

**1. Today I ask you for a favorable report on the EHRA, HB0596:**

I'm Dr. Thomas E Moore, a Fellow of the American Geophysical Union, retired NASA Manager and Project Scientist (CV attached) and resident of Annapolis. I'm active as a consultant for environmental, energy, and transportation causes aimed at sustainability and ending fuel burning and carbon emission to limit global warming, ice melt and sea level rise. Living on the South River, sea level matters to me.

**2. We have an implicit right *and* obligation to the environment out of which we were born:**

The environment that creates life is self-evidently the birthright and estate of the life it sustains. We must assert a right to enjoy and benefit from our healthful natural environment. We should not allow individuals and corporations to foul or exploit our environment to enrich themselves at our expense, or for any other reason.

**3. The state is responsible to voters as stewards and trustees of that environment:**

Our Constitution serves to establish and uphold the rights of citizens and provide the framework for law and order, assuring equal rights to all before the law. The obligation, duty and oath of elected officials is to protect the common good, preventing its exploitation to enrich the few at the expense of the many. You are accountable to voters, in turn, to hold exploiters accountable to the government. To do that will require positive action on HB0596.

**4. Pollution and sea level rise have been allowed to threaten Maryland and Annapolis:**

In the 1980s, we learned that the seemingly harmless carbon dioxide released by burning fuels is warming our entire planet by the greenhouse effect. We verified this by noting the global melting of ice and corresponding raising of sea levels everywhere. Science confirms that we can expect to face a continually increasing existential threat to our infrastructure. Annapolis and the Chesapeake Bay area are rapidly becoming a "low country" like Holland.

**5. Annapolis will incur accelerating expenses to postpone a threat we helped to create:**

Once a seasonal nuisance, flooding now occurs about 40 days per year, and is expected to become a daily occurrence. Higher mean sea level also increases damage from storms. The City Of Annapolis and the US Naval Academy now require a 5 to 6 foot sea wall to protect the Naval Academy and downtown businesses from severe damage. Both are in jeopardy as important keystones of the city's growth and prosperity, as are many other sites in MD..

**6. Your duty to the common good requires submission of HB0956 to the voters:**

Polls (attached) show 76% of Maryland voters support this amendment. They recognize it as a necessary step to *limit and establish accountability* for the threat to Annapolis and the state of MD. An attack the root causes will require us to first establish the rights of citizens and the trustee responsibility of the government. **The voters will thank you for fulfilling your duty by submitting HB 0596 to a ballot so they can claim a proper respect for their rights.**

I attach several exhibits and am happy to respond to any questions.

**Exhibit 1. City of Annapolis Climate Report**

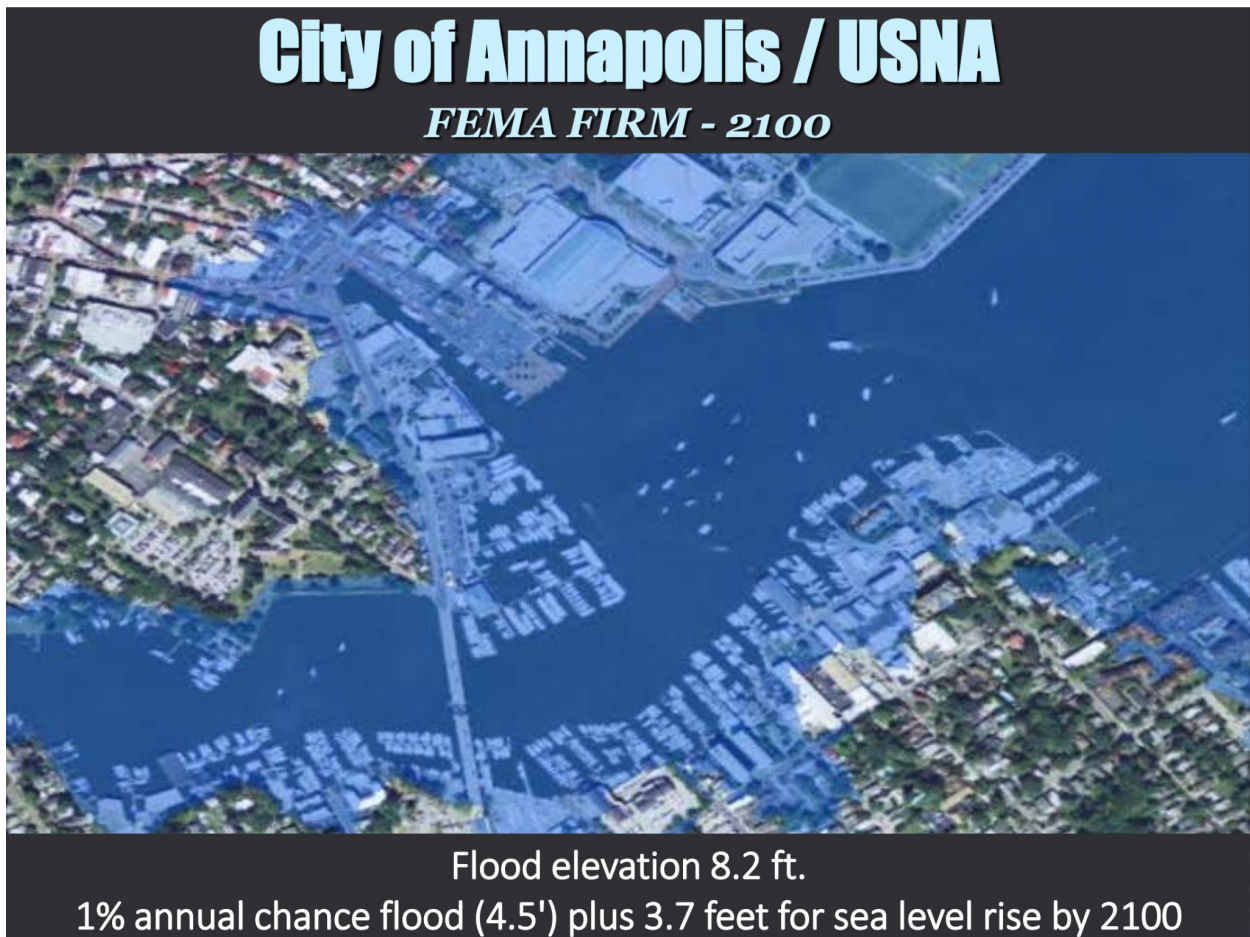
Current values and events: :



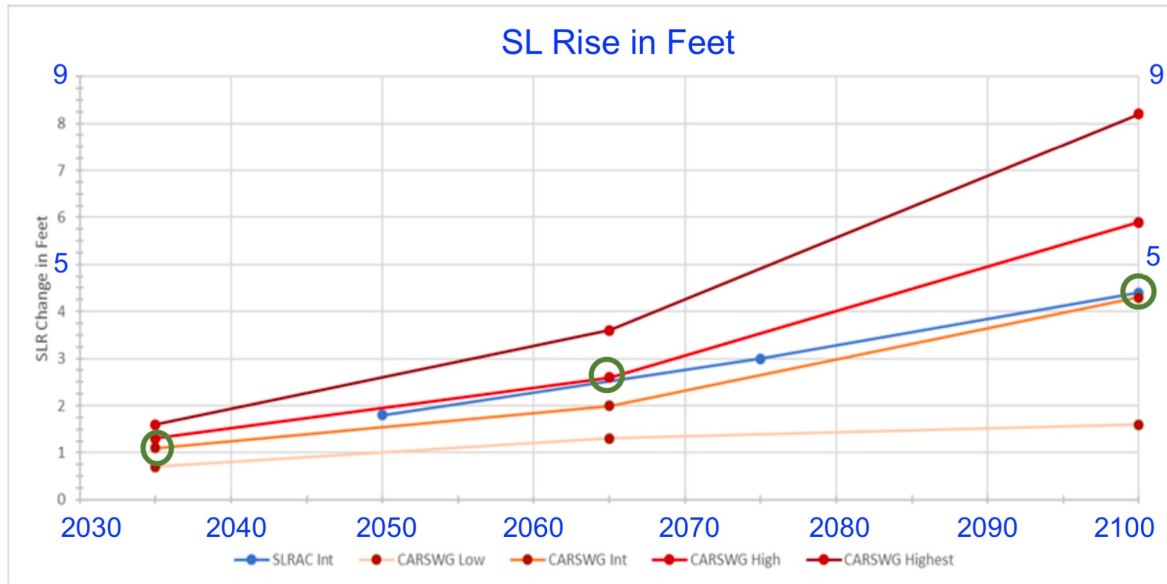
**Summary of Key Elevations**

- Flooding Through Storm Drains – 1.9 feet NAVD88
- Extreme High Tide in March 2018 – 2.7 feet NAVD88
- Protection after Flood Mitigation project – 3.2 feet NAVD88
- Ten Year Storm Elevation – 3.7 feet NAVD88
- Base Flood Elevation (100-Yr Storm) – 5.0 feet NAVD88
- Hurricane Isabel (September 2003) – 6.4 feet NAVD88

**Exhibit 2. Recent FEMA flood insurance rate map projects 100 year flood levels in downtown that far exceed current floodplain designations.**



**Exhibit 3.** A Naval Academy Study of this century's projected sea level rise projects about 1.9 feet of Mean Seal Level (MSL) rise by 2050. A 2022 NOAA Sea Level Report moderated that to about 1.0 foot, but only IF emissions are curbed. If not, it also projects 5-7 feet by 2100.



**Exhibit 4.** The recommended new seawall is 5.2 feet above current MSL Future MSL and 100 year flood levels based on rising MSL are shown at three dates.

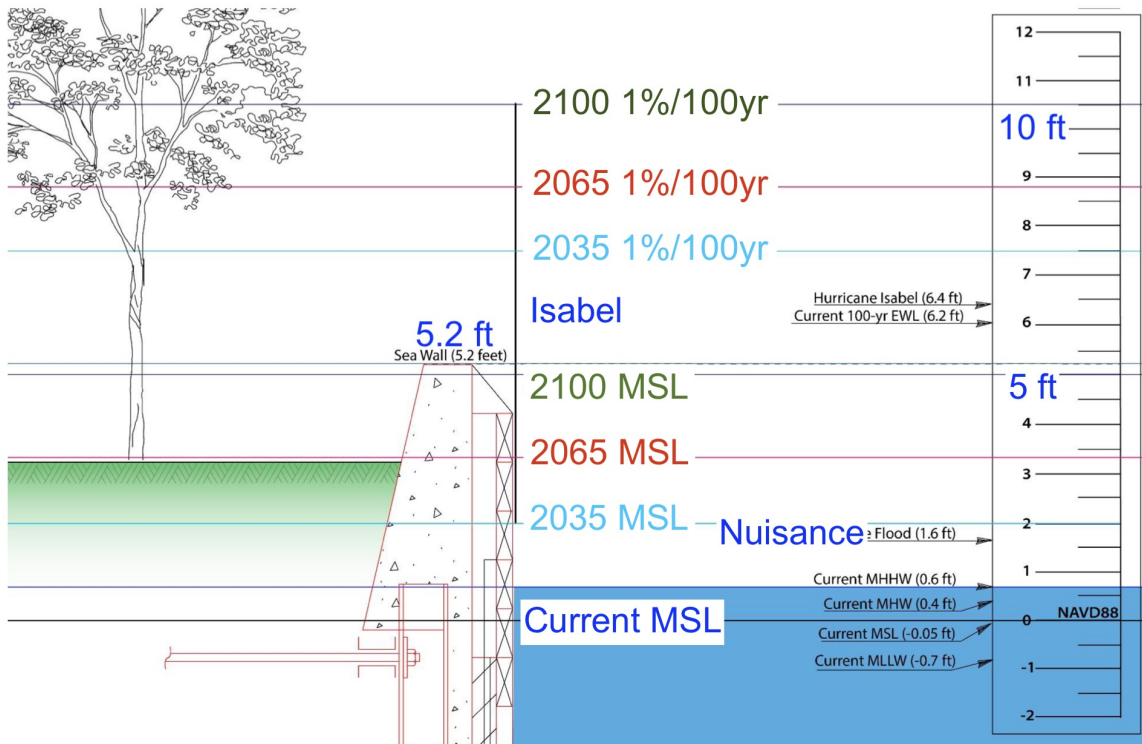
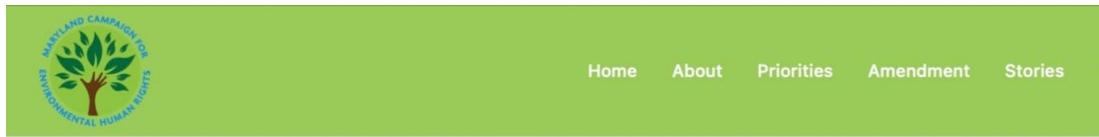


Exhibit 5. Opinion Poll Results



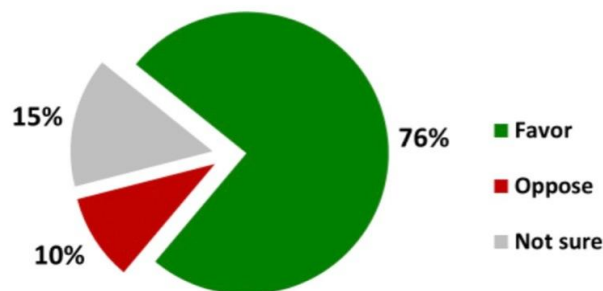
# Majority of Maryland Voters Support the Environmental Human Rights Amendment

BY EDITOR • JANUARY 27, 2022 • ENVIRONMENTAL HUMAN RIGHTS, ENVIRONMENTAL RIGHTS AMENDMENT, UNCATEGORIZED



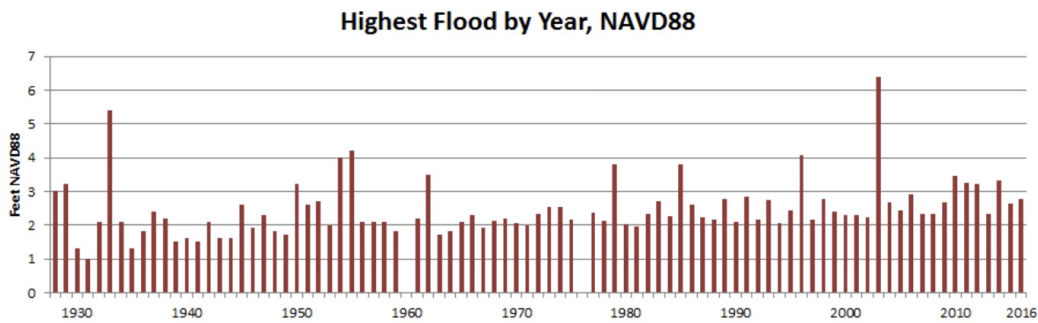
ANNAPOLIS, MD: In a recent poll by Opinion Works LLC, 76% of Maryland voters said they favor protecting the right to a healthful environment, and even more importantly, the majority would vote for the proposed amendment if the election happened today.

**Maryland Voter Support for Environmental Rights Amendment**

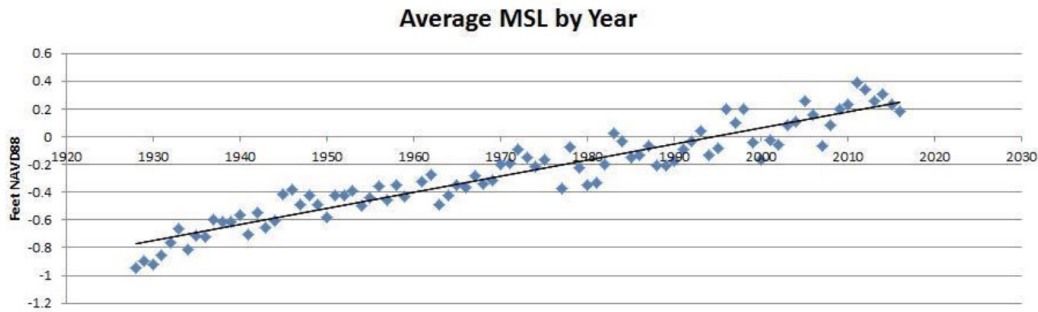




**Exhibit 6.** Historical data from City of Annapolis CHRMP report April 2018, demonstrating the reality of accelerating mean sea level rise.

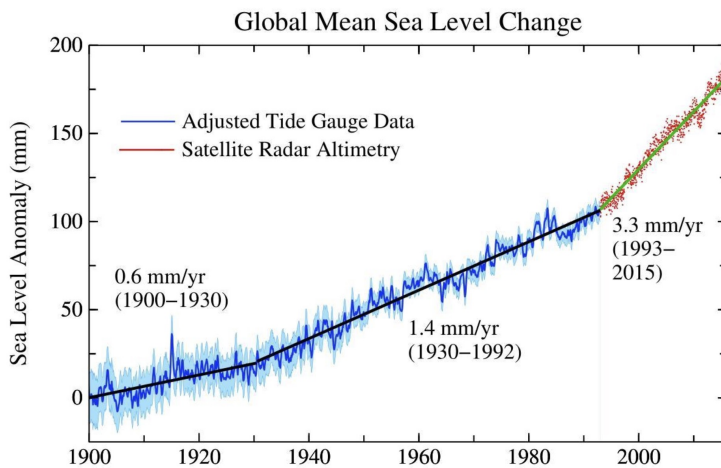


The figure shows the highest observed water in each year since 1928 (except 1960 and 1976). Notice the floods from storm surges in 2003 (6.4 feet, Hurricane Isabel) and 1933 (5.4 feet).



The average or mean sea level (MSL) over the same time period reveals a trend of rising sea level. The trend in sea level rise is clear and relatively consistent over the 20<sup>th</sup> century as shown in NOAA’s historical analysis of sea level rise at Annapolis.

**Exhibit 7.** The global sea level rise has been **accelerating**. Full scale 200 mm = 0.7 ft



J. Hansen et al., 2016: Ice melt, Sea Level Rise and Superstorms<sup>37</sup>

Dr. Thomas E. Moore



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Curriculum Vitae

Biography

Publications

Brief Bio

Thomas E. Moore worked on the dynamics of the plasma environment at geosynchronous orbit, on some of the first multi-point observations to reveal space weather fronts. He also was active in the observation of plasma and energetic particles above auroral displays from sounding rocket platforms. Dr. Moore joined NASA at Marshall Space Flight Center in 1983 as a member of the science team for the Retarding Ion Mass Spectrometer on the Dynamics Explorer-1 Satellite. He supplied plasma spectrometers for the Topside Probe of the Auroral Zone (TOPAZ) series of sounding rocket payloads, the ARCS series of active experiment payloads, and the SCIFER and CAPER cusp payloads. At MSFC, he became the principal investigator for the Thermal Ion Dynamics Experiment and Plasma Source Instrument for the ISTEP POLAR spacecraft. Dr. Moore joined the Goddard Space Flight Center in 1997, to serve as project scientist for the IMAGE mission, as lead co-investigator for the Low Energy Neutral Atom imager on IMAGE, and to pursue broader interests in heliospheric and planetary plasma heating and outflow. Dr. Moore has published over 250 research reports and other contributions to the refereed literature. He is a Fellow of the American Geophysical Union, having served as awards committee member, section secretary, and program committee member for the Space Physics and Aeronomy section. He served as a member of the Solar Probe science definition team, The Sun Earth Connections Advisory Subcommittee, as a co-chair of the first NASA "Heliophysics" Roadmap Committee, and as study scientist for the Magnetotail Constellation Mission. He is a co-investigator on the Interstellar Boundary Explorer mission, and on the Magnetospheric Multiscale mission, for which he was Sr. Project Scientist until his retirement on 1 Oct. 2019.

Positions/Employment

- 2010 - Present **Sr. Project Scientist (MMS)**  
NASA GSFC, Greenbelt MD
- 2009 - Present **Adjunct Professor**  
Univ. of MD, College Park MD
- 2006 - 2010 **Deputy Director, Heliophysics Science Division**  
NASA GSFC, Greenbelt MD
- 1997 - 2006 **Head, Interplanetary Physics Branch**  
NASA GSFC, Greenbelt MD
- 1987 - 1997 **Graduate Faculty, Physics**  
Univ. of AL in Huntsville, Huntsville, AL
- 1985 - 1997 **Chief, Space Plasma Physics Branch**  
NASA MSFC, Huntsville AL

Education

- B.S. (honors), Physics, University of New Hampshire, 1970
- M.A.T., Education, University of New Hampshire, 1971
- Ph.D., Astrogeophysics, University of Colorado, 1978
- R&D Management, Wharton School, Univ. of PA 2009

Professional Service

Dr. Moore has served on numerous definition teams, review panels and strategic studies, including the Solar Probe Science and Technology Definition Team, the Sun Earth Connection Advisory Subcommittee (SECAS), and the Sun-Earth Connections Roadmap Team (1997, 2000). He co-chaired the first Heliophysics Roadmap Team in 2005-2006. He has been active in the American Geophysical Union as an Awards Committee member, as a Chapman Conference Convener, as a Program Secretary for Space Physics and Aeronomy, and was elected a Fellow of the AGU in 2009. He has received NASA awards for Excellence in Research and Technology, for membership in the Polar, IMAGE, and IBEX development teams, for Outstanding Management of the Interplanetary Physics Branch at NASA Goddard, and the NASA Exceptional Service Medal.

Awards

- NASA Award for Excellence in Research and Technology, NASA MSFC, 1992.
- Group Achievement Award: Polar Mission Thermal Ion Dynamics Experiment team, 1999.
- Outstanding Management Award (First level supervisors): NASA GSFC, 2002.
- Group Achievement Award: IMAGE Mission Low Energy Neutral Atom Imager team, 2001
- Fellow of the American Geophysical Union, 2009.
- NASA Exceptional Service Medal, 2010.