

## Compatibility Determination

**Use:** Amateur Radio Operations

**Refuge Name:** Baker Island National Wildlife Refuge (NWR) within the Pacific Remote Islands Marine National Monument (PRIMNM or Monument).

**Location:** Minor Outlying Islands of the United States (not affiliated with a State)

Baker Island is an unincorporated unorganized U.S. territory located in the Pacific Ocean in the northern Phoenix Islands archipelago at 0° 13' N, 176° 28' W, and just 13 nautical miles (nmi) north of the equator.

### **Refuge and Monument Establishing and Acquisition Authorities:**

On May 13, 1936, President Franklin D. Roosevelt signed Executive Order 7368, placing control and jurisdiction of Baker Island with the Secretary of the Interior (Secretary). Pursuant to the provisions of the Reorganization Act of 1949, the Secretary is authorized under Reorganization Plan No. 3 of 1950 to re-delegate to any officer or agency within the Department of the Interior (DOI) any of the functions legally under their jurisdiction. Baker Island was administered by the U.S. Department of Interior's Office of Territorial Affairs.

On June 27, 1974, the Secretary of the Interior (Secretary), designated Baker Island and its territorial sea extending to the 3 nautical mile (nmi) limit as a unit of the National Wildlife Refuge System (39 FR 27930, August 2, 1974). The Refuge was established under the authority of:

- 1) the Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742a-742m);
- 2) the Refuge Recreation Act of 1962, as amended (16 U.S.C. 460k-460k-4); and
- 3) the National Wildlife Refuge System Administration Act of 1966, as amended (16 U.S.C. 668dd-668ee).

On January 6, 2009, President George W. Bush signed Presidential Proclamation 8336 (74 F.R. 1565-1575) making Baker Island NWR part of the much larger PRIMNM under the authority of the Antiquities Act (34 Stat. 225, 16 U.S.C. 431). This proclamation included the existing Refuge and further protected marine resources out 50-nmi from shore. These resources are administered by the Secretary in consultation with the Department of Commerce through the National Oceanic and Atmospheric Administration, which has primary responsibility, in consultation with DOI, with respect to fishery-related activities seaward of 12-nmi.

The Secretary later delegated the proper care and management of the PRIMNM to the U.S. Fish and Wildlife Service (Service); extended the Refuge boundary to 50-nmi from shore; and provided additional direction for monument management (Secretarial Order 3284, Jan. 16, 2009; 66 F.R. 7660-7661; as amended by Secretarial Order 3284A1, August 31, 2016).

**Refuge Purpose(s):**

“...for the development, advancement, management, conservation, and protection of fish and wildlife resources...” 16 U.S.C. §742f(a)(4)

“... for the benefit of the United States Fish & Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ...” 16 U.S.C. §742f(b)(I)(Fish & Wildlife Act of 1956)

“... conservation, management, and ... restoration of the fish, wildlife, and plant resources and their habitats ... for the benefit of present and future generations of Americans...” 16 U.S.C. § 668dd(a)(2) (National Wildlife Refuge System Administration Act)

“... suitable for— (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ...” 16 U.S.C. § 460k-1

“... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ...” 16 U.S.C. § 460k-2 (Refuge Recreation Act (16 U.S.C. § 460k-460k-4), as amended).

**National Wildlife Refuge System Mission:**

The mission of the National Wildlife Refuge System (NWRS) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

**Additional Management Direction:*****Baker Island, Howland Island, and Jarvis Island National Wildlife Refuges, Biological Ascertainment Reports*** (U.S. Fish and Wildlife Service [Service], 1973).

Purposes listed in acquisition authorities, or legislative acts, are often general in scope. Acquisition documents often contain more specific information regarding intent for management of the Refuge. The biological ascertainment report at the time of transfer of Baker Island to the Service states that the Refuge will be managed “...for the preservation of the complete ecosystem, terrestrial as well as marine; (with) special emphasis to be given to allowing seabird nesting colonies to reestablish themselves on Baker so eventually they would reach the great numbers which were present there prior to human occupancy” (USFWS 1973).

***Pacific Remote Islands Marine National Monument***  
*Presidential Proclamation 8336*

“... for the purposes of protecting the objects identified in the above preceding paragraphs ...” “For the purposes of protecting the objects identified above, the Secretaries of the Interior and Commerce, respectively, shall not allow or permit any appropriation, injury, destruction, or removal of any feature of this monument except as provided for by this proclamation or as otherwise provided for by law.”

*Secretarial Order 3284*

“... For each of the areas subject to this delegation, the [Fish and Wildlife Service] Director shall provide for the proper care and management of the monument, including all objects of scientific and historic interest therein; the conservation of fish and wildlife; and the development of programs to assess and promote national and international monument-related scientific exploration and research” (Section 4.a.(2)).

“... The Director shall manage the emergent and submerged lands and waters out to 50 nautical miles from the mean low water lines of Howland, Baker, and Jarvis Islands as units of the Pacific Remote Islands Marine National Monument and units of the National Wildlife Refuge System.”

***Pacific Remote Islands Marine National Monument Expansion***

*Presidential Proclamation 9137*

“Nothing in this proclamation shall change the management of the Pacific Remote Islands Marine National Monument as specified in the Proclamation 8336...”

**Description of Use:**

Public access to Baker Island NWR is managed through refuge-issued Special Use Permits (SUP)(USFWS 2008). The SUP authorizing this use will include stipulations, conditions and restrictions to ensure compatibility and mitigate for potential anticipated impacts to refuge resources.

Amateur radio (also called ham radio, or DX) is the use of radio frequency spectrum for purposes of establishing non-commercial communication between radio hobbyists. Operators use radio transmitters and receivers to communicate with other amateur radio operators all over the world as a hobby. The demand for this use within the NWRS is linked to the facet of contests in the hobby, where amateur radio operators are frequently in a contest to be the first, within a set period of time, to travel to a location where amateur radio activity is infrequent or uncommon and broadcast, and make contact, with other operators around the world. Generally, a group of 6–12 amateur radio operators will travel to the remote site. The group will then transmit for a period of time during which they will attempt to contact as many other operators as possible. This interchange is documented on a postcard (QSL card) that is then sent to the other operators to document their success at establishing the contact with the remote site. The competitive side of the activity involves striving for both the highest number of contacts possible and achieving the most distant contact. The rules of the radio contests require that any transmissions from these remote sites be done legally with the proper permits.

Amateur radio operation is an existing use at Baker Island; however, it is not a common use. The Service last permitted an amateur radio operator group to access Baker Island NWR in April 2002. This is not a wildlife-dependent public use although it does have some value as a source of public information about wildlife resources and to bring public attention to the Refuge.

Located 1,830-nmi southwest of Honolulu, it is an 8-day ship voyage from Honolulu to Baker Island. Deployment and break-down of the camp and radio equipment usually takes 2-days on each end of the trip. Selection of a landing site will depend on conditions at sea, and conditions at the individual landing sites at Baker Island. Access to the island would be gained by small boats capable of beach landings as there is no moorage for larger vessels. An example of an amateur radio expedition may include amateur radio operators, accompanied by a Service representative, who board a vessel in Honolulu, Hawai'i (or other Pacific U.S. port); transit to

Baker Island NWR; transfer equipment and personnel to a smaller boat; land ashore and set up camp in a location on the beach approved by the Service representative.

Camp would be set up no further than 30 feet from the seasonal high water mark so that ground wires may be run from the antennae to the water. The water itself acts as the ground plane for the antennae, which is a crucial component to transmitting via radio waves over long distances. The substrate in the area within 30 feet of the water line is typically coral rubble and sand and supports very little plant life. Generally there are no nesting seabirds in this area.

A sizeable amount of cargo is required for such an expedition which would typically include: working, sleeping and cooking facilities for up to 12 personnel; electric generators (solar powered or with 20-40 5-gallon cans of fuel for gasoline generators); 100-120 5-gallon jugs of drinking water (2-gallons per person per day); enough food to provide 504 on-island meals and 250 emergency meals in case departure is delayed; camping equipment; radio antennae and equipment; sanitation equipment; and backups for essential gear.

Once the camp is deployed, the amateur radio operators would attempt to make contact with as many other operators around the world as possible. Anticipated number of successful contacts can be as high as 5,000 per day. Expeditions could be as long as 14-days on the island giving 12 days of transmission effort. The radio operators transmit in shifts while alternating sleeping and providing support services such as cooking, cleaning and fueling of generators. The vessel that delivered the group will remain live boating offshore with its 3-7 crew members for the entire length of time the camp is ashore as there is no anchoring in the Refuge.

Amateur radio operator expeditions would be considered only as requested and then only when it is logistically possible and safe for humans to visit Baker Island. Historically groups have asked to visit Baker Island NWR every 10-15 years.

**Need and Availability of Resources:**

Additional resources are needed to support this use of the refuges within the PRIMNM. Each expedition would require a Service staff member or Service-approved resource monitor to prepare for and join the expedition, which could take up to 5 weeks of travel time. Sufficient quarantine supplies for the refuge staff would need to be procured as well. Additional resources would be needed to review, prepare, and administer the Special Use Permit (SUP) required for each expedition.

	Category and Itemization	One-time (FY17 \$)
	Resource Monitor, daily salary and benefits for GS-7 to GS-12* ≤ \$450/day	
	5-days of pre-trip preparation	≤ \$2,250
	2-days of post-trip clean up and trip report	≤ \$900
	{(# of days in transit)+ (# of days on island) } x \$450 = ~{30 days}	≤ \$13,500
	Travel Costs for Resource Monitor, airfare, hotel, taxi's, per diem. (if needed)	TBD
	Quarantine Field Gear/Supplies per trip.	\$1,000
	Permit Administration per trip, GS-11/6 salary and benefits for 40 hours	\$2,000
	<b>Total</b>	<b>&gt;\$19,650</b>

\*GS rate dependent on grade of qualified staff member available for expedition.

**Special equipment, facilities, or improvements necessary to support the use:** All equipment to be supplied by the permittee and must meet quarantine protocol requirements stipulated in the SUP.

**Maintenance costs:** None

**Offsetting revenues:** Costs for SUP preparation, compliance requirements, consultations with the permittee, managerial and/or technical SUP consultations, administration, monitoring, and completion will be recovered from the permittee. In addition, if Service employees are available to participate as a Resource Monitor during the proposed expedition, the Permittee would be required to cover certain staff costs associated with administering and managing the trip. Costs would include salary, travel expenses if flights are required and quarantine equipment for the trip. Permittee would cover all costs on the island and in transit including room and board.

If Service employees are not available during the proposed expedition dates, the Permittee would be required to cover certain staff costs associated with administering and managing the trip and the Permittee would also be required to contract with a Service-approved biologist to perform Resource Monitor duties; contractor costs to include salary, travel expenses, quarantine equipment for the duration of the project, and a final trip report. Staff time cost recovery and location fees would be paid by the permittee either directly to the Service, or to a source that will directly benefit the refuge.

**Anticipated Impacts of the Use:**

The camp is temporary, and everything brought to the island would be removed from the island, including all waste generated by the individuals.

**Short-term impacts:** One may only access Baker Island NWR by ocean-going vessel and then ship to shore via small boat. The most destructive short-term impacts resulting from a visit would be bird disturbance or mortality due to the direct influence of the camp or radio antennae. Other potential impacts to marine resources also include anchor damage to corals and other reef life, potential fuel spills, and disturbance of fish and wildlife.

Baker Island is a low-lying island surrounded by a shallow submerged fringing reef and terrace with a patchwork of many habitats. The island is vegetated by herbs and grasses tolerant of the arid climate; it is surrounded by beaches on all sides composed of sand or coral shingle. Eleven seabird species are known to nest on the island, including almost 1 million pairs of sooty terns. Migrant shorebirds also use Baker Island, including Pacific golden plovers, wandering tattlers, ruddy turnstones, bristle-thighed curlews, and sharp-tailed sandpipers.

Anthropogenic light sources from ships or from the camp may cause disturbance to both sea turtles and seabirds. Sea turtles are attracted to lights, and may become disoriented if they are swimming or crawling toward a light. Additionally, seabirds are attracted to lights, and may be susceptible to flying into ships, poles, or tents if lighting is not controlled. Therefore the use of lights at night will be strictly controlled, and campfires would be prohibited.

All of the PRIMNM refuges are breeding grounds for immense seabird populations. Their breeding seasons are unpredictable at this equatorial site. Potential disturbance may be in the form of bird collisions with the radio antennae or guy-lines, interactions between human visitors and the seabirds, and presence of humans causing burrow cave-ins, disruption of chick feeding,

and birds to leave their nests and expose eggs or small chicks to extreme heat or predation by other wildlife. Complete avoidance of seabird colonies will minimize nest disturbance and prevent burrow nest cave-ins.

Activities on Baker Island will always attract the land crabs that inhabit this location. All efforts must be taken to avoid inadvertently feeding or entrapping these animals.

Marine trash and debris pose a threat to fish, marine mammals, sea turtles, and other marine animals. Collisions between marine animals and vessels could cause death or traumatic injury. Although no sea turtles have been documented nesting or basking on the island, the following Threatened and Endangered (T&E) species have the potential to occur in the area: Central South Pacific green turtle (Distinct Population Segment); hawksbill turtles; leatherback turtles; olive Ridley turtles; and North Pacific loggerhead turtles. Other T&E species that could potentially occur in the waters around Baker Island include: blue whales; fin whales; sei whales; sperm whales; North Pacific right whales; the Indo-West Pacific distinct population segment of the scalloped hammerhead shark; and the coral species *Acropora globiceps*, *A. jacquelineae*, *A. retusa*, and *A. speciosa*. All efforts should be made to avoid any contact with these species in transit.

**Long-term impacts:** No long-term impacts to the wildlife or habitat are anticipated, as long as the Permittee complies with the stipulations in their SUP. The most destructive potential impacts would be caused if: (1) a release of invasive species or contaminants to the terrestrial or marine environments occurred; or (2) a ship grounding took place, causing the release of invasive species, contaminants, as well as coral reef damage from the ship's impact and nutrient loading from metals dissolving and oxidizing in the water column. Such impacts could cause extreme changes to the environment both in the short-term and the long-term.

**Cumulative impacts:** Through proper education and management of the use, there would be no cumulative impacts associated with infrequent amateur radio operations at Baker Island NWR.

**Public Review and Comment:**

This draft determination is issued for public review and comment from April 24, 2017 until May 8, 2017. It is available on the Refuge website at [https://www.fws.gov/refuge/baker\\_island/](https://www.fws.gov/refuge/baker_island/). Four amateur radio operators who were known to be interested in this draft determination were notified of its availability. This level of review and comment was selected to meet Service requirements under the National Wildlife Refuge System Administration Act of 1966, as amended.

**Determination:** (check one below)

Use is Not Compatible  
 Use is Compatible with the Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

- 1) Those wishing to access any refuge in the PRIMNM must apply to do so through the NWRs SUP process. Proposals will be considered once submitted to the Monument Superintendent and will be evaluated based on impacts to wildlife, habitat, facilities, operational capacities and other authorized uses of the refuge. The SUP authorizing this use will include stipulations, conditions

and restrictions to ensure compatibility and mitigate for potential anticipated impacts to refuge resources.

- 2) Those wishing to access any refuge in the PRIMNM are notified from the outset that they must be accompanied by a Service approved Resource Monitor. All costs associated with travel, food, lodging, and quarantine measures associated with a Service Resource Monitor will be paid by the permittee either directly to the Service, or to a source that will directly benefit the refuge.
- 3) If no Service personnel are available, the permit applicant must hire a biologist that is pre-approved by the Service to fulfil the duties of the Resource Monitor. The biologist must have previous experience at the site, or a Service-approved suitable proxy habitat, to perform the resource monitor duties. All expenses of biologists contracted to accompany the group will be paid by the group through their contract with the biologist.
- 4) The trip itinerary must accommodate the requirement for the Resource Monitor to embark on and disembark from the transport vessel from a U.S. port. The transport vessel must meet all U.S. Coast Guard requirements that may apply to the transportation of Federal employees and operation in waters of the United States.
- 5) All small boats and engines, all anchors and lines will be visually inspected by the Service representative for any algal remnant or other alien species which must be removed by the permittee prior to departure for any refuge in the PRIMNM. Small boats must be washed and if necessary fumigated prior to departure. All vessels used to access the Refuge must carry a minimum amount of Wreck Removal and Pollution insurance, specifically targeted and sufficient to provide for the vessel's full extraction and removal from the Refuge should it run aground or experience difficulties with the vessel, any of its equipment or small boats, or crew and passengers or to address release of contaminants such as fuel or oil. Any extraction or recovery methods must meet with the approval of the Service and any other appropriate federal resource trustee, prior to it being carried out.
- 6) The group will be permitted to be on the island for up to 14 days, with no more than 12 days of broadcasting allowed. If environmental conditions do not allow for a safe departure from the island at the scheduled time the PRIMNM superintendent must be notified in order to discuss authorization for remaining until conditions improve. Sufficient emergency food and water for the entire group for an additional 7 days must be maintained onshore in case inclement weather prohibits safe landing during the group's stay.
- 7) The Service-approved Resource Monitor will be responsible for choosing a site on the island that will cause minimal disturbance to the wildlife, and to ensure the footprint of the camp is kept to a minimum. The Resource Monitor will accompany the radio operators on tours to other parts of the island to observe wildlife, habitats, and historic sites.
- 8) Antennae will be a maximum of 3-inches in diameter and a maximum of 43-feet tall vertically. They may stand on a tripods or use guy-lines but only when and if wind conditions require them. Antennae, poles and guy-lines must be flagged every 2-feet to provide a strong visual cue to flying birds. Radials should be less than 50 meters in length and may terminate in the ocean. All equipment should be inspected every 4 hours for evidence of bird collisions

or entanglement. A 25-meter wire antenna supported by a kite may also be used on an experimental basis if the Service representative deems it to be safe to wildlife. The kite apparatus may only be used in daylight hours, the entire length of the kite line and/or antenna must be flagged every 2 feet to provide a visible cue for wildlife to avoid it. If any takes of seabirds or shorebirds occur steps must be immediately taken to avoid any other takes which may include taking the antenna's down if no other methods of mitigation are considered effective by the Resource Monitor.

- 9) Fuel brought to the island to support the generation of electrical power will be transported in U.S. Department of Transportation-approved containers that have been tested for leaks and weigh less than 50 pounds each. No more than 200 gallons of fuel will be stored on Baker Island at any one time. All fuel storage containers must be contained within a secondary containment. Sufficient spill prevention and clean up kits must be maintained on island during the expedition. Any fuel that is not used during the expedition must be removed from the island. Generators and any other equipment requiring fueling must be placed upon a suitable containment area that will capture any and all potential spillage during the fueling process.
- 10) No more than 12 people may be ashore on Baker Island NWR at one time. A Service-approved Resource Monitor will accompany the amateur radio group ashore at all times. The Resource Monitor will have the authority to manage activities and modify procedures, including halting activities that have the potential to cause harm to wildlife.
- 11) All human and other waste that is produced by the group will be removed from the island and properly disposed of or recycled outside of Baker Island NWR.
- 12) Gas camp stoves may be used for cooking. No campfires are permitted. All artificial light emissions must be kept to a minimum and shielded from pointing skyward to minimize bird collisions with camp structures.
- 13) Showering or bathing will occur within the camp footprint or at the water's edge adjacent to camp. Only biodegradable soap will be permitted for use on the Refuge.
- 14) The transport vessel may not expel or discharge any treated or untreated sewage and gray water within 50-nmi of Baker Island and once beyond 50-nmi may only do so if the currents will carry the waste away from the Refuge water.
- 15) All General Conditions of the SUP would apply to amateur radio operator expeditions. This includes the Special Conditions that stipulate stringent quarantine procedures, vessel inspections and certifications, anchoring and landing requirements, wildlife avoidance measures, zero-impact requirements, and reporting requirements. Biosecurity requirements will be part of the SUP.
- 16) Both Baker Island NWR and the adjacent Howland Island NWR are no-take marine and terrestrial reserves unless otherwise permitted, and Permittees are responsible for themselves and the crew of the charter vessel to ensure there is no fishing or collecting within the refuges.

- 17) A maximum of 1 amateur radio operator group will be permitted to visit Baker Island NWR within a 5-year period.
- 18) If QSL postcards are distributed an informative or educational statement about the Refuge must be included. The content of QSL cards pertaining to the Refuge must be reviewed and approved by the PRIMNM Superintendent before printing and distribution.

**Justification:**

While this is not a wildlife dependent public use according to National Wildlife Refuge Administration Act of 1966, as amended, amateur radio operation is a use that assists in the management of the resources indirectly. By allowing amateur radio operators to visit the PRIMNM refuges, the refuges benefit through the ability of staff to visit remote island sites to monitor wildlife populations, habitats, detect invasive species introductions, and perform management actions that would otherwise require the Service to charter a vessel. A vessel charter to any of these sites with a 14 day layover typically costs at least \$250,000, so most of the remote island refuges within the PRIMNM are rarely visited due to budget constraints.

Additionally, part of the procedure of such an expedition is the mailing of cards with a photograph of the site to each person who contacts the group during the visit. A statement about the Refuge is required to be included on the card, and it reaches a wide audience. This can be a valuable outreach tool.

**Mandatory 10 - or 15 - Year Re-evaluation Date:**

Mandatory 15-year reevaluation date (for wildlife-dependent public uses)

Mandatory 10-year reevaluation date (for all uses other than wildlife-dependent public uses)

However, any recommendation to include areas of the Refuge in the National Wilderness Preservation System would require Compatibility of this activity to be re-evaluated.

**NEPA Compliance for Refuge Use Decision: (check one below)**

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

**References:**

U.S. Fish & Wildlife Service (USFWS). 1973. Baker Island, Howland Island, and Jarvis Island National Wildlife Refuges, Biological Ascertainment Report.

U.S. Fish & Wildlife Service (USFWS). 2008. Baker Island National Wildlife Refuge Comprehensive Conservation Plan.

DRAFT

**Signatures for Compatibility Determination, Amateur Radio Operations at Baker Island National Wildlife Refuge:**

Prepared by: \_\_\_\_\_  
Signature Date

Refuge Manager/  
Project Leader  
Approval: \_\_\_\_\_  
Signature Date

Concurrence

Refuge and  
Monument  
Supervisor: \_\_\_\_\_  
Signature Date

Regional Chief,  
National Wildlife  
Refuge System: \_\_\_\_\_  
Signature Date