

LONG BEACH CIVIC ASSOCIATION
Board of Directors Meeting
Meeting Minutes for June 11, 2022

BOARD ATTENDEES: Richard Wilder, Torben Hüge-Jensen, Cathy Collins, Patti Oehmke, Mieke Rockhill, Jolene Lauria, Paul Murdoch, Steve Perlik, Steve DeBord

CALL TO ORDER: 10:00am

PLEDGE OF ALLEGIANCE

ANNOUNCEMENTS

Richard Wilder asked for a show of hands for those attending their first LBCA Meeting and asked them to introduce themselves. Five attendees introduced themselves followed by the Board introducing themselves. Richard notified attendees that the Guest Speaker would start at 11:00am (transcript attached to these minutes) and announced that the board had received good reviews for last speaker. The LBCA plans to bring in a new guest speaker every quarter.

FINANCIAL REPORT

The financial reports for April and May (attached to these minutes) were distributed to attendees and Cathy Collins, Treasurer, explained every itemized transaction (disbursements and deposits). Voice Vote approved and accepted the financial statements.

NEIGHBORHOOD WATCH REPORT

Debbie Berens provided a report on the Calvert County Safety Meeting she attended which featured a guest speaker from Animal Control. She learned that if our community were to be evacuated for any type of disaster, the County provides pet shelters. Crime is still very low in our community. However, there has been an uptick with theft of catalytic converters from cars because thieves are able to resell them for about \$1,000 each. It is so prevalent now that the insurance companies just sent out checks because they don't have the capacity to keep up with demand for replacements. This type of theft can happen very quickly; Mieke Rockhill stated that her brother's catalytic converter was stolen in less than 10 minutes when he used a public restroom. Richard asked Debbie if there had been any discussion at the meetings about the candidates running for Sherriff's office or if any of the candidates shown up at the meetings. Debbie responded that the candidates have been at the meetings but do not say much of anything.

PARKING SECURITY REPORT

An attendee expressed a concern about people who are not property owners, residents or guests driving around looking for places to park on side streets to gain access to the (North) beach. She reported that she approached the offenders who had parked on her street while they were at the beach and let the beach goers know that two sheriff's deputies live on the street where they parked. She also let them know that if they rent in our community, they should ask their landlords for parking permits so they can park legally. She spoke of a general problem with people unloading their beach gear and then parking their car on the side roads, sometimes as early as 6:30am when they know the parking guards are not yet on duty. One of her neighbors has several cars parked on the grass, sometimes double-parking.

Steve DeBord, LBCA Coordinator of Parking Security, explained that when the board set up the new policies for beach parking, the decision was made to NOT address the walkers because there are several

vacation rentals in the community and we did not want to stop their guests from walking to the beach, or be more offensive than we needed to be. Parking was the main issue the board dealt with. As of last weekend that changed because of what happened at North Gate where people are parking on Flag Harbor Blvd and carrying coolers and beach/fishing gear and walking to the beach. Steve stated this needs to stop.

A second attendee works from home and shared her observation of beach goers double-parking and seeking a parking space where the view from a home's window is obscured. Steve DeBord asked her if she would volunteer to contact Calvert County police and ask about a special parking permit parking designated by the county (with the permission of the property owner); street signs would be posted that state parking is for permit. There would probably be a fee for this service; in Montgomery County this permit it is quite expensive. Steve stated that the board needs help from residents who don't want these people to park in front of their house to call the county police.

The attendee responded that she is a new property owner and agreed to investigate the permit/signs and anticipates some pushback. Steve responded that there should not be pushback from the residents who don't want people parking in front of their house when having a special permit issued to limit who can park in front on their house could be the solution.

The attendee reported on another problem with a lot on Overlook that has a yellow chain situated as you go up the hill; people are removing the chain to park cars and set up tents and coolers where they camp overnight, leaving trash and empty alcohol containers. She noted that they should leave the beach the way they found it, but the reality is that beachgoers will walk up the street with a broken cooler and just discard it on the side of the road when they think no one is looking. Richard Wilder responded that the board is aware of this situation and is taking care of it. New "No Parking" signs will be installed, and towing enforced.

Richard Wilder urged property owners to read their covenants – beaches are for property owners, residents, and their guests. He reminded property owners that they are personally, legally, and financially responsible for what happens with their renters and guests. What the board is hearing is that these people are not residents or guests, they are from outside the community coming in to look for a way to use the beach. This is not new; we have always had this problem. Richard acknowledged the diligent work of Steve DeBord and thanked him for time managing parking security. He asked Steve to provide an overview and status.

Steve DeBord reported that he needs help with approaching beachgoers who may not be residents or the guests of property owners and identifying those that may not belong in the community and locations where they park.

An attendee shared that property owners in Calvert Beach community are issued a key to the gate that seems to work well; and she has a friend who lives in a community in St. Mary's that had a gate installed 5 years ago that uses a scanner to provide access to property owners – it has worked well over this time without any problems. The gate cost \$2,500.

John Fisher stated that cars were being towed from South Beach lot during first week because some property owners took it for granted that they could park there without being towed due to the lack of enforcement over the past few years. He asked if the parking monitor could give those parking a written notice that towing will not be enforced for the first week. Steve DeBord responded that property owners

were given full leniency the first week and there was no towing, warnings were given. He said the parking monitor was given a full list of who had paid for their parking passes; the first week they could still park even if their name was not on that list.

One attendee expressed concern about a moped that speeds through the community, even at night. Another attendee asked if there would be an increase in police patrols now that schools have been let out and it's the time of year for mischief to start.

Richard Wilder stated that police will make their normal patrols and urged property owners to call the police if they see someone using the beach after hours that is suspect. The caller does not have to give their name, they can just tell police we are observing someone who may be trespassing. He reminds the community that the all-volunteer board does not get paid, that the board needs the help of property owners and that the board cannot do everything.

OLD BUSINESS

Spring Clean Up Day Recap - Richard Wilder reported that Community Clean Up day was a success; and certain areas were coordinated by team leaders:

- Carla Hance led volunteers at the community center
- Torben Huges-Jensen and Jolene Lauria led the North and South Beach cleanups
- Georgia Reidel led the clean-up at the corner of Long Beach Drive and Calvert Road
- The beaches were already in good shape for litter, but some of the picnic tables were buried in sand and had to be dug out. There was a good turnout of volunteers, a lot of work was completed just minutes before the rain while volunteers collected for a pizza lunch in the community center.
- Here are the things that did not get done:
 - Community Sign - Some finishing touches on the community sign near the circle.
 - Community Center – needs power washing & a coat of paint on entry porch
 - Bench repairs
 - South Beach Ramp that provides for handicap access

Richard said that some of these other items will probably be taken care of with a Fall Community Clean Up Day. (See below).

Paul Murdoch reported that he has reached out to the person who built the newer picnic tables at cost. He is getting an estimate to purchase more picnic tables. Carpenter bees have damaged the old picnic tables. An attendee remarked that the carpenter bees seem to have calmed down a bit and agreed that the community could use some more picnic tables. She said two graduation parties moved the tables to the shady area behind the porta-potty at North Beach and more shady space is needed. She asked if we could clear out some more of the undergrowth while complying with rules for the critical areas and set the picnic tables in the shade? Paul said that he is meeting with a master gardener for advice on native plants. The master gardener came in the Fall to look at plantings for stormwater management and will come in July to identify which plants are protected.

Mieke Rockhill cautioned that we **MUST** have a permit to clear away **ANYTHING** in the critical area and shared the story of a neighbor was told by the County that they did **NOT** have permission to clear away poison ivy.

Mieke also noted that benches really need attention, some of the boards are in a bad state of disrepair. She asked if we could use a material like Trex instead of wood. An attendee noted that Trex can warp just like wood. Richard Wilder said that the benches are not as easy to fix and paint as people would

think; stubborn bolts need to be pulled out to get to the wood, reinstalling can be problematic. It is more than a volunteer can complete in a half-day. The Board plans to collect bids from a contractor (hopefully one that lives in our community) to take care of it and maybe ask the donors of the benches to chip in on the costs.

New Community Billboard & Signage - Richard Wilder reported that the Community Sign is being handled by Jolene. Flag Harbor & Community Center Daycare will share the bottom third of the sign. Calvert Beach has a third of the sign and LBCA has a third of the sign.

New LBCA Website - Richard Wilder spoke of the new website and thanked Patti Oehmke for her efforts. He stated that Patti taught herself how to do it and did a great job. An attendee said the old website needs to be taken down because it is causing confusion. Richard assured her that the LBCA is trying to take the old website down.

NEW BUSINESS

Flag Harbor Marine Services Grand Opening - Richard Wilder announced that John Little sold the marina and that the new owners are having a big open house today.

Road Repairs/Paving - Richard Wilder reported that the board has started the process of planning the next phase to get the roads paved. We did no paving in 2020 or 2021. Paving and road repairs will happen according to need, not popularity. There are roads that no one sees that are in terrible shape. He explained that there are 3 steps to paving the roads:

1. Prep and clear sides of roads, cutting back overgrowth
2. Repair – potholes and craters
3. Paving topcoat

Melissa, property owner at the end of Oak Street, asked if the road could be paved to the end of the street because the paved road stops before their house and if the board could look at cleaning out the black pipe that channels storm water to the Bay that is at the end of Oak Street. Richard responded that plats would be used to determine property lines for paving. Steve Perlik stated that the black pipe was installed more than 20 years ago and was not part of the SWM project initially and that it had been cleared out recently with heavy equipment the last time the SWM sediment trap was cleaned out.

Torben Huge Jensen reported that we have met with 3 contractors so far for the road repairs and paving; one is pending, one declined, and another has submitted a bid. Torben worked with Jeff Greene who has already done a lot of work on the planning of this project.

Paul Murdoch would like gravel in the North Beach parking lot be included with the roadwork bids. Richard Wilder asked the room for a vote on a paved parking lot rather than gravel and one raised their hand. Steve DeBord commented that gravel was better for slowing vehicle speed.

Jolene Lauria stated that the Board will have a budget and plans for the execution of the work at the next meeting; the LBCA seeks the involvement of the community in planning and coordinating these projects. The LBCA would prefer to grant the project funds to a local contractor, especially if the contractor is within our own neighborhood, and is looking for competitive pricing. Please help us get the word out if you know anyone that wants to work on any of these things.

Jolene said that one of the reasons for having community involvement on committees is to make sure that all budgets and projects are out in the open with full transparency for the community. An attendee

asked who the contact is for submitting bids and Richard Wilder responded that Patti Oehmke would do an email blast with that information, as we have in the past.

SWM Walk - Steve Perlik, resident expert on Storm Water Management (SWM) and erosion leads SWM tours. Jolene Lauria said she had participated in two SWM walks and found them really informative, she found it interesting to see how many small things that can be done by the home owners on the hill, like changing the direction of a gutter, or the way a curb is situated and other small changes can change the direction and speed of the water eroding the hill and the flow of water down the hill and through our community streets to the bay. Jolene found the SWM Walk in the pouring rain was the most effective to demonstrate the flow of Water. LBCA will be setting up another SWM tour soon, and all neighbors are invited to join.

Fall Project Day - Richard Wilder reported that a Fall Clean Up Day would help the community to better prepare for the Spring Clean Up day next year, since we hadn't done any community projects for a year. We can take care of the small projects that were unfinished from this year's Spring Clean Up at that time.

OTHER BUSINESS:

Revetment Project -Richard Wilder provided an update on the Revetment Project, noted that Mark Lewis, Calvert County Administrator, visited Long Beach yesterday with Karen Molinas. The project appears to have received the final blessing and will now go out to bid. Meike Rockhill stated that \$500K was already authorized and that there are only small windows where the work can be done; Sept/Oct or March/April. Richard said there is concern about gas prices affecting the budget, especially with the heavy equipment used for this project.

Street Sign and Handicap Access to North Beach - An attendee who lives on Overlook said they need a street sign; groceries and packages get misdelivered. She also asked if it would be possible to build a handicap beach access on Overlook. Richard Wilder noted that the County installed new street signs near to South Beach.

Committees - Jolene Lauria explained that the LBCA is forming Committees comprised of community residents and board members. She invites anyone who is interested in SWM to join the SWM Committee. Joining the committee will require that committee members tour the SWM lots with Steve Perlik. She stated that it will really open eyes as to what has been done, what has eroded over the past couple of years and the challenges for SWM. Jolene would like anyone interested to contact her and she will set up a tour, noting that storm water is always on our minds and in our roads. It will take time and commitment.

Community Projects List - Jolene Lauria compiled a list of projects to be completed:

- Community Sign Painting
- Community Center – needs power washing & a coat of paint on entry porch
- Bench repairs/power washing
- South Beach Ramp (handicap access)
- New Picnic Tables
- Clear area behind North Beach Porta-potty to create shady place for picnic tables
- Fencing on South beach has rusted metal posts that need replacement

- Community Center Remodeling (Part 2): Making the bathroom. ADA compliant at Community center, the kitchen cabinets also need attention, but the bathrooms are the priority for the community center.

Torben's Birthday - Mieke Rockhill announced "Rumor has it that today is Torben's birthday" which started everyone singing Happy Birthday to Torben Huge Jensen followed by applause.

Water Co-op Leaks - Paul Murdock reported that water leaks caused road damage that affected heavier vehicles (trash truck, ambulance, etc.) when they drove on the places where the water bubbled up to the street. Paul urges homeowners to call Beaches Water Co-op if something that looks like a leak is spotted. The Co-op doesn't have anyone on call; they have installed wi-fi metering and will get someone out right away. Note: the contact number for the Beaches Water Co-op is 410-586-8710 , the emergency number for the Co-op is 410-846-1040.

Rumble Strips - Paul Murdock has a meeting with an engineer from the county on the 17th at 9:00 am to discuss installation of rumble strips on County Roads. Let him know if you see places that need this to slow cars down. You will hear noise as cars drive over the rumble strip so keep that in mind, and it should slow cars down. Certain areas are dangerous for pedestrians who would be warned a car is coming around a curve with the sound made by the rumble strips.

ADJOURN 11:05AM

NEXT MEETING: JULY 9, 2022

Respectfully Submitted:

Richard Wilder, President

Patti Oehmke, Secretary

LBCA Guest Speaker
Dr. Ralph Eshelman
June 11, 2022 11:00a.m.

Paul Murdoch introduced Dr. Ralph Eshelman, author, geologist, paleontologist, who also served as director of Calvert Marine Museum. Paul invited Dr. Eshelman to talk about anything he wanted to speak about.

Dr. Eshelman began by stating that it was interesting for him to sit through our LBCA meeting to hear the discussion about problems with people from outside coming to community for access to water. He lives in a waterfront community in Calvert County that has the same problem and noted that every community where he speaks that has water access seems to have this same issue.

Dr. Eshelman shared his first memory of Long Beach in 1967 when he stayed at Camp Matoaka while a student of geology and paleontology at the State University of NY at Stonybrook during a field project at Calvert Cliffs. The Calvert Cliffs Nuclear Power Plant was being constructed and was hired with other researchers to undertake stratigraphy studies on a series of terraces that were dug out of Calvert Cliffs. He described a game of "Chesapeake Greased Watermelon Football" played in the waters of the bay below Matoaka where teams were challenged to make their way to a goal with a greased watermelon past the other team. He recalled how much fun they had during the game and how the players emerged covered in grease.

Dr. Eshelman stated that many of us are attracted to where we live because of the water, and how others are attracted to the water as well which is why we have problems with people coming to gain access to the water who are outside of our community. He offered to explain how water has changed where we are today and asked everyone to imagine Long Beach 60-120K years ago. He told us at that time we would have been under 20' of water and the shoreline would be where Washington DC is today. Then he asked the audience to envision 12-17K years ago and asked what we would see as we looked out to the Bay. He explained that there would be a valley in front of us, NO Chesapeake Bay, the Susquehanna River would be winding through the bottom of the valley and Mammoths, Mastodons and Giant Sloths would wander the land. The water level would be about 300' lower than it is today. He said that we all hear about global warming and wants us to understand that things can change in 120K years, geologically which is just a snap of time in the geological terms of time.

Dr. Eshelman said that we all want to know the future and what are the problems? All the predictions are that sea levels will rise to what it was 60-120K years ago. Because that was one of these times when the climate was warmer and the tremendous continental glaciers, ice caps, had melted. And that was a major contributing force to sea level rise. And then when the ice caps formed, where did that ice come from? It came from snow that compacts and becomes ice and over thousands of years it caused the sea level to go down. In just 120K years we have a difference in sea level of 300'. What does the future hold? It's complicated. It comes down to three things starting with the **Milankovitch cycles**.

Hardly anybody has heard of the Milankovich cycles, but they are actually very simple. A Serbian geophysicist and astronomer [*Milutin Milanković*] started to look at earth and its relationship to the sun back in the 50's. What he discovered helps to understand climate change: as earth rotates around the sun, that orbit changes over time. Sometimes Earth is closer to the sun, sometimes Earth is further away from the sun. When Earth is closer, earth is warmer, and when Earth is further from the sun, earth is colder. He took it further because he also noted that the earth is on an axis and the axis tilts. And the degree of tilt varies over time. If you are in the northern hemisphere and the earth is tilted over toward the sun, you get more sunlight than if it is tilted away from sun. On top of the

changes in the tilt there is the wobble. The axis is not precise, and the earth wobbles around it like a top near the end of the spinning cycle. The wobble can sometimes make our planet further tipped over or less tipped over.

He took those three things together came up with what is referred to as the Milankovitch cycles. What's interesting is if you take the Milankovitch cycles and put over top of it put things like sea level, Co₂, Methane, all these factors that affect global climate you will find a parallel through time up until about 100 years ago. According to the Milankovitch cycles we should be going into a cooling period, and we are not now. We are going into a warming period. We do not fit the Milankovitch cycles. You can look at that as good and bad.

The reason Dr. Eshelman looks at it as good is because it helps to tell us the cause. Because if it were part of the natural cycle that it is getting warmer, it is going to be more difficult to make a correction to a natural cycle. But if it is human-induced cause then we know what the problem is so we can take care of it. If we want to take care of it.

In 2007 National Geographic published an account of the parameters Dr. Eshelman is talking about with maps and charts and graphs. And they took it back 400K years. How can they take it back that far? They did it primarily from ice bubbles captured in old ice from Greenland. They took lots of air bubbles to measure what elements that were in the air at that time. The current work is being done in Antarctica where they have ice that is 1.5 million years old. Analysis will be able to report on the Milankovitch cycles back to 800 thousand years into the past. Not published yet, but the word is that the Milankovitch cycles is a constant back that far.

What happened in the last hundred years to change all of that? The burning of fossil fuels. That is a big issue today. The use of hydrocarbons.

If we look at long beach, where is the water going to be 50 years from now? 100 years from now? All we can do is speculate. Based on what's happened the last 100 years, sea levels will continue to increase. Relative sea level will rise, which is not just the amount of water coming into the oceans, it is also the expansion of water due to heat, a combination of things.

Another factor is that the Earth's crust also changes and moves up and down. Dr. Eshelman asked how many have heard of **Isostasy**? It means the Earth's crust always trying to reach an equilibrium. Think of the earth as a crust of bread and its resting on top of a semi-liquid which is the earth's mantle. If you put weight on it, it will sink down. If you take weight off it, it will bounce back up. Like balsa wood will float on top of water because it is very light, and if you place Lignum Vitae in water it will barely stay above the surface because of its weight. The earth's crust is the same way.

If we look back during the past major glacial period, there was a tremendous sheet of ice that covered most of North America and parts of Europe, all of Antarctica and the Arctic. All that weight, some of which was over 3 miles in thickness seriously depressed the Earth's crust. When you get into a warming period that ice begins to melt, and all that weight is released because of all the water running back into the oceans. The earth's crust begins to rise with that release. If you live in Alaska, for example the Earth's crust is rising faster than sea level rise. But if you live in the Gulf of Mexico, you have a compounding problem because the crust going down where sea levels are rising.

What do we have right here in Long Beach? You have a unique situation impacted by the Forebulge. And it's not a good thing. When you were younger and you played in the mud, you placed your hand in the mud and pushed down the mud came up between your fingers and around your hand. If you have an ice sheet with all that weight it creates a forebulge in the crust in front of the ice sheet. Where was the forebulge for the great North American ice sheet? Right over central Calvert County. It is not good because the forebulge after maximal glaciation caused the earth's crust to rise around 60'. And now the forebulge is going down. In Calvert County we have the problem of sea levels rising while the forebulge is going down.

If we accept that we are responsible for the reversal of the Milankovitch cycles that has been constant for at least 400K years. All we must do is clean up our mess. Not an easy thing to do.

Remember when the environmental movement started in the 60's and 70's? The message was clean air, clean water, clean Earth. The environmental movement has changed the message. Now the movement is geared towards climate change. If we really want to change the environment we need to return to the original message. That's how we address climate change.

Why has the message changed? In 2008 US Corporations spent over a billion dollars on anti-global warming ads. The major corporations are trying to preach to the American public that global warming is not an issue you should be concerned with. The closest analogy is the 1960's Congressional hearings where CEOs of the 3 major tobacco corporations testified. Each was asked if cigarette smoking had any impact on health. All three lied. In many regards, money is more important than the truth. You can say it is a natural cycle, but why does it not fit the Milankovitch cycles?

Q: What happened to the terraces at Calvert Cliffs? Did they get finished?

Dr. Eshelman answered that the terraces were modified; instead of ten 10'x30' terraces, there were seven terraces, resized to 5'x10'. We finished the field project for five terraces. All the data was recorded into computers. Terraces were out like an archeological grid map. If we found a clam shell, we reported where it was found (square within the grid), whether it was a complete shell or a part of a shell, was face-up or face-down, whole or broken, very detailed reporting. Then the specimens were placed in special boxes in the same position as found, given to the American Academy of Sciences (AAS). Another sad story: all the collections were sent to AAS which was seeking status as state museum of natural history. Most states have these, Maryland does not. The paleontologist who was hired to put this collection together died and they conducted a global search for her replacement. The replacement was focused on establishing an interactive children's museum which was installed at the inner harbor Baltimore and was not interested in natural history. All those collections for natural history have been ill taken care of, lost, or worse. All the paleontological collections from Calvert Cliffs were in boxes which were put in drawers which were placed in quarter units (lockers). When the collection was moved, they were transported on dollies which were tilted back, and all the questions were jostled. All that data was lost. All because the people at the children's museum did not know how to take care of collections.

Most of those collections today are now part of the Natural History Society in Baltimore. The good news is that they just paid off the mortgage on their building and recently received large donations and grants to rehab their building. They seem to be doing well by the collection at the state level.

Someone came up with an idea that Calvert Marine Museum is now designated to be the state repository for paleontology. Maryland Center for Research & Collections with NO FUNDING. The Marine Museum does not have the space, or capacity. We can't even take care of what comes to the Museum from Calvert Cliffs, much less the entire state.

Q: What dictates what goes to the Natural History Museum vs. Calvert Marine Museum vs. the MAC Lab?

A: The MAC Lab in Jefferson Patterson Park is the Maryland Archeological Conservation Lab, the Marine Museum is Paleontological. It's amazing that both are in Calvert County. Cultural resources from prehistoric and historic sites left behind by humans goes to the MAC lab, fossils to the Marine Museum. Let me tell you what happens in other states like Nebraska, Kansas, California, Oregon, and Washington where they have active programs and so many states do this: when a new road or major construction project begins, they bring a paleontologist on site to make sure that no paleo resources are destroyed during the construction of that project. There is no way we

could do that in Maryland where we have too many projects. Some counties may have historic planners. Calvert County's historic planner is retiring, and a new person is coming in.

Q: We get overwhelmed by the SWM project in our own community, is there a way to get a handle on rising sea levels?

A: The good news is that we are talking about millimeters of change per year, not inches or feet. Geologically speaking, the millimeters over a hundred years adds up. For us in the next 10 years, I don't think it is that critical. It is not good, but it is not critical. The main concern to me is not the sea level rise or the fact that the land is sinking because if none of those things were happening, we would still have a problem with erosion on the shoreline because of wind/wave action. The term "fetch" is the distance wind can blow unobstructed across the water, and a greater the fetch with the same wind velocity produces greater waves. With one hundred miles of fetch here on the bay, you will still have erosion at Calvert Cliffs at 2' per year. What does that mean? It means that every 10-15 years you have a 25' slump that comes down and weakens the area next to it which also will slump with time so that on average you lose 2' per year. That is significant erosion.

Dr. Eshelman named a geologist, now retired from Naval Research Lab, who has completed many studies on cliff erosion at Scientist Cliffs. Peter has determined that just the freezing and thawing action at Scientist Cliffs produces a half inch of spalling falling off the cliffs. If you have a wet year with many cycles of freezing and thawing, you will have more spalling than years that are less wet.

I have a photograph of a house that is ready to fall off a cliff. Many people will guess that it is the Chesapeake Ranch Estates, or Randle Cliffs but it is on shore of Lake Michigan. There is no sea level rise on Lake Michigan, the reason the cliffs are eroding is because of fetch. When the ice forms on the Lake it can rub up against the cliffs and cause erosion. The farther North the colder it is, so the earth's crust in the north of Michigan had more ice weight and as the land rebounds quicker than the South it is displacing water that is being pushed South to Chicago

The more we learn about the earth the better we can understand how to take care of it.

Q: If you look at historical photos of the area where the marina is, the breakwater for the marina was extended and you can see in the photos that there is a larger beach to the north than what was there before the breakwater.

A: That's due to what is called "lateral drift"; the prevailing winds that come from the North to the South will gradually cause sand to drift from the North beaches to the South Beaches. There will be more erosion to the South of the breakwater. You can see the same situation with Ocean City – there is a quarter of a mile difference at the breakwater. Ocean City is now dredging sand every 4 years; the Army Corp of Engineers analyzes the cost vs. economic benefit and find that Ocean City's tourism money and taxes make it economically worthwhile. But sometimes the Corp may find that a project costs too much. And then there is a problem for that area.

Q: When is the last time the marina was dredged out?

A: Every year.

Paul Murdock explained that part of the problem is with sand migration/erosion to Flag Ponds. The rocks in front of the beach and waterfront homes in the "Flats" displace the energy of the waves which deposits the sands from our beachfront to Flag Ponds.

Dr. Eshelman used the example of Western Shores before the rip rap was put in, it was a beautiful beach. Now they have no beach.

When you put in rip rap it temporarily stops the erosion, and then the cliffs try to reach the “angle of repose”; if the cliff is clay it can be very steep, if it is sandy the angle of repose is about 45 degrees. Calvert County did a study on Calvert Cliffs erosion and how we adjust this for future home sales. Using the angle of repose and the rate of erosion, they calculated how far a home should be built from the cliff’s edge, so the home lasts for 50 years. That was back in the 80’s, and many homes were built prior to that, situated too close to the cliffs. A few of these endangered homes were bought by FEMA. Dr. Eshelman commends the County for trying to do a good job on that. Some people bought 2 lots so they could build their house further from the cliffs. There is no law that requires the seller to share info about the erosion rates of Calvert Cliffs. Many people are uninformed. Why do we build in flood plains? It makes no sense geologically.

Paul: The County just approved two houses in Chesapeake Ranch Estates for this purchase program. However, if you walk the beach, you will see a septic tank hanging off the cliff with a disconnected pvc pipe. And that home did NOT qualify for the County’s purchase program

Dr. Eshelman ended his talk with these words:

“Let me end on a happy note: To me, learning about the history of the natural world helps us to better appreciate where we live and gives us a sense of place. Often times it is the developer or politicians with no sense of place that are making the decisions for where we live, and they aren’t always necessarily in the best interests of the place where we live. If we have a sense of place and we like that sense of place we are more likely to do the things that will help maintain and protect it.”

Glossary of Geological Terms:

Forebulge is a flexural bulge in front as a result of a load on the lithosphere, often caused by tectonic interactions and glaciations.

Isostasy (*Greek *ísos* "equal", *stásis* "standstill"*) or *isostatic equilibrium* is the state of gravitational equilibrium between Earth's crust (or lithosphere) and mantle such that the crust "floats" at an elevation that depends on its thickness and density.

Lithosphere is the rigid, outermost shell of a terrestrial-type planet or natural satellite. On Earth, it is composed of the crust and the portion of the upper mantle that behaves elastically on time scales of up to thousands of years or more.

Milankovitch Cycles describe the collective effects of changes in the Earth's movements on its climate over thousands of years. The term was coined and named after Serbian geophysicist and astronomer Milutin Milanković.

Stratigraphy is the study of rock layers (strata) deposited in the earth. It is one of the most challenging of geologic subdisciplines, comparable to an exacting form of detective work, yet it is also one of the most important branches of study in the geologic sciences.

