guidelines direct the city to avoid development regulations that impose enhancement or restoration. The Planning Commission and the city need to follow that direction.

As you undertake this update, the Planning Commission should follow the three C's in adopting regulations, clarity, consistency and certainty. You should focus your efforts on effective programs that protect the lakes and the salmon, and avoid development regulations that fail to accomplish anything except conflict with property owners. Thank you.

Audience: Applause.

Ms. Tebelius: Well as you can imagine, this has taken hours and hours of work, and it is not cheap. Board members have contributed a thousand dollars to this, and when you leave, homeowners, there's envelopes to ask you to assist us in the continued representation of you before the city. But let me wrap this up. I don't know how to do this. I honestly don't. I'm a lawyer and I only do – Alright. On the science, we ask that the Commission consider opposing science and include it in your recommendations. Decisions must be based on independent peer review, and peer review requires review by scientists who do not necessarily agree with you.

Bulkheads. We believe there's a gross overestimation of their number. They are less destructive on the lakes than alleged. Their impacts can clearly be mitigated, and removal may have serious adverse effects.

Docks. If you use the process now, many docks will be declared nonconforming, leading to major cost. They will be restricted to unnecessarily small sizes, and they will involve burdensome, duplicate permit processes. Already the federal government and the Army Corps of Engineers is the lead agency for permitting. The city should not duplicate that process.

Shoreline restoration and buffers. The Shoreline Management Act does not require or justify inclusion of buffers. See Redmond's SMP update. Setbacks are an alternative. Native plants are difficult to establish. Look at our pictures. No touch unnecessarily restricts access, and that's what happens when you put in a buffer. It promotes nuisance critters or worse. Anybody who lives on lake Sammamish has seen that awful nutria who swims down the lake, is bigger than the biggest rat you could ever imagine, and is not native to our shorelines. And how about the rats that would go along the shoreline if we had lots and lots of native plants. So we ask you to consider that.

And finally, trees and large woody debris. For streams, yes.

Urban lakes, no. Again, the no touch aspect of a buffer makes the trees unmaintainable, they are unstable in the nearshore environment, they are clearly dangerous to children, boaters and swimmers. Grandchildren, I might add. And the restriction on upland views of the lake are unnecessary.

That is our presentation. And we are not done yet because we have our expert panel for you to ask any and all questions. Our panel is going to include our own Dr. Gil, and our own Dr. Charley, our attorney, but we are going to add to this Dr. Marty Nizlek, who is the driving force behind this organization. Without him, we would not be here tonight. Dr. Nizlek has a PhD in transportation, and he's been very active. And we are going to open it up to the Planning Commission to ask questions of our three experts.

Have you enjoyed this tonight?

Audience: Applause.

Chair Sheffels: First question, Hal. Did you have one?

Commissioner Ferris: Yeah. I had a couple of questions for Dr. Gilbert. Do we need to do anything about the microphone?

Chair Sheffels: Yes, we should have a microphone.

Mr. Inghram: We've got a microphone here and one further down, so they should pick up.

Commissioner Ferris: Okay. So, for Dr. Gilbert. What I heard you say – and I'll try to speak loudly – it was in your opinion – I assume it was based on your scientific understanding – is on the bulkheads that you were favoring laybacks of bulkheads – you called it tapered bulkheads, but I would refer to it as a layback.

Dr. Pauley: I'm only referring to riprap bulkheads in that case, not concrete. Concrete probably would have a similar lesser impact, but concrete doesn't dissipate the waves like rocks do. Like –

Commissioner Ferris: Right.

Dr. Pauley: – if you have rocks with crevices, the waves basically are dissipated.

Commissioner Ferris: Right.

Dr. Pauley: And the more you lean it back, the less problem you have.

Commissioner Ferris: Right. So I heard – what I heard you say – I just want to make sure I understand – is that you favored layback bulkheads, and then the riprap compared to concrete vertical walls. So, you know, something to dissipate the waves.

Dr. Pauley: Sure.

Commissioner Ferris: And there's two benefits of that. One is the crevices that allow things to be in them, and the other is to dissipate the waves.

Dr. Pauley: Yeah. Something I didn't talk about, it's the same principle as building an artificial reef out in the Sound.

Commissioner Ferris: Right.

Dr. Pauley: I had two students I worked with on that. And you have crevices. And I might also add they attract the prey and the big predators.

Commissioner Ferris: Right, okay.

Dr. Pauley: So, but in that case you do get the small critters in there. And you still get the benefit, but it's not as big of an impact in terms of looks and things.

Commissioner Ferris: So that would mean that if, you know, if possible when people were looking to either repair or maintain their armor to put these types of solutions in rather than the vertical armor.

Dr. Pauley: Right, correct, sure.

Commissioner Ferris: Alright. I didn't – You didn't talk about it, and I just wanted to know, there has been in the critical areas ordinance, which the city adopted a few years ago, there was a building setback – I believe it's twenty-five feet – and there are, I think, in that area between the building and the shoreline is where the native plant requirement comes in. So, do you feel is a building setback appropriate and, in terms of improving the ecology of the lake, or mitigating impacts to it, and if it's not twenty-five feet, what's a, you know, what's a reasonable –

Dr. Pauley: I'm not going to get into that. I think it's a legal thing. But I will, let me – since you opened Pandora's box there – let me say that in terms of planting things in the area, one of the things I read in the BAS report, or one of the other reports, was that the consultants recommended imposing a bond on the homeowners, the property owners. Two things I would like to mention. If they feel very strongly about it, they should post the bond, okay? Because they're the ones recommending it. Secondly, when you deal with things that live, you can't guarantee they're going to live. I raise dahlias, and I'm good at it. I cannot tell you from year to year how many of which one I will get back, or certain ones will die. And so to have that scenario on the homeowners I think is preposterous.

Commissioner Ferris: I wasn't – I guess what I was concerned – what I've understood the concern is, is that when you plant lawn that people tend to fertilize, then you tend to get runoff of fertilizer into the lake, which

increases the phosphorous in the lake and causes – So that is what I've always understood to be the detrimental effect of planting lawn up and therefore why the native, which doesn't require, you know, the fertilizer, which causes the detrimental effect that the lawn would. So that was, my question was just should we – I understand about it can't be guaranteed to grow back, and I didn't get into bonding. I was just thinking, you know, intuitively to me it makes sense that you would not plant lawn from an ecological purpose right up next to the lake because of the fertilizer that comes with it to keep it green, which people, you know, like to have green grass, you know, if they're going to have it next to the water.

Dr. Pauley: Well, there are other ways to do it, to keep the grass green. You don't have to put nitrogen and phosphorous on the lawn. But again, it's kind of an area that out of my expertise. I might point out one other thing in terms of the examples I used. I only used examples I felt were in my area of expertise. I noticed things I thought were a little bizarre but they weren't in my expertise. And I only used a few examples, okay? But I'd like to stay within my area of expertise, which is lake reservoir management, fisheries, that sort of thing.

Ms. Tebelius: I believe Mr. Klinge has an answer to that.

Mr. Klinge: Well, no, I was just going to – I would like to clarify, because there was one just misspeak by someone. There's a two hundred-foot regulatory area. That's your shoreline management area. So that's a regulatory area. And then under the current rules, the city has a fifty-foot buffer and then on top of that – I'm sorry, a twenty-five foot buffer, and on top of that a twenty-five foot setback from the buffer, so a fifty-foot total.

Commissioner Ferris: Oh.

Mr. Klinge: And under the current city rules, it's very restrictive on anything that goes on in the buffer. I mean, even taking the grass and replacing it with plants in some circumstances would require a critical area permit. And to do that now you have to have a critical area report, which is by a biologist or other professional, and it gets very expensive to do that. The direction the Commission really needs to be thinking about is getting rid of all that. And if there's some standards that can have a consensus on, you have standards but not dragging people through a difficult permitting process that takes many months and you're not sure what's going to happen on the other end.

Commissioner Hamlin: Dr. Pauley, one of the studies that talked about the salmon, I think it was salmon in general, avoiding or going underneath the docks, the docks were actually somewhat of a detriment to them.

Dr. Pauley: Mr. Tabor's work? The one that was presented here?

Commissioner Hamlin: The one that was presented here, right. And I was curious about your thoughts about that.

Dr. Pauley: Well, one thing I might point out is that he has published a paper in 2006 – well, I shouldn't say published, it's not been published in a referee journal, but it's a report to the city of Mercer Island. And what he says there in that report is that the majority they move offshore and then they go under the dock. And a few may go around. Now I did hear his talk here and he talked about them going around. Chapman's report on the Wells Dam reservoir, he indicates sixty to seventy percent of them go under the dock, and only thirty percent go around. But, I want to make two points. One, there's no relationship to predation just because they go under or around, okay? And in terms of this journey we talked about, eight or ten feet to go around the dock is miniscule compared to what their challenge is to go out to the ocean and come back. I mean, it's like you and me walking out that door rather than taking this one. It's a very, very small thing. And there's no study that I can find that says there is an increased rate of predation on those fish. That's all assumption, okay? I want to point out it's a very good study, and I know him well. The study's well done. But there's nothing proven as far as mortality there, okay?

Chair Sheffels: Dr. Pauley, even considering the fluctuation of fish populations each year, how would you characterize the health of the fish populations in both Lake Sammamish and Lake Washington? Is it getting better, worse? Staying the same?

Dr. Pauley: Well, I haven't really looked at it in that big a detail as to make that assessment, but something I could do. I would say the hatchery situation's fantastic, okay? I mean, they didn't even – last year, all the fish they didn't use they didn't even release them upstream. I asked them, what'd you do with the rest of them, and they didn't even know. But in other words, they had a big abundance. There are some streams, I think Bear Creek is one – remember the line I showed you, the one-to-one – it's very close to the one-to-one. The fluctuation on it is about point nine nine to point one oh two, over I can't remember how many years that is. But that's in the salmon management restoration plan that was published. So, I think one of the things is, if you have genetic interbreeding and intermingling with the hatchery fish, with the native fish, that potentially is a concern. I don't think it's been studied on Lake Sammamish yet to be very honest. There is some work going on in Lake Washington. I don't know what the percent of strays is. In other words, strays are the fish that are supposed to go back to Issaquah Creek, say to the hatchery, and they go somewhere else. And I don't know what the effect of those strays are, or what the comingling of the hatchery fish is with the actual native fish that are spawning in the various streams. But there are native spawners that are spawning in the lower end of Issaquah

Creek, and then they also are letting a lot of fish go up above. There are native spawners in Bear Creek which I indicated from my knowledge are kind of right on that one-to-one. And then to go back to your question, it depends on what you want to define as good or bad. Now, one-to-one is perfectly acceptable. That's fantastic, if the population is continuing itself very well. It's not increasing, but it's not decreasing. So that's very fine in a biological system in many respects. But if you want a fishery on that, no, that's not good. So in that respect I think those are the things you have to look at. The hatchery fish take the place of those, though, in terms of the fishery. So they are supposed to compensate for that, okay?

Chair Sheffels: Thank you. More questions?

Commissioner Himebaugh: I have one. Question for Mr. Klinge. You mentioned the city of Redmond and I wondered if you could explain the regulatory difference between the Redmond approach and what Bellevue currently has. You mentioned there's no buffer, if I heard you correctly.

Mr. Klinge: Right. In the city of Bellevue right now you have a buffer. So if you want to do any work of any kind, even in certain circumstances changing the plants in the twenty-five foot buffer, that's twenty-five feet within the ordinary high water mark, then you need a critical area permit and you need to go through that process, and there's lots and lots of restrictions. And then the house, the primary structure, needs to be set back fifty feet, and any accessory structures that are within fifty feet – like we talked about the cabana – those are declared nonconforming structures, and under city rules you can't even repair them at all. In Redmond, they said since the shoreline is so urbanized, and so impacted, trying to establish a buffer and requiring incrementally to have individual properties do a little bit of planting here and there, that's just not going to work, it's not going to accomplish anything. So they have a thirty-five foot buffer – I'm sorry, setback – thirty-five foot setback, and then it's a flexible setback, so that if you want to have a less building setback, they do then encourage some plantings, and if you do the plantings you can get a lesser setback.

Dr. Nizlek: Let me interject. The way we worked that – because I worked with the city of Redmond as the Parkway Association president – it's incentivized, it's optional. If you want to reduce the thirty-five feet you can go down to twenty, but to do that you have to agree to put some plantings in. I don't know that they are native as such, and I would have to see that code. But that's what we worked on and achieved. It's incentivized, it's not a no-touch buffer.

Mr. Klinge: But a big concern with the city of Bellevue rules is that historically that means that ever since the first Shoreline Master Program the setback has been twenty-five feet, that's the building setback from

the ordinary high water, twenty-five feet. And you have a lot of houses in that twenty-five to fifty-foot range. Now, the city code is good, actually, in one respect. It says that if you're in there right now, the line goes around the house and your house itself is not a nonconforming house, your primary residence. But, as soon as you want to add on even ten feet, you know, five feet, to bump out your – make a little bit larger bathroom or a kitchen, now you're encroaching into the setback or the buffer, but probably the setback, and then, now you're into the permitting. Again, under the Shoreline Management Act, single family homes for your own use are an exempt use under the Shoreline Management Act. You're not supposed to be required to go through shoreline permitting or other, that type of planning permitting. You can get a building permit, but you're not supposed to be going through permitting to decide whether this is an appropriate structure or not. And again, that's where those standards kick in.

Commissioner Turner: So in the urbanized area that we have, is there any real benefit to having that twenty-five foot setback?

Mr. Klinge: Well, you're asking – you're kind of looking at me, Commissioner Turner, and that's kind of a science question, more of a science question. But, you know, from the setback, historically you've got – actually there, from a legal standpoint, because historically the setback has been twenty-five feet. And so you do have certain areas where the houses are at that setback location. And now that ensures an equality of use. And so keeping it at twenty five makes a lot of sense from that standpoint. And in fact, if you increase it and as people expand, if they're forced to tear down their house and move it back, or if you want to make a bigger house, there's too much in permitting so they just move it back, they may be losing that view that the other houses would have at twenty-five feet.

Dr. Nizlek: I'd like to add one distinction to that if I could, sir. In Redmond, the determination was to update their Shoreline Master Program or plan. In Bellevue four or five years ago, 2006, the ordinance was adopted that said essentially the city finds that the shorelines are critical areas. We question that. We've raised one issue with the science behind that with respect to the fish. There are similar questions that can be raised. We just need to raise that one, and that's our concern. That they were designated as critical areas inappropriately without sufficient information. Now you're dealing with the Shoreline Master Program.

Mr. Klinge: Actually I wanted to add onto that, because some of you Commissioners, and I think Commissioner Turner was involved, back at that critical area ordinance time period. And there was a lot of controversy about tree cutting and whether you could cut trees on steep slopes that had been cut for decades, and there was some controversy about commercial areas and creating nonconforming uses. But because the city had never called a

shoreline a critical area, the general public didn't realize that this was a shoreline change. And it wasn't a change to the Shoreline Master Program, it was just a change to the critical areas ordinance. And I would suspect that most people here didn't even know that there was changes going on to the shoreline rules at that time.

Dr. Nizlek: I for one, as president of the West Lake Sammamish Association testified on behalf and in support of the critical areas ordinance, with respect to streams and wetlands and steep slopes. We had no awareness that shorelines of the lakes were being considered at that time.

Chair Sheffels: Commissioner Hamlin.

Commissioner Hamlin: So, sometimes I'm wondering if we're talking about Redmond and Bellevue sort of apples and oranges. How many – do you know how many like actual residences were impacted by the Redmond shoreline act. It doesn't seem like there're very many.

Dr. Nizlek: There are about a hundred parcels there. There're about four hundred south of that in the city of Bellevue, in the three hundred to four hundred range.

Commissioner Hamlin: Okay.

Commissioner Turner: I had a question about the peer review. It seemed like that's a fairly large issue, not having –

Dr. Pauley: It is from a scientific point of view. Yeah, the validity, yes.

Commissioner Turner: So are there any particular studies that we should look to that where we should expect to get that peer review, that are more critical than others?

Dr. Pauley: I'm not quite sure I follow your question. You mean of the reports you've gotten, should some be more peer reviewed than the others?

Commissioner Turner: Of the reports that we use in the city of Bellevue, are there any that we should look to in particular that are more critical to have peer reviewed than others?

Dr. Pauley: Well, yeah, I think if you have internal documents or things that you're just using in terms of inside the city type of thing and it doesn't affect people so to speak, if it's just something you're using to run city hall or something like that, I don't think that has to be peer reviewed. But if you are going to promulgate rules that go out and impact people, and you're going to base it on things that are, quote – like in that one report – listed as best available science, I don't think that was best available science. That's my own personal opinion.

Ms. Tebelius: I think, Dr. Pauley, he wants to know are there any reports that they should look at other than what they've already seen that would satisfy that peer reviewed science standard.

Dr. Pauley: Oh, you mean a separate report? I guess I'm not quite sure –

Ms. Tebelius: Is there any other report they ought to look at that would justify –

Commissioner Turner: So are there any other reports that the city of Bellevue is using that, you know, we're using to develop any kind of policy, that haven't been peer reviewed that should be?

Dr. Pauley: Oh, I would guess there's probably a lot of them, is my guess. Anything that affects the land or land use, but my expertise is only in the fish, so that's kind of why I looked at this one. I can look at it from the streams, I can look at it from the lakes. That sort of thing. But once it gets out into other areas, you know. I mean, I know how trees interact with fish, that sort of thing, but if you go into sections that's just trees, then no, that's not my arena. But yeah, I would say there may be. The first report I don't think was peer reviewed either, the docks and pier report, but I know two of the authors and I know they do a very good job. And so I really don't have a big problem with that report like I did the middle report, the 2005 report. I hope that answers your question. I don't know. Those are the only three reports that I looked at in addition to the overall salmon management plan report.

Chair Sheffels: Commissioner Ferris has a question.

Commissioner Ferris: Yeah, I just – we – most of the discussion or presentation was around the shorelines, more applicable to Lake Washington and Lake Sammamish. And yeah, we have Phantom Lake and it seems like it really has a lot different issues that it's dealing with. And most of the issues I've heard have been related to stormwater runoff that are not necessarily shoreline. And so I didn't know, Diane, if there was anything that we have or that this group has that would be informative to us that's relative to the shoreline on Phantom Lake as compared to stormwater runoff, you know, that really is within the purview of what we're tasked with.

Dr. Nizlek: To answer part of your question, Commissioner Ferris, we don't have a variety of stormwater data. The city is supposed to be monitoring that. It was not made available to us or to some of the scientists who requested it. But let me come back and combine an answer to your question and Commissioner Turner's. The seminal document right now is the 2009 shorelines analysis report. And in there should be the data, unequivocally, that says the regulations that you put in effect are sound and valid. We've raised some questions with respect to the fish science around that. I have looked at that in great depth. It is a matter of my training and profession to look at quantitative analyses, and I find some serious

problems in here. You will also find some conflicting regulatory promotion, that is it advises you should not restore, et cetera, that I'd like to take up with you. But the quantitative analysis is definitely questionable. I'll come back before this body, I won't take up all these people's time, but I'll be happy to do that.

Mr. Klinge: I want to add one thing on that, because both this report and the old best available science report for Lake Washington, Phantom Lake and Lake Sammamish, all came to that same conclusion. These are highly urbanized lakes that are highly altered from their historic state. And again, on that quote I had, current and likely future land use practices preclude the possibility of the shoreline functioning as a natural shoreline to benefit salmonids. That's on Lake Sammamish and Lake Washington, but they had a similar statement regarding Phantom Lake. So, you know, what they're saying is it's so urbanized that trying to transform it into a nature shoreline is not going to work. It says precludes the possibility of that happening. So that really – the city's own report already would seem to support no buffer. And then so what are we trying to do then? Are we trying to just get that little tiny bit that's not already altered? You know, that's what you have to focus on.

Ms. Tebelius: Commissioner Ferris, in response to your answer, Brian Parks is leading, he can lead the Phantom Lake residents in preparing a report for the Commission on Phantom Lake specifically. And I'm not sure how long it will be. It will be a little bit, but not that long in order to finish that up.

Audience: In regard to a comment was made, Phantom Lake isn't worried about the shoreline. It's water runoff.

Chair Sheffels: Ms. Tebelius, we've finished our questions.

Ms. Tebelius: Alright, thank you so very much. There's forms for everyone to fill out if you want to join up. Information on the website www.sensibleshorelines.org. Join us in order to get good regulations. And you know, working with the Commission, we really, really appreciate this opportunity. Thank you so much.

Audience: Applause.