National Science Foundation
Geosciences Directorate
Division of Ocean Sciences
Alexandria, Virginia

FINDING OF NO SIGNIFICANT IMPACT (FONSI) PURSUANT TO THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) AND DECISION DOCUMENT (DD)

IODP^3/NSF Expedition 501, Northwest Atlantic Ocean, May–August 2025

Award: 2508636
Principal Investigator/Institution: Brandon Dugan, Colorado School of Mines

Project Title: Expedition 501 New England Shelf Hydrogeology

A Final Environmental Assessment (Final EA) was prepared for the above noted proposed International Ocean Drilling Programme (IODP^3)/National Science Foundation (NSF) Expedition 501, funded by NSF (Proposed Action). The Proposed Action would involve drilling, coring, and logging operations from the liftboat (L/B) *Robert* in the Northwest Atlantic Ocean within the U.S. EEZ, but entirely outside of state waters. The Proposed Action would involve the Principal Investigators (PI) noted above, as well as academic participants and technical staff.

The Final EA entitled, "*Final Environmental Assessment for IODP3/NSF Expedition 501, Northwest Atlantic Ocean, May–August 2025* (Attachment 1) analyzed the potential impacts on the human and natural environment associated with the Proposed Action pursuant to the National Environmental Policy Act (NEPA). The Final EA tiers to the the Programmatic Environmental Impact Statement (PEIS), Integrated Ocean Drilling Program-U.S. Implementing Organization (IODP-USIO); IODP PEIS bridging document; and Final Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement (OEIS) for Marine Seismic Research Funded by the National Science Foundation or Conducted by the U.S. Geological Survey (June 2011) and Record of Decision (June 2012).

The conclusions from the Final EA, and other federal regulatory processes, were used to inform the Division of Ocean Sciences (OCE) management of potential environmental impacts of the surveys. OCE has reviewed and concurs with the Final EA findings. The Final EA is incorporated into this FONSI/DD by reference as if fully set forth herein.

Project Objectives and Context
The primary goal of the research is to investigate the hydrodynamics and origins of the offshore freshened groundwater (OFG) system in the continental shelf south of Nantucket, MA. The program is designed to determine whether meteoric recharge and local flow cells or subglacial recharge and proglacial lakes are responsible for fresh water. This project would characterize the spatial extent of the OFG, emplacement mechanisms, porewater geochemistry, microbe diversity and activity, and anomalous pressure distribution. To achieve the project goals, the researchers propose to conduct drilling, coring, and downhole logging, including nuclear magnetic resonance (NMR), from L/B *Robert*, to examine the onshore-offshore hydrologic system along the U.S. Atlantic continental shelf extending south from Nantucket, MA. The

proposed drill sites are shown in the Final EA (Attachment 1, Figure 1). No land-based activities are proposed.

Summary of Proposed Action and Alternatives
The procedures to be used during Expedition 501 would be similar to those used during previous IODP expeditions, except the drilling would occur from a smaller vessel, L/B *Robert*, instead of the riserless scientific ocean drilling vessel (SODV) JOIDES Resolution. The self-propelled and self-elevating L/B *Robert* would be used to carry out the Expedition. A liftboat is a seaworthy platform with legs that are used to support the vessel when on site. The vessel legs can be lowered to the seafloor to anchor the boat, and the platform can then be lifted out of the water. The vessel is secured to the seabed with three legs, equipped with flat pads at the ends, that are lowered under power to the seafloor and then settle onto the seabed soft sediments. Three primarily drill sites and one alternate drill site have been identified; all would occur in water less than 100 m deep.

In addition to drilling and coring operations, a suite of downhole logging tools would be available for Expedition 501, including spectral and total gamma ray, sonic (P-wave velocity), formation conductivity and magnetic susceptibility, hydrogeological measurements, caliper, flow meter, and NMR. Supplies and personnel transfers would occur with supply vessels and helicopters. Expedition 501 would take place during summer 2025 (May–August) for a period of ~100 days, including ~96 days of drilling/coring/logging and ~4 days of transit. L/B *Robert* would likely leave out of and return to the port of Bridgeport, CT.

Another alternative to conducting the Proposed Action would be the "No Action" alternative (i.e., the proposed research operations would not be conducted). The "No Action" alternative would result in no disturbance to marine species attributable to the Proposed Action, but geological data of scientific value and relevance that would provide new insights to offshore freshwater resources would not be collected. The purpose and need for the proposed activity would not be met through the "No Action" alternative.

Summary of environmental consequences
The Final EA includes analysis on the affected environment (Chapter III) and the potential effects of the Proposed Action on the environment (Chapter IV). Potential impacts of the Proposed Action on the environment would be primarily a result of the drilling operations and use of the liftboat. Potential impacts could include vessel collisions with marine mammals and disturbance to various marine biota. However, it is anticipated that most impacts from the Proposed Action would result in minor and temporary changes in behavior by marine mammals, sea turtles, seabirds, fish, and marine invertebrates. Injurious impacts to marine mammals, sea turtles, and seabirds are not anticipated. Bottom disturbances from the activities would be anticipated to be localized, minor, and temporary, and would not be expected to have significant effects on water quality or water resources.

The Proposed Action includes a monitoring and mitigation program to minimize potential impacts on the environment. Mitigation efforts include pre-cruise planning activities and operational activities (Attachment 1, Chapters II and IV). Pre-cruise planning mitigation activities included a review of the proposed Expedition's activities to ensure that science-related objectives can be achieved while minimizing or eliminating adverse environmental impacts. The review intended to identify safe drilling locations, environmentally safe drilling methods, site-specific sensitive environments, or special conditions warranting site-specific mitigating measures to minimize potential impacts to these resources.

The operational mitigation program would further minimize potential impacts to marine species that may be present during the conduct of the proposed research to a level of insignificance, in particular North Atlantic right whales. As detailed in Attachment 1 (Chapters II and IV), the Proposed Action would include operational monitoring and mitigation measures, such as, but not limited to lookouts during daytime hours

to avoid potential vessel collisions and vessel speed restrictions with respect to North Atlantic right whales. The IODP[3] and its contractors are committed to applying the mitigation measures in order to minimize effects on marine mammals and sea turtles, and other potential environmental impacts. With the planned monitoring and mitigation measures, unavoidable impacts to marine species that could be encountered would be expected to be minimal, and limited to short-term, localized changes in behavior and distribution near the operations. Mitigation, monitoring, and reporting requirements were incorporated into the Final EA and the FONSI/DD. No long-term or significant effects would be expected on individual marine mammals, sea turtles, seabirds, fish, the populations to which they belong, or their habitats.

Reasonably foreseeable effects of the Proposed Action were evaluated in Section 4.1.6 of the Final EA. Due to the location of the Proposed Action, activities in the area around the liftboat would be anticipated to include other research, military, offshore energy development, vessel traffic, fisheries, and whale watching activities. Although there are a number of shore-accessible SCUBA diving sites off the coast of Nantucket and Martha's Vineyard (Final EA, Section 3.8), most of the dive sites south of Cape Cod are located in Nantucket Sound or Vineyard Sound, at least 42 km from the proposed drill sites. Most whale watching activities are conducted within 40 km from the coast. Given the distance of the proposed activities from shore (at least 32 km), and the short and temporary duration of the Expedition, it would be unlikely that the marine mammal watching industry would be affected by the Proposed Action. Fisheries activities would not be precluded in the Expedition area; however, a safe distance would need to be kept from L/B *Robert* to avoid possible gear entanglement. Any potential conflicts with ocean users would be avoided through Notice to Mariners and direct communication with the fishing community during the Expedition. Considering the limited time that the planned Expedition is proposed to occur, and the temporary nature of potential environmental impacts, the proposed project is not expected to have any significant impacts on other activities in the area.

The "No Action" alternative would remove the potential for the limited direct and indirect environmental consequences as described above. However, the "No Action" alternative would preclude important scientific research from going forward that would provide new insights to offshore freshwater resource. The "No Action" alternative would result in a lost opportunity to obtain important scientific data and knowledge relevant to the geosciences and to society in general. The collaboration, involving academic researchers, students, and collaborators would be lost, as would the opportunity to collect and interpret new data and provide new results to the greater scientific community. Loss of NSF support often represents a significant negative impact to the academic infrastructure, including the professional and academic careers of the researchers and students. The "No Action" alternative would not meet the purpose and need of the Proposed Action.

Coordination with Other Agencies and Processes

Compliance with other federal statutes and regulatory processes are summarized below and in further detail in the Final EA, Section 4.1.8.

(a) Endangered Species Act (ESA)

On 12 March 2025, NSF submitted an ESA Section 7 expedited informal consultation request, including the Draft EA, to NMFS for the proposed activity. On 21 April 2025, NMFS concurred with NSF's finding that the proposed research is not likely to adversely affect the NMFS ESA-listed species (Appendix F of the Final EA), which concluded consultation requirements under the ESA.

(b) Marine Mammal Protection Act (MMPA)

NSF and the PIs contacted NMFS regarding compliance with the MMPA. NMFS confirmed on 20 December 2024 that an IHA was not necessary for the proposed activity as "takes" pursuant to the MMPA would not be anticipated.

(c) Essential Fish Habitat (EFH)

The Draft EA was used during the EFH consultation process with NMFS. On 12 March 2025, NSF requested consultation with NMFS, Habitat Conservation Division (HCD) under the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Appendix G). On 24 April 2025, HCD noted that to avoid and minimize impacts to spawning Atlantic cod, there are temporal restrictions on in-water bottom disturbing activities during the peak spawning period (November 1 – March 31). As the proposed project is scheduled to occur May–August, this recommendation is met. HCD recommended one additional conservation measure to avoid and minimize adverse impacts to EFH – that the EFH consultation should be reinitiated if the project timeline for in-water work deviates in any way from what is described in the Draft EA (Appendix G).

(d) Coastal Zone Management Act (CZMA)

During discussions with Coastal Zone Management Program Staff in Massachusetts and Rhode Island on 1 April 2025, it was determined that no consistency determination was required for the proposed project. It was recommended that vessel transits only occur during the daytime when lookouts can observe for North American right whales and other marine mammals. This measure has been incorporated into the mitigation measures for the expedition.

(e) National Historic Preservation Act (NHPA)

NSF invited federally recognized Tribal Nations (Wampanoag Tribe of Gay Head (Aquinnah), Narragansett Indian Tribe, Mashpee Wampanoag Tribe, Mashantucket Pequot Tribal Nation, and Mohegan Tribe of Indians of Connecticut to consult on the proposed action. During discussions with various Tribal Nations, no historic properties were identified. Out of an abundance of caution, NSF will require the following inadvertent discovery requirement:

In the event that an archaeological or historical material is encountered when processing the core samples, the awardee shall contact NSF, and NSF will notify Tribes. Work shall be adjusted to avoid any damage to the discovery until significance is determined and an appropriate treatment can be identified and implemented through consultation between NSF and the Tribes.

(f) Rivers and Harbors Act

The research activities require a permit from the U.S. Army Corps of Engineers (USACE) under Section 10 of the Rivers and Harbors Act. BGS has applied for a permit, and USACE and NSF have coordinated on the necessary reviews to support this permitting.

(g) Tribal Consultation

NSF invited federally recognized Tribal Nations (Wampanoag Tribe of Gay Head (Aquinnah), Narragansett Indian Tribe, Mashpee Wampanoag Tribe, Mashantucket Pequot Tribal Nation, and Mohegan Tribe of Indians of Connecticut) to consult on the proposed action. NSF and representatives

from the researcher team met with Wampanoag Tribe of Gay Head (Aquinnah), Narragansett Indian Tribe, and Mashantucket Pequot Tribal Nation to discuss the research.

(h) Public Comments

During the 30-day public comment period, comments were received from seven individuals, the Town of Nantucket, and the Mashantucket Pequot Tribal Nation. These comments and questions are addressed in Appendix H and as appropriate within the Final EA.

Conclusion and Decision

NSF has reviewed and concurs with the conclusions of the Final EA (Attachment 1) that implementation of the Proposed Action will not have a significant impact on the environment. Consequently, implementation of the Proposed Action will not have a significant direct, indirect or reasonably foreseeable effects on the environment within the meaning of NEPA. Because no significant environmental impacts will result from implementing the Proposed Action, an environmental impact statement is not required and will not be prepared. Therefore, no further study under NEPA is required. As described above, NSF's compliance with the ESA, MMPA, EFH, NHPA and CZMA is completed.

In summary, NSF concludes that implementation of the Proposed Action will not result in significant impacts after full consideration of the Final EA and the entire environmental compliance record. Accordingly, on behalf of NSF, I authorize the issuance of a Finding of No Significant Impact for the Proposed Action, Expedition 501 including drilling, coring, and logging from R/V *Robert* in the Northwest Atlantic Ocean, and hereby approve the Proposed Action to commence.

lisa m clough May 8, 2025

Lisa M. Clough Date
Acting Division Director
Division of Ocean Sciences

Attachment 1: Final Environmental Assessment for IODP3/NSF Expedition 501, Northwest Atlantic Ocean, May–August 2025