Papahānaumokuākea Marine National Monument

RESEARCH Permit Application

NOTE: ***This Permit Application (and associated Instructions) are to propose activities to be conducted in the Papahānaumokuākea Marine National Monument. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, provide all information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Papahānaumokuākea Marine National Monument (Monument).***

ADDITIONAL IMPORTANT INFORMATION:

- Any or all of the information within this application may be posted to the Monument website informing the public on projects proposed to occur in the Monument.

- In addition to the permit application, the Applicant must either download the Monument Compliance Information Sheet from the Monument website OR request a hard copy from the Monument Permit Coordinator (contact information below). The Monument Compliance Information Sheet must be submitted to the Monument Permit Coordinator after initial application consultation.

- Issuance of a Monument permit is dependent upon the completion and review of the application and Compliance Information Sheet.

INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED

Send Permit Applications to:
Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
nwhipermit@noaa.gov
PHONE: (808) 397-2660 FAX: (808) 397-2662

SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, SEE THE LAST PAGE.

Papahānaumokuākea Marine National Monument
Permit Application Cover Sheet

This Permit Application Cover Sheet is intended to provide summary information and status to the public on permit applications for activities proposed to be conducted in the Papahānaumokuākea Marine National Monument. While a permit application has been received, it has not been fully reviewed nor approved by the Monument Management Board to date. The Monument permit process also ensures that all environmental reviews are conducted prior to the issuance of a Monument permit.

Summary Information

Applicant Name: Donald C. Potts
Affiliation: Institute of Marine Sciences, University of California, Santa Cruz

Permit Category: Research
Proposed Activity Dates: 1 June 2010 - 31 December 2011
Proposed Method of Entry (Vessel/Plane): Plane: USFWS flights from/to Honolulu
Proposed Locations: Midway Atoll: multiple shallow sites (0-35 m depth)

Estimated number of individuals (including Applicant) to be covered under this permit: 10
Estimated number of days in the Monument: up to 100 person-days per year

Description of proposed activities: (complete these sentences):

a.) The proposed activity would…

…determine sedimentary conditions prevailing on Midway Atoll before human contact began in the late 1800s; detect changes in the composition of sediments and rates of sedimentation since then; and determine whether changes can be attributed to the major engineering modifications of the reefs and islands between ~1930 and ~1980. This activity continues previous multidisciplinary studies of the effects of environmental change on marine benthic habitats of Midway Atoll, and will contribute to a broader assessment of whether Midway Atoll will be sustainable as a viable atoll ecosystem during the climatic and oceanographic changes expected over the next century.

b.) To accomplish this activity we would ….

… use a portable corer to extract 5 m long sediment cores from the main areas of sediment deposition in the lagoon and sites of sediment export from the atoll. We will establish the historical record and detect changes by describing grain composition and sizes along the cores, by comparing these with samples of surface sediments collected in 2007-09, and by selecting single elements for isotopic dating of major transitions. We will then use models to predict potential physical and ecological changes on Midway Atoll under various IPCC scenarios of

climatic and oceanographic change, and to identify and explore ways to enhance positive trends and reduce deleterious effects.

c.) This activity would help the Monument by …
… expanding the knowledge base of detailed information about Midway's physical structure, biotic communities and ecosystem processes; by documenting the nature and extent of changes in patterns of erosion and deposition of sediments associated with past modifications of the atoll; by establishing current baselines for hydrodynamic processes; by providing input for modeling responses to rising sea-levels over the next century; and by informing management about ways to enhance the long-term sustainability of Midway Atoll. This will be the most extensive study (in space and time) of sediments ever conducted in the NWHI, and many results should be relevant to other atolls in the PMNM

Other information or background:

Midway Atoll may be particularly vulnerable to changing patterns of erosion and sedimentation, driven partly by sea-level change, for several reasons:

1. It lies near Grigg's (1982) "Darwin Point" (~29oN), the latitude north of which natural processes of reef destruction (by erosion, sediment export and subsidence) exceed rates of reef growth (by corals, coralline algae and sediment deposition).
2. It is also ecologically marginal and many reef-building species (e.g. corals, coralline algae) appear to have relatively low growth and survival rates, while bio-eroding species (e.g. fish, sea urchins), which are major producers of new sediments, are abundant and capable of rapid destruction of both new and old coral growth.
3. It has been greatly modified by dredging, cutting channels through the reef margin, island expansion and construction of many kinds, especially between 1930 and 1990. These modifications have lowered lagoon water levels and altered residence times of water; changed current strengths and wave energy; and increased sediment transport, scouring, and export from the reef. These modifications probably continue to contribute directly and indirectly to habitat degradation over much of the lagoon and backreef habitats (i.e. compared to the largely unmodified Kure Atoll).
4. Existing climate models lack the regional resolution for predicting probable future climatic and oceanographic conditions at Midway Atoll, but since rates of CO2 increase, sea-level rise, and ocean acidification are already exceeding those assumed for many IPCC (2007) projections, it is likely that effects of climate change are already altering physical processes on marginal reefs such as Midway.

Some environmental changes predicted for mid-latitudes are likely to be beneficial, rather than detrimental for Midway Atoll. For example:

1. Warming of cooler waters not only tends to increase calcification and growth rates of corals and coralline algae, but also tends to reduce absorption of CO2 and hence slows acidification.
2. Lighter winds and less intense storms reduce physical erosion and export of sediments, although more frequent or more intense storms tend to accelerate erosion.

3. Rising sea-levels will increase available habitat for upward growth of corals and coralline algae, although during severe weather, deeper water also increases the potential hydraulic energy of waves and currents, leading to greater erosion of both reef margins and islands, and accelerating sediment loss.

This project builds on work begun in 2005 under USFWS permits and continued under permits PMNM-2007-013, PMNM-2008-056a, PMNM-2008-056b, PMNM-2008-065 and PMNM-2009-040.

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): Potts, Donald, C

Title: Professor of Biology

1a. Intended field Principal Investigator (See instructions for more information):

Potts, Donald C. (Applicant)

Warner, Anne B. Ph.D. student, University of California, Santa Cruz [redacted] [redacted]

2. Mailing address (street/P.O. box, city, state, country, zip):

[redacted]

Phone: Office: [redacted] Lab: [redacted] Cell: [redacted]

Fax: [redacted]

Email: [redacted]

For students, major professor's name, telephone and email address: See applicant above

3. Affiliation (institution/agency/organization directly related to the proposed project):

Center for the Development and Evolution of the Land-Sea Interface (CDELSI)
and Institute of Marine Sciences (IMS), University of California, Santa Cruz (UCSC)

4. Additional persons to be covered by permit. List all personnel roles and names (if known at time of application) here (e.g. John Doe, Research Diver; Jane Doe, Field Technician):

Participants will be drawn from the following pool. All UCSC personnel are AAUS certified research divers and DOI-qualified motor boat operators:

Wendy Cover UCSC Ph.D. student (Ecology & Evolutionary Biology)

Helen O'Brien UCSC Ph.D. student (Ecology & Evolutionary Biology)

Kristin McCully UCSC Ph.D. student (Ecology & Evolutionary Biology)

Rachel Fabian UCSC Ph.D. student (Ocean Sciences)

Dennis Hubbard Professor of Geology, Oberlin College OH (reef sedimentologist)

UCSC field assistant - to be named

Up to 5 Volunteers (from Mitsubishi International Corporation) - to be named

Section B: Project Information

5a. Project location(s):

		Ocean Based	
☐ Nihoa Island	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Necker Island (Mokumanamana)	☐ Land-based	☐ Shallow water	☐ Deep water
☐ French Frigate Shoals	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Gardner Pinnacles	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Maro Reef			
☐ Laysan Island	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Lisianski Island, Neva Shoal	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Pearl and Hermes Atoll	☐ Land-based	☐ Shallow water	☐ Deep water
☒ Midway Atoll	☒ Land-based	☒ Shallow water	☐ Deep water
☐ Kure Atoll	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Other			

NOTE: There is a fee schedule for people visiting Midway Atoll National Wildlife Refuge via vessel and aircraft.

Location Description:

Up to 50 sites in water depths of 0-35 m spanning the main sedimentary habitats (shallow sand flats, margins and bottom of the lagoon; dredged harbors and swinging basin; discharge areas from the main channel and Welles Harbor; deeper fore reef). Potential sites are outlined in Fig. 1 and key characteristics are given in Table 1.

5b. Check all applicable regulated activities proposed to be conducted in the Monument:

☒ Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving Monument resource
☒ Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands
☒ Anchoring a vessel
☐ Deserting a vessel aground, at anchor, or adrift
☐ Discharging or depositing any material or matter into the Monument
☐ Touching coral, living or dead
☐ Possessing fishing gear except when stowed and not available for immediate use during passage without interruption through the Monument
☐ Attracting any living Monument resource
☐ Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserves and Special Management Areas)
☐ Subsistence fishing (State waters only)
☒ Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

6 Purpose/Need/Scope ***State purpose of proposed activities:***

Midway Atoll has the largest land area in the PMNM; is the only site capable of supporting extensive infrastructure and access for ships, aircraft and visitors; and is home to some of the largest populations of endangered species (e.g. Hawaiian monk seal, laysan albatross) in the PMNM. Therefore, persistence of Midway Atoll as a viable atoll ecosystem is vital both as wildlife habitat and as a key element for the long-term development, management, public access and supervision of the entire PMNM. The sustainability of Midway Atoll depends on maintaining the integrity of its physical structures and on ensuring the long-term health of the marine ecosystems that build its physical structure.

Divers and snorkelers in the 1970s described healthy, thriving patch reefs, with high coral cover similar to the Porites compressa patch reefs on nearby Kure Atoll and elsewhere in the Northwestern Hawaiian Islands. Our observations over the last few years suggests that several parts of Midway are now severely degraded: corals are uncommon on much of the fore reef; parts of the reef margin appear to be eroding rather than growing; much of the backreef is being destroyed by bio-eroders, primarily sea-urchins but also fishes; the lagoon is largely devoid of patch reefs, with zones of mobile rubble indicating where patch reefs used to exist; sediments within the lagoon are highly mobile, especially during winter storms; and there is extensive export of sediments to deeper water via the ship channel and out of Welles Harbor. Many patch reefs in the shallow lagoon now consist mainly of dead rock and/or piles of rubble and many are experiencing intense bio-erosion by sea urchins that generate large amounts of sand and gravel. Examination of rock and rubble specimens indicates that these patches were built mainly by the finger coral, Porites compressa, a common reef-building species in the Hawaiian Archipelago, but now largely absent from Midway.

The widespread decline of patch reefs has exposed intervening soft bottoms to greater wave, current and tidal energy that mobilize and transport sediments. While we have found few records or photographs showing the reef and lagoon condition before about 1970, it is likely that much of the physical degradation stems from engineering activities begun in the 1930s by PanAm and continued into the 1980s by the US Navy. They included: removing the upper 12' from patch reefs to create seaplane runways; cutting the channel through the south reef margin that is now the major drainage site from the reef; dredging the swinging basin and anchorage in the lagoon; raising the average height of both Eastern and Sand Islands by 2-4 m; and extensive land-filling and enlargement of Sand Island to build the main runway and the Inner Harbor.

It is clear that global sea-levels are rising and will continue to rise, probably at faster rates than those in the IPCC (2007) report. For much of the year, deepening of water over shallow reefs may enhance coral and reef growth; but during severe weather and winter storms, deeper water leads to greater wave height and exponential increases in the energy of waves and currents that mobilize greater amounts of sediment and larger pieces of rubble, smash fragile structures and living organisms, abrade tissues, scour surfaces and beaches, or smother organisms under sediment deposits.

Our project focuses on sea-level rise and its consequences with the ultimate goals of understanding the changing balance between the positive processes of biological reef growth and the negative processes of biological and physical erosion, and of exploring their effects as the entire system responds to physical and chemical changes in both atmosphere and oceans.

Our activities will contribute to the sound scientific basis for management of the Midway Atoll NWR within the PMNM by: increasing understanding of the nature and consequences of anthropogenic modification of the reef and islands over the last 100-150 years, identifying management procedures to enhance sustainability by reducing or reversing some adverse impacts of its history of severe disturbance and modification., and test the hypothesis that Midway Atoll can persist as a sustainable physical and biological system during the environmental changes anticipated over the next century.

7. Answer the Findings below by providing information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Monument:

The Findings are as follows:

a. How can the activity be conducted with adequate safeguards for the cultural, natural and historic resources and ecological integrity of the Monument?

1. Work will be done in conformity with all PMNM, USFWS, Midway Atoll NWR, UCSC, and OSHA regulations, standards and requests, and we maintain continuing discussions with Midway NWR staff while on Midway.

2. Numbers and sizes of samples are the minimum necessary to be scientifically and statistically valid, and they will be located to avoid adverse impacts on other aspects of the site.

3. We avoid all known historical and archeological sites, and locations of special conservation significance. Should new historical or archeological sites be encountered, they will not be disturbed, but will be reported to Midway and PMNM staff.

b. How will the activity be conducted in a manner compatible with the management direction of this proclamation, considering the extent to which the conduct of the activity may diminish or enhance Monument cultural, natural and historic resources, qualities, and ecological integrity, any indirect, secondary, or cumulative effects of the activity, and the duration of such effects?

We are creating information directly relevant to the management of marine environments at Midway Atoll, and all activities are designed with this in mind. This project involves no permanent marks or structures. All sites will be on soft bottoms. Any impacts will be small and very localized compared to ongoing anthropogenic disturbances; but every site will be monitored for unanticipated impacts.

c. Is there a practicable alternative to conducting the activity within the Monument? If not, explain why your activities must be conducted in the Monument.

No. Our work is directed at understanding key ecological and physical processes acting on Midway's reef today and in the future, As an isolated, ecologically and latitudinally marginal reef with a history of extensive, largely undocumented, anthropogenic disturbance during the 20th century, Midway Atoll has no comparable analogues elsewhere.

d. How does the end value of the activity outweigh its adverse impacts on Monument cultural, natural and historic resources, qualities, and ecological integrity?

Our findings will provide essential data for maintaining the continued health of the reef at Midway as a physical structure, and the overall health and long-term sustainability of its ecosystem. Impacts of coring will be restricted to the area occupied by two divers, and signs of disturbance will be gone within a few hours. This will be the first comprehensive study of sedimentation (in space and time) ever conducted in the NWHI, our findings will also be relevant to other reefs in the PMNM and beyond, and can probably be transferred to other reefs without having to repeat extensive studies there.

e. Explain how the duration of the activity is no longer than necessary to achieve its stated purpose.

Analysis of cores from the first year will inform selection of new coring sites in the second year.

f. Provide information demonstrating that you are qualified to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.

We have been visiting Midway Atoll since 2002, have conducted research there since 2005, and are very familiar with the reef layout, conditions, and organisms,

Potts has studied the ecology and evolution of Pacific corals and reefs for over 30 years (mainly in Australia, Papua New Guinea, Hawaii), and worked on various aspects of reef paleo-ecology, past climates and geological processes for over 10 years (in Papua New Guinea, and Hawaii). He has been active in national and international organizations and committees concerned with marine science and biodiversity policy for over 15 years (see CV). In early 2010, he is participating (as a coral specialist) on a 2-month IODP drilling cruise (GBREC-325) along the Great Barrier Reef to obtain the highest possible resolution record of biological, physical, chemical and geological responses of reefs to rising sea levels since the last glacial maximum.

Field PI, Anne Warner, has completed two summers at Midway, concentrating on sediment and water sampling, and expects the sediment cores to become a major part of her Ph.D. dissertation.

Our collaborator, Dennis Hubbard, is a reef sedimentologist who has worked for decades on sediments of Caribbean reefs, and is the designer and builder of the portable corer we will use.

g. Provide information demonstrating that you have adequate financial resources available to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.

Core funding comes from the Mitsubishi Corporation (Tokyo) under their Social Responsibility Program. These funds are currently committed for 5 years (2006-2011) at $100,000 a year. Our Midway work is one of three complementary projects forming the Mitsubishi Corporation's Global Coral Reef Conservation Project (other sites are in the Seychelles and the Ryukus).

h. Explain how your methods and procedures are appropriate to achieve the proposed activity's goals in relation to their impacts to Monument cultural, natural and historic resources, qualities, and ecological integrity.

The coring method is a standard geological field technique widely used by reef scientists. It is a small-scale, largely non-invasive, technique designed to provide maximum information with minimum disturbance. All methods have been discussed with USFWS staff (e.g. Matthew Brown, John Klavitter, Jim Maragos) and these discussions will continue in the field. We avoid sites with rare species or unusual situations. No mitigation is necessary, because holes left by the corer are filled by surrounding sediments within minutes to hours. We take the minimum number of samples consistent with sound statistical analysis, and we discuss locations and details of samples with Midway NWR staff before beginning field work.

i. Has your vessel has been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?

We use Midway Atoll NWR’s small boats, and we follow both USFWS and UCSC boating regulations and procedures

j. Demonstrate that there are no other factors that would make the issuance of a permit for the activity inappropriate.

None Known

8. Procedures/Methods:

We will take vertical cores of soft sediments using a portable vibrocorer operated by one person in a small boat and two divers. It is powered by a small gasoline or one-cylinder diesel motor in the boat that drives a hydraulic pump delivering 3-5 gallons per minute (at 600-1000 psi) to the vibrocorer via 3/4" hydraulic hoses. The system uses biodegradablenon-toxic, vegetable oil (instead of conventional hydraulic fluids) to minimize problems, should there be an accidental leak.

The vibrocorer consists of a hydraulic cement vibrator - a cylinder ~50 cm long by ~10 cm diameter containing an irregular rotor that creates vibrations as it bounces off the interior wall while rotating. An adapter on the vibrating head has a clamp for attaching sections (up to 5 m long) of 7.5 cm (3") diameter aluminum irrigation pipe (2 mm thick wall).

The unit is assembled on the surface and floated to the bottom by the divers, using a small air bag, and held in a vertical position. The hydraulic power supply is started 30-60 seconds before coring and turned off immediately after core penetration is completed. The divers turn the vibration on and off with a valve on the vibrator. Once vibration starts, it usually takes less than 30 seconds to complete a core unless layers of coarse gravel, shell, etc. interrupt coring. In this case, the divers fit a sleeve with handle around the upper part of the core pipe and use it to manually drive the core beyond small obstructions. Even with the sleeve, it rarely takes more than 1-2 minutes to complete a typical core. Therefore the motor and hydraulic pump rarely run for more than 2 minutes at a time. The underwater vibrator makes less noise that many outboard motors in regular use at Midway, and typically runs for less than 30 seconds per core. Because of the time required for processing each core (see below), we usually take only 1 or 2 cores per day.

Potential sites are outlined in Fig. 1 and key characteristics are given in Table 1.

Once penetration is complete, we remove the hydraulic vibrator from the core pipe, cap the top of the pipe, and attach another collar with handles for the divers to pull the core out of the bottom, using an air bag if necessary to provide extra lift. One diver places a cap over the bottom of the core pipe as it comes out of the bottom, and losses are minimal (usually <10 cm).

Once ashore, we use a hand-held circular saw with a carbide blade resting in a wooden guide to make a shallow (~2 mm) straight longitudinal cut along both sides of the core tube. We then slide a taught wire or spatula between the cuts to split the core into two equal halves. After splitting the core, we lay a mm-scale tape measure along the core and take a series of high resolution, digital images along the entire length. We take comprehensive notes of what can be seen on the cut surfaces, and record the depth of any discontinuities, changes in composition, or special features. We also note any organisms living in the samples, and preserve specimens for identification. Finally, we subsample the core at intervals, record wet weights, and air dry the samples for shipment to UCSC for laboratory analysis, including selection of elements suitable for isotopic dating to determine the ages of carbonate material, and likely dates of deposition.

NOTE: If land or marine archeological activities are involved, contact the Monument Permit Coordinator at the address on the general application form before proceeding, as a customized application will be needed. For more information, contact the Monument office on the first page of this application.

9a. Collection of specimens - collecting activities (would apply to any activity): organisms or objects (List of species, if applicable, attach additional sheets if necessary):

Common name:

Sediment cores

Scientific name:
N/A

& size of specimens:

50 cores (5-10 cm diameter, 5 m long)

Collection location:

Up to 50 sites spanning the main sites of active sedimentation (i.e. shallow sand flats, margins and bottom of deep lagoon and dredged anchorages and swinging basin; entrances to main channel and Welles Harbor; fore reef terraces) in water depths of 0 - 35 m. (Fig. 1 and Table 1).

☐ Whole Organism ☐ Partial Organism

9b. What will be done with the specimens after the project has ended?
Sub-samples dried for further analysis at UCSC

9c. Will the organisms be kept alive after collection? ☐ Yes ☐ No
N/A

• General site/location for collections:

Up to 50 sites spanning the main sites of active sedimentation (i.e. shallow sand flats, margins and bottom of deep lagoon and dredged anchorages and swinging basin; entrances to main channel and Welles Harbor) in water depths of 0 - 35 m. (Fig. 1 and Table 1).

• Is it an open or closed system? ☐ Open ☐ Closed
N/A

• Is there an outfall? ☐ Yes ☒ No
N/A

• Will these organisms be housed with other organisms? If so, what are the other organisms?
N/A

• Will organisms be released?
N/A

10. If applicable, how will the collected samples or specimens be transported out of the Monument?

USFWS charter flights to Honolulu

11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:

We are discussing our program and potential field, analytic and modeling collaborations with several researchers at the University of Hawaii, HIMB, USFWS, NOAA, CRED, USGS, University of Colorado and Oberlin College. We are not aware of any similar research being conducted on Midway Atoll. Permanent samples will be deposited in the Bishop Museum and other museums, with a reference collection retained at UCSC for continuing study.

12a. List all specialized gear and materials to be used in this activity:

Portable vibrocorer; flotation bag; small gasoline or diesel motor; hydraulic pump and hoses; 5 m lengths of irrigation pipe; vegetable oil

12b. List all Hazardous Materials you propose to take to and use within the Monument:

NONE - In case of accidental spills, we will use non-toxic, biodegradable vegetable oil to replace conventional hydraulic fluids.

13. Describe any fixed installations and instrumentation proposed to be set in the Monument:

NONE

14. Provide a time line for sample analysis, data analysis, write-up and publication of information:

We expect to take up to 25 cores by September 2010 and another 25 in 2011. Analysis of 2010 cores should be finished by spring 2011, with preparation of descriptive reports in mid-2011. We anticipate presenting data from both years at the 2012 International Coral Reef Symposium, plus publication of detailed descriptive papers by the end of 2012. Modeling will begin in 2011 and should lead to one or more papers predicting changes at Midway Atoll under various climate change scenarios.

15. List all Applicants' publications directly related to the proposed project:

Warner, A.B. 2009. Sediment production and distribution at Midway Atoll (NWHI). Undergraduate senior Honors thesis paper and defense, Oberlin College.

With knowledge of the penalties for false or incomplete statements, as provided by 18 U.S.C. 1001, and for perjury, as provided by 18 U.S.C. 1621, I hereby certify to the best of my abilities under penalty of perjury of that the information I have provided on this application form is true and correct. I agree that the Co-Trustees may post this application in its entirety on the Internet. I understand that the Co-Trustees will consider deleting all information that I have identified as "confidential" prior to posting the application.

_____ _____

Signature Date

SEND ONE SIGNED APPLICATION VIA MAIL TO THE MONUMENT OFFICE BELOW:

Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
FAX: (808) 397-2662

DID YOU INCLUDE THESE?

☒ Applicant CV/Resume/Biography
☒ Intended field Principal Investigator CV/Resume/Biography
☒ Electronic and Hard Copy of Application with Signature
☐ Statement of information you wish to be kept confidential
☐ Material Safety Data Sheets for Hazardous Materials