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Good Afternoon. I am Ellen Athas, Director and Program Counsel for the Clean Oceans Program at The Ocean Conservancy. The Ocean Conservancy strives to be the world's foremost advocate for the oceans. With over 80 staff serving 900,000 members and volunteers, we work to inform, inspire and empower people to speak and act for the oceans through science-based advocacy, research and public education. Headquartered in Washington, D.C., The Ocean Conservancy has additional offices in Alaska, California, Florida, Maine, Virginia and the U.S. Virgin Islands.

In the following testimony, I will first outline the problems of harmful algal blooms and hypoxia, focusing on the costs to the environment, coastal ecosystems, fisheries and coastal and tourist economies. Next, I will discuss the need for action to address harmful algal blooms, hypoxia and nutrient pollution, in general, in the context of the successes and shortcomings of the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (P.L. 105-383). Finally, I will conclude with a discussion of where we go from here, offering specific recommendations relative to H.R. 1856, the Harmful Algal Bloom and Hypoxia Research Amendments Act of 2003.

We at The Ocean Conservancy strongly support continued Congressional involvement and oversight on the important issues of harmful algal blooms and hypoxia. We recognize the importance of including these ongoing research, monitoring and reporting efforts as part of a larger solution to addressing this serious and worsening problem. We would, however, welcome Congressional support to ensure solutions for these important issues through further promotion of action plans and increased congressional oversight of Federal agencies tasked with responsibilities under these plans.

The Problems of Harmful Algal Blooms and Hypoxia

1. Harmful Algal Blooms. Algal blooms are natural phenomena that have occurred throughout recorded history. They are a proliferation, or "bloom," of single-celled marine algae, called phytoplankton, that photosynthesize and multiply. These massive quantities of phytoplankton deplete the oxygen in the waters where the phytoplankton blooms occur. Different species of marine phytoplankton cause harmful algal blooms. Some are toxic only at high concentrations, while others are toxic at even the smallest densities.

In the past, these harmful algal blooms appeared in only a few scattered coastal areas in the United States. Without doubt, there has been a major worldwide expansion in the frequency, geographic extent, and magnitude of harmful algal bloom events and in the number of species that trigger such events. In the United States, the past twenty-five years reflect a marked increase in the number of algal toxins, affected areas, impacted fisheries and higher economic losses. In addition, the number of algal species known to be toxic has increased from about 20 species a few years ago to at least 85 identified, toxic species as of 1998.

On the East Coast, harmful algal blooms first made news headlines in 1997 with outbreaks of the organism *Pfiesteria piscicida.* While not a form of algae, the nutrient-fueled planktonic outbreak was sufficiently alarming to serve as a catalyst for action on harmful algal blooms and hypoxia at all levels of government. *Pfiesteria piscicida* was responsible for fish kills and fish lesion events in Maryland, Delaware and North Carolina throughout the 1990s, and was found in tributaries with high levels of nutrients and dissolved organic matter. Elevated populations of this particular harmful species were found immediately downstream of sewage outfalls and discharges from hog farms and other animal feeding operations. It appears that excessive nutrient loading – too much of a good thing – creates an environment rich in the microbial prey and organic material that *Pfiesteria* feeds upon. A forum of scientists asked to advise the State of Maryland in the wake of the 1997 outbreaks on Maryland's Eastern Shore concluded that there is a strong linkage between high nutrient load and abundance of this potentially toxic dinoflagellate.

2. Hypoxia and Nutrient Over-Enrichment. The National Academy of Science's report on nutrient pollution issued in 2000, entitled Clean Coastal Waters,[1] concluded that the impacts of high levels of nutrients are negative, and that eutrophication can be one of many responses to the introduction of excessive amounts of nutrients. Perhaps the best-known example connecting excess nutrient loadings with eutrophication is the "Dead Zone" in the Gulf of Mexico. Each spring in the Gulf of Mexico, oxygen levels fall too low to support most fish and crustacean life in a vast region along the Louisiana and Texas coasts, creating what is called a "Dead Zone." There are many causes that lead to this condition of hypoxia, which refers to the situation where some oxygen is present in water, yet levels are so low that some fish and crustacean life cannot be supported. One cause of hypoxia is related to nutrient over-enrichment. The phytoplankton in the Gulf – actually the bacteria created by the decaying phytoplankton – uses up available oxygen, leaving inadequate levels for most fish and crustaceans. The National Research Council maintains that the Dead Zone's "key driver" is excess nutrients, and "[o]ver half the nitrogen can be attributed to agriculture."[2]

The May 2002 Integrated Assessment of Hypoxia in the Northern Gulf of Mexico concluded that, while hypoxia can occur naturally and has existed throughout geologic time, its occurrence in shallow coastal and estuarine areas appears to be increasing

1 National Research Council (NRC), 2000. Clean Coastal Waters: Understanding the Effects of Nutrient Pollution. National Academy Press, Washington, D.C.
2 Id. at 25.

and is most likely accelerated by human activities. Although years ago the Dead Zone covered 9,500 km², by the summer of 1999, it had grown to an area of 20,000 km². It is now the size of the state of Massachusetts. Loss of wetlands, combined with nutrient over-enrichment, has resulted in the ever-enlarging Dead Zone. The continued loss of wetlands deprives major riverine and estuarine systems of their greatest filtering systems, systems that would – if in place – filter out nutrients and other organic material before they were amassed and concentrated into one gulf or estuary.

The incidence of harmful algal blooms along the United States coast increased from 200 during the 1970s to 700 in the 1990s, and now touches upon almost every coastal state in the United States. According to the NOAA National Estuarine Eutrophication Assessment, forty-four estuaries along all the nation's coasts showed high nutrient over-enrichment as of 1999. Thus, one-third of the estuaries studied showed these high nutrient levels. The report concludes, however, that left unabated, two out of every three estuaries studied will have impaired use by 2020. So, without substantial action to reverse this situation, nutrient over-enrichment will soon increase dramatically.

3. Ecological Health, Human Health and the Economy. When such nutrient over-enrichment increases, ecosystems suffer, human health suffers and fishermen and coastal communities suffer. For example, coral reefs – among the most productive and diverse ecosystems in the world – are found in nutrient-poor surface waters. High nutrient levels are detrimental to reef health. Even slight increases in nutrient levels upset the ecological balance on coral reefs and give rise to macroalgae which can then overgrow a coral reef and lead to permanent damage. For all ocean ecosystems, though, balance is the watchword. Increased nutrient levels are simply not to be viewed as beneficial for ecosystem health, by any means. They upset the natural balance and lead to unwanted conditions. In fact, there were some erroneous theories that some small increases in nutrient levels could be "beneficial" to certain ocean ecosystems, but that is simply not true. There may be short-term increases in fish and other biological productivity, but those do not translate into benefits to the ocean ecosystems.

Human health concerns arise directly from nutrient contact. Sometimes, that is so because nutrient contact also means contact with human sewage. In addition, one group of pathogens specifically shows increased growth rates under eutrophic conditions, raising concerns about contamination and transmission of pathogens to humans. Also, harmful algal bloom toxins – that is, toxins synthesized by certain harmful algal blooms -- can accumulate in shellfish and fish, and harm humans ingesting that fish. Harmful algal bloom toxins are serious, because they often cannot be destroyed by cooking or freezing and have few antidotes. Harmful algal bloom-related illnesses in the United States include Paralytic Shellfish Poisoning, Domoic Acid Poisoning, Neurotoxic Shellfish Poisoning, Ciguatera Fish Poisoning and *Pfiesteria*-related illnesses, among others. These are serious illnesses, some of which can result in death.

Humans are not the only ones affected by harmful algal bloom-related illnesses. For example, harmful algal bloom-related illnesses affect brown pelicans, cormorants and

sea lions. During one harmful algal bloom event off Monterey, California, 400 sea lions died. In 1997, 21 million fish died in the Gulf of Mexico, with millions washing up on shore, as a result of a harmful algal bloom-related disease commonly referred to as red tide, because these blooms turn the water red. A red tide bloom off the coast of Florida killed over 100 bottlenose dolphins between 1999 and 2000.

Economically, fishermen and coastal communities lose a great deal from increased harmful algal blooms and hypoxia. The commercial seafood industry in Maryland lost $43 million in sales in 1997 as a result of the public's reaction to the *Pfiesteria* outbreak. The brown shrimp catch – the most important commercial fishery by dollar value in the Gulf – declined from a record high in 1990 to below average during 1992-1997, coinciding with years of greatly increased hypoxia. In the summer of 1997, in response to the fish kills and blooms of *Pfiesteria piscicida* on Maryland's Eastern Shore, 28,000 party and charter boat trips were cancelled. In 1999, 11 Gulf Coast beaches in Florida were closed for 13-22 weeks because of red tides. During the same year, 10 Atlantic Ocean beaches in Florida were closed for a month because of algal blooms. Closing these polluted beaches costs local economies tourist dollars and jobs, but also disappoints and costs those families forced to cancel beach plans. The U.S. Environmental Protection Agency estimates that coastal waters support 28.3 million jobs and generate $54 billion in goods and services each year.

We need to protect the clean water that supports these jobs, goods and services. We need to protect human health, the health of the creatures that live in the coastal waters and the very ecosystems themselves. We need to protect the fisheries upon which we depend for jobs and nourishment.

4. Ongoing Need for a National Strategy to Address Harmful Algal Blooms and Hypoxia. To do this, we need a national strategy that will achieve a measurable improvement in the quality of impaired coastal systems and will significantly improve coastal water quality. Just slowing the decline is simply not good enough. And while local efforts are essential to this goal, the breadth and reach of this problem mandates that it be addressed, first and foremost, at a national level. Strategies have been outlined already. The excellent nutrient pollution strategy by the National Academy of Science, National Research Council, in fact, mirrors some of the strategies recommended in the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force's Action Plan, delivered to Congress in January 2001 pursuant to the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998.

Both the National Academy study and the Task Force Action Plan encourage nonpoint source pollutant reductions under existing laws, including the Clean Water Act, the Farm Bill and the Coastal Zone Management Act. Both also recommend implementing nutrient management programs, including the use of total maximum daily load (TMDL) programs after establishment of nutrient criteria. Both acknowledge the need to reduce the impact from agricultural practices on harmful algal blooms, hypoxia and nutrient pollution through, at a minimum, incentive programs. Wetlands and seagrass projects that promote restoration and enhancement of natural systems for nitrogen retention of

waters were also supported by both. Both conclude that continued scientific research and monitoring to assess progress in this area are also needed.

With such recommendations on the table, actions must be forthcoming to implement these strategies. In this regard, the scientific assessments and action planning components of the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (the 1998 Act) have been extraordinarily successful in moving these issues to the forefront, defining them, and outlining a strategy for action.

The next logical step, in the context of this Act, is to go beyond the assessment and action plan stage and develop plan implementation and enforcement mechanisms. In terms of legislation, this would mean reviewing and translating the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force's Action Plan into legislation with firm deadlines that mandate Federal agency action.

The Harmful Algal Bloom and Hypoxia Research and Control Act of 1998

We are very fortunate that in 1998 Congress acted quickly to begin to address the important issues of harmful algal blooms and hypoxia by passing the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998. The statute called for the creation of a high level task force to study the identified problems.

The statute mandated three scientific assessments and also called for an action plan. There was to be an Assessment of Harmful Algal Blooms, examining ecological and economic consequences of harmful algal blooms and further examining alternatives for reducing, mitigating and controlling these blooms. Second, there was to be an Assessment of Hypoxia, which would examine the ecological and economic consequences of hypoxia in United States coastal waters and further examine alternatives for reducing, mitigating and controlling hypoxia. Third, there was to be an Assessment Report on Hypoxia in the Northern Gulf of Mexico examining distribution, dynamics, and causes; ecological and economic consequences; sources and loads of nutrients; effects of nutrient load reductions; methods for nutrient load reductions and the costs and benefits of implementing such methods. The legislation also called for a plan to be developed for reducing, mitigating and controlling hypoxia in the northern Gulf of Mexico. Finally, the Act specifically authorized a number of scientific research programs to help efforts to prevent, control and mitigate the impacts of harmful algal blooms and hypoxia.

The statute authorized $15 million for fiscal year 1999, $18.25 million for fiscal year 2000, and $19 million for fiscal year 2001 to be appropriated to the Secretary of Commerce for research, education and monitoring activities on harmful algal blooms and hypoxia. These sums were divided among the National Ocean Service, the National Marine Fisheries Service, and the Office of Oceanic and Atmospheric Research, under the Department of Commerce's National Oceanic and Atmospheric Administration. Funds were also included to carry out the Ecology and Oceanography

of Harmful Algal Blooms (ECOHAB) project, under the Coastal Ocean Program. Under the ECOHAB program, five federal agencies were to work in a cooperative and coordinated manner to fund research projects and disseminate information on harmful algae.

Two of three scientific assessments were completed and submitted to Congress. In February 2001, the National Science and Technical Council, through its Inter-Agency Task Force on Harmful Algal Blooms and Hypoxia, delivered the report, "National Assessment of Harmful Algal Blooms in U.S. Waters." The report synthesized current research and management knowledge on the causes and consequences of harmful algal blooms. It identified the growing body of evidence pointing to the worsening of harmful algal blooms worldwide, and identified nutrient pollution as a possible cause for increased blooms. It studied the impacts on human health, ecosystem health and the economy. It further looked at management options, recommendations, gaps in epidemiology research, needs for research into control methods, the need for monitoring and event response programs and research and development needs for new technologies. In May 2000, Congress received the "Integrated Assessment of Hypoxia in the Northern Gulf of Mexico." This report traced the problem, identified the causes and studied the consequences of hypoxia and nutrient over-enrichment. It studied future effects under various scenarios and investigated approaches for reducing nutrient loads. It also explored adaptive management as a framework for action, monitoring and research. The third assessment, which was to be an assessment of hypoxia in United States coastal waters, has not yet been issued, as of this date.

The sole Action Plan called for by the statute was delivered to Congress in January 2001 by the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force. This Task Force was composed of eight Federal agencies, nine Mississippi Basin States, and two Indian Tribes. The plan, pursuant to the statute's mandate, had been published in the Federal Register, and public comments had been received.

The Action Plan called for specific actions to occur by specific dates. Unfortunately, the implementation of these actions has fallen short of Congress' mandate. By Summer 2001, States and Tribes were to establish sub-basin committees, but only one such committee has been formed to date, and two others are in the process of being formed. Coastal States, Tribes and relevant Federal agencies were to greatly expand the long-term monitoring program for the hypoxic zone by Spring 2002, but this has not been accomplished. By Fall 2002, strategies for nutrient reduction, including setting reduction targets for nitrogen losses to surface waters, establishing a baseline of existing efforts for nutrient management, identifying opportunities to restore floodplain wetlands along and adjacent to the Mississippi River, detailing needs for additional assistance to meet their goals, and promoting additional funding were to be established, but this has not been completed. The U.S. Army Corps of Engineers, if funded, was to complete a reconnaissance-level study of potential nutrient reduction actions that could be achieved by modifying Corps projects by December 2002, but there was no funding for such activity. Clean Water Act permitting authorities were to identify point source dischargers with significant discharges of nutrients and undertake steps to reduce those loadings by

January 2003, but nothing in any coordinated manner has taken place to date. Increases to assistance to landowners for voluntary actions to restore, enhance or create wetlands along rivers and streams and encouragement to businesses to adopt voluntary best management practices were to begin by Spring 2003, but those required funding under the Farm Bill or other statutes. There is no coordinated effort underway now to effect this facet of the plan.

Clearly, as the action plan itself acknowledged, "There are no simple solutions that will reduce hypoxia in the Gulf." The very features of the action plan which made it possible to achieve a certain level of consensus also detract from its effectiveness, insofar as the action plan's recommendations are voluntary. Nonetheless, the action plan calls for the sound application of existing programs that, if properly and fully implemented, would substantially improve the water quality in the Gulf of Mexico and work to reduce hypoxia and the incidence and severity of harmful algal blooms. Finally, while additional funding needs are identified, none is sought. I will return to this critical issue in the context of The Ocean Conservancy's views on H.R. 1856, Congressman Ehlers' Harmful Algal Bloom and Hypoxia Reduction Amendments Act of 2003.

The Harmful Algal Bloom and Hypoxia Research Amendments Act of 2003

In this section of my testimony, I would like to offer a critique of the reauthorization bill pending before the Subcommittee and propose additional measures intended to improve this helpful and much-needed reauthorization legislation.

1. Retention of the Task Force. First, H.R. 1856 removes the Task Force disestablishment clause, so as to make the Task Force permanent. **We strongly support this amendment.** This high-ranking Task Force is an excellent mechanism for bringing federal agency policy leaders together to address the serious issues of harmful algal blooms and hypoxia. With a national strategy and a serious commitment to working with States, Tribes and local governments to support the necessary local efforts, progress can be made. We would further urge that this Subcommittee require the relevant Federal agencies to go beyond mere participation in the Inter-Agency Task Force. Instead, the Subcommittee should direct members of the Task to use their existing authorities to prevent, control and mitigate harmful algal blooms and hypoxia. We would be happy to work with the Subcommittee to formulate language, and we believe that there are good examples in other statutes that can be drawn from.

2. Assessments. Section 3 of H.R. 1856 calls for three national assessments. The first, the Scientific Assessment of Harmful Algal Blooms in United States coastal waters, is to consider the causes and ecological consequences and economic costs of harmful algal blooms in marine waters,[3] describe costs and benefits of management actions for

3 The first such assessment, due within 24 months after the date of the enactment of the Harmful Algal Bloom and Hypoxia Research Amendments Act of 2003, would consider only marine harmful algal blooms, but subsequent assessments, conducted every 5 years thereafter, would consider both marine and freshwater harmful algal blooms.

preventing, controlling and mitigating harmful algal blooms; evaluate progress and needs of Federal research programs and avoid unnecessary duplication among Federal agencies. The second, the Scientific Assessment of Freshwater Harmful Algal Blooms, including areas such as the Great Lakes and upper reaches of estuaries, is to consider the causes, ecological consequences and economic costs of freshwater harmful algal blooms with significant effects on freshwater locations, set priorities and guidelines for research programs under the ECOHAB project, and prevent unnecessary duplication of effort among Federal agencies. The third, the Scientific Assessment of Hypoxia in United States coastal waters, including the Great Lakes, is to examine the causes and ecological consequences and the economic costs of hypoxia, describe costs and benefits of actions for preventing, controlling, and mitigating hypoxia, evaluate progress and needs of Federal research programs and prevent unnecessary duplication of effort among Federal agencies. H.R. 1856 also calls for Local and Regional Scientific Assessments, to be conducted by the Secretary of Commerce, in coordination with others, at the request of State, Tribe or local governments. These assessments shall examine the causes and ecological consequences and economic costs of hypoxia and harmful algal blooms, methods to prevent, control and mitigate hypoxia or harmful algal blooms and the benefits and costs of such methods, and other appropriate topics. **The Ocean Conservancy supports these assessments and views them as integral tools of an overall strategy to address harmful algal blooms, hypoxia and nutrient pollution.**

3. Research Plan. H.R. 1856 calls for a National Scientific Research Plan Into Reducing Impacts From Harmful Algal Blooms to establish priorities for an interagency research plan, identify ways to improve coordination among Federal agencies, ensure that the results of the research program are shared with diverse institutions and the general public. **These are all excellent and important efforts, and we support the call for a research plan.**

4. Prediction and Response Plan. H.R. 1856 calls for a Prediction and Response Plan which would require the President, in conjunction with the governors, to develop and submit to Congress a plan to protect the environment and public health from impacts of harmful algal blooms. The plan would review techniques for predicting the onset, course and impacts of harmful algal blooms and evaluate how well these techniques protect the environment and human health. Further, there would be an identification of innovative response measures to prevent, control and mitigate harmful algal blooms and provisions for development and implementation of these innovative response measures. Although innovative response measures are always welcome and encouraged, we believe that many of the necessary steps have already been identified by the National Research Council and the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force's Action Plan and are not necessarily innovative in nature. Quite to the contrary, these ideas include addressing non-point source pollution through traditional programs, dealing with nutrient pollution through total maximum daily load (TMDL) program implementation, encouraging wetlands restoration on a meaningful level, and having, for example, the Army Corps of Engineers incorporate nitrogen reduction consideration into its project implementation actions. It is unclear whether

such actions are intended under the bill's "innovative response measures" requirement, and, yet, they are basic, integral steps needed to address a fundamental set of problems plaguing our waters. **We support Prediction and Response planning, but do not view this as a substitute for action plans, which remain necessary and wanting.**

5. No Action Plan. H.R. 1856 does not call for the submission of an action plan. In 1998, Congress wisely mandated that, based on the assessment of hypoxia in the northern Gulf of Mexico, the President was to prepare an actual plan for reducing, mitigating and controlling hypoxia in the northern Gulf. Such a plan to reduce, mitigate and control hypoxia is a more meaningful and important tool than that set out in the Prediction and Response Plan of protecting the environment from the impacts of harmful algal blooms. Nothing less should be required under the current amendments. This Subcommittee, with knowledge of the issues of harmful algal blooms, hypoxia and nutrient pollution, must lead in ensuring that the downward decline we have witnessed in the past twenty-five years does not worsen. Without explicit direction from Congress to prepare action plans, however, we are concerned that we may not see any consistent, coordinated actions to address these serious problems by Federal agencies. The Harmful Algal Bloom and Hypoxia Amendments Act of 2003 is an important step in doing that, but it can and should be augmented by more action-forcing mechanisms. **We strongly support inclusion of action plan requirements in this important legislation.**

We would be pleased to assist the Subcommittee in preparing draft language on this issue, but believe that the action plan language from the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 would serve as an excellent template. The 1998 Act required the President to "develop and submit to Congress a plan, based on the integrated assessment, for reducing, mitigating, and controlling" hypoxia in the northern Gulf of Mexico. Action plans should be required for the remaining specific areas for which assessments were mandated under the 1998 statute but no action plans were prepared. These would include: (1) an Action Plan on Harmful Algal Blooms; and (2) an Action Plan on Hypoxia. These action plans could then serve as a foundation for future legislation, providing the necessary authority, direction and funding to implement those plans.

6. No Plan to Enforce the Existing Action Plan. As noted earlier, in direct response to the requirements of the 1998 Act, the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force delivered its Action Plan to Congress in January 2001 which set out specific action to occur by specific dates. However, there has been no effort by Congress to implement the Action Plan and enforce its recommendations. And yet, that represents the next, logical step in this process. First, an assessment is done. Next, an action plan is prepared. That is then followed by Congressional action to implement the action plan. All this should, of course, be carried out with Congressional oversight. By translating the voluntary Action Plan that addresses hypoxia in the northern Gulf of Mexico into legislation with firm deadlines that mandate Federal agency action, this Subcommittee will be making the next positive step in reducing, mitigating and

controlling hypoxia. Failure to take this step will create a leadership void, where recommendations and assessments are routinely made, but not enforced. **We strongly support legislative language to implement the one existing Action Plan and enforce its recommendations.**

7. Authorization Increases. Finally, the new legislation would authorize $27.2 million for fiscal year 2004, $28.7 for fiscal year 2005, and $29.2 for fiscal year 2006 to be appropriated to the Secretary of Commerce for research, education and monitoring activities on harmful algal blooms and hypoxia. These sums were divided among the National Ocean Service, the National Marine Fisheries Service and the Office of Oceanic and Atmospheric Research, under the Department of Commerce's National Oceanic and Atmospheric Administration. Funds were also included to carry out the Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) project, under the Coastal Ocean Program. **This represents a substantial increase in authorization, which we support. We support these higher authorizations and recommend that some of these funds be used for action plans and other activities that go beyond research and monitoring.**

Conclusion

Our coastal waters and Great Lakes provide sustenance and livelihoods for millions of Americans, homes for millions of sea creatures and rare moments of rest, relaxation and tranquility for all. The risk to these resources from nutrient pollution, hypoxia and harmful algal blooms is real and increasing. This Subcommittee has before it the opportunity to make great strides in addressing these problems and assuring that it is done in a carefully coordinated manner. The proposed legislation provides funding and research guidance for good and important work to continue. It encourages the federal agencies to continue to work together through the Task Force. We congratulate these efforts.

We encourage the Subcommittee to build on this foundation by mandating a new commitment by Federal agencies to addressing the problems of harmful algal blooms, hypoxia and nutrient pollution, legislating the contents of the one action plan that has already been prepared, and requiring development and implementation of plans of action to accompany the existing and upcoming scientific assessments. This will provide greater substance and meaning to an already considerable achievement. But, more importantly, it will turn the tide from study and assessment to assessment and action. This will have significant implications on the ground, in the estuaries, on the banks and in the waters to which this Subcommittee has given its great attention and focus.