

## **Hawaiian and Pacific Islands National Wildlife Refuge Complex Wilderness Inventory Summary**

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Guam National Wildlife Refuge Wilderness Inventory

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Mariana Trench National Wildlife Refuge Wilderness Inventory Information

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HAWAIIAN AND PACIFIC ISLANDS NATIONAL WILDLIFE REFUGE COMPLEX WILDERNESS INVENTORY SUMMARY

Table 1. Hawaiian and Pacific Islands National Wildlife Refuge Complex Wilderness Inventory Summary

Complex/Monument	National Wildlife Refuge (NWR)	Inventory Unit (acreage)	Required Components				Other Components	Summary
			<i>(1) Has at least 5,000 acres of land or is of sufficient size to make practicable its preservation and use in an unconfined condition, or is a roadless island.</i>	<i>(2) Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable.</i>	<i>(3a) Has outstanding opportunities for solitude.</i>	<i>(3b) Has outstanding opportunities for a primitive and unconfined type of recreation.</i>	<i>(4) Contains ecological, geological, or other features of scientific, educational, scenic, or historical value.</i>	<i>Parcel qualifies as a WSA (meets criteria 1, 2, &amp; 3a or 3b)</i>
	Guam NWR	Ritidian Unit, Guam NWR, terrestrial portion (385 acres)	No. Does not contain 5,000 acres, is not a roadless island, and is not of sufficient size to make its preservation and use in an unimpaired condition practicable and of a size suitable for wilderness management.	No. Landscape is highly modified and actively managed.	No. Unit is actively and regularly managed.	No. Recreation is highly regulated and requires staff presence.	Endangered birds and plants, migratory birds; wildlife-dependent recreation, cultural resources	No

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		Ritidian Unit, Guam NWR, marine portion (832 acres)	No. Does not contain 5,000 acres, is not a roadless island, and is not of sufficient size to make its preservation and use in an unimpaired condition practicable and of a size suitable for wilderness management.	Yes. Marine landscape appears relatively pristine and affected primarily by the forces of nature.	No. Unit is actively and regularly visited by the public and refuge staff.	No. Recreation is highly regulated with limited area in which to participate in recreational activities.	Endangered birds and plants, migratory birds; wildlife-dependent recreation, cultural resources	No
Marianas Trench Marine National Monument	Mariana Trench NWR	Mariana Trench NWR (50,532,102 acres submerged lands)	Not evaluated.	Not evaluated.	Not evaluated.	Not evaluated.	Not evaluated.	Not evaluated.
	Mariana Arc of Fire NWR	Mariana Arc of Fire NWR (55,912 acres of submerged lands consisting of 21 volcanic features with 1 nmi	Yes. 21 separate submarine volcanic features totaling 55,912 acres.	Yes. Completely natural submarine volcanic arc. No diminishing factors.	Yes. Isolation from human habitation. Areas have enjoyed limited human exploration.	Yes. Unit can be observed by technical divers.	Stony corals, undersea mud volcanoes and thermal vents and other geological and biological phenomena.	Yes.

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		radial boundary)						
Pacific Remote Islands Marine National Monument	Howland Island NWR	Howland Island (330 acres)	Yes. Is a roadless island.	Yes. Not diminished by day beacon and other artifacts.	Yes. Uninhabited island 1000 nmi from Hawai'i.	No. Refuge is closed to all recreational activities.	Earhart day beacon, WWII artifacts, guano mining, and nesting seabirds.	Yes
		Submerged lands and waters to 12 nmi (34,000 acres)	Yes. Approximately 34,000 acres contained within the territorial sea from mean high tide to 12 nmi.	Yes. Coral reefs and other underwater features untouched by humans.	Yes. Isolation from habitation both on surface and below.	Yes. Refuge has been closed to public access since establishment to protect unique and fragile natural resources; however opportunities are present.	Pristine coral reefs and associated marine fish, mammals, and turtles abound.	Yes
	Baker Island NWR	Baker Island (531 acres)	Yes. Is a 531-acre roadless island.	No. The imprint of man's work is substantially noticeable.	Yes. Uninhabited island 1,690 nmi from Hawai'i.	No. Refuge is closed to all recreational activities.	Baker day beacon, guano mining, colonization ruins, WWII military ruins, and nesting seabirds.	No
		Marine Unit (31,378 acres of submerged lands and	Yes. Approximately 31,378 acres are contained within the territorial sea from	Yes. Coral reefs and other underwater features untouched by humans.	Yes. Isolation from habitation both on surface and below.	Yes. Refuge has been closed to public access since establishment to protect unique and fragile natural	Nearly pristine coral reefs and associated marine fish, mammals, and turtles abound.	Yes

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		waters to 12 nmi)	mean high tide 12 nmi.			resources; however opportunities are present.		
Johnston Atoll NWR	Terrestrial Unit (696 acres of emergent lands).	No. Is not a roadless island.	No. Highly altered environment with 10 miles of paved roadway, landfill, and permanent structures.	Yes. Approximately 717 miles west-southwest of Honolulu. Temporary field camps do not intrude on solitude.	Yes. Refuge currently closed to the public to protect and restore its unique natural resources; however, opportunities are present.	Seabirds, shorebirds, one of the most isolated atolls in the world.	No.	
	Marine Unit (530,100 acres of submerged lands and waters to 12 nmi	Yes. 530,100 acres of submerged lands and waters to 12 nmi.	No. Remnants of human presence and influence on the atoll. Structures from military mission.	Yes. Approximately 717 miles west-southwest of Honolulu, presence of FWS staff and volunteers does not detract from opportunities for solitude.	Yes. Refuge is currently closed to the public to protect and restore its unique natural resources; however opportunities are present.	Coral reefs and associated marine fish, mammals, and turtles.	No.	
Wake Atoll NWR	Wake Atoll NWR	Not evaluated.	Not evaluated.	Not evaluated.	Not evaluated.	Not evaluated.	Not evaluated.	

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	Kingman Reef NWR	Kingman Reef NWR (483,760 acres)	Yes. 3 acres of emergent coral rubble spits, 3 acres of emergent reef, 483,754 acres of submerged reefs and associated waters out to 12 nmi.	Yes. Coral rubble spits, emergent and submerged coral reefs, and other underwater features untouched by humans.	Yes. 932 miles southwest of Hawai'i. Isolation from habitation both on surface and below.	Yes. Refuge has been closed to public access since establishment to protect unique and fragile natural resources; however opportunities are present.	Nearly pristine coral reefs and associated marine fish, mammals, and turtles abound. Roosting site for brown boobies and migratory shorebirds. Greatest proportion of apex predators in the world.	Yes.
	Palmyra Atoll NWR	Terrestrial Unit (320 acres of emergent lands)	No. Does not contain 5,000 acres, is not a roadless island, and is not of sufficient size to make its preservation and use in an unimpaired condition practicable and of a size suitable for wilderness management. 320 acres of emergent islets connected by roads and fill.	No. Highly altered environment with roadways, causeways, potential UXO.	Yes. Approximately half-way between Hawai'i and American Samoa. Maximum of 25 individuals reside at the atoll, with habitation on Cooper Island and not within refuge lands.	Yes. Lush environment and diverse natural resources provide excellent opportunities for observation and exploration of an atoll system.	Native vegetation; roosting, feeding, and nesting seabirds and shorebirds; and coconut crabs.	No.
		Marine Unit (480,647 acres of	Yes. 480,647 acres containing 3 central lagoons, submerged	Yes. Coral dredging does not detract from the overall naturalness	Yes. Approximately half-way between Hawai'i and American	Yes. Various limitations on certain approved recreational	Nearly pristine coral reefs and associated marine fish, mammals,	Yes.

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		submerged lands and waters to 12 nmi)	reefs, and open water out to 12 nmi.	of the unit. Motorized vessel transport is limited.	Samoa. Isolation from habitation on and below the water surface. Limited human presence.	activities, however opportunities are present.	and turtles abound.	
Jarvis Island NWR	Jarvis Island (1,273 acres)	Yes. Is a roadless island.	Yes. Not diminished by day beacon and other artifacts.	Yes. Uninhabited island 1000 nmi from Hawai'i.	No. Refuge is closed to all recreational activities.	Jarvis Light day beacon, <i>Amaranth</i> memorial, guano mining, colonization ruins, historic shipwreck, and nesting seabirds.	Yes	
	Marine Unit (36,214 acres of submerged lands and waters to 12 nmi)	Yes. Approximately 36,214 acres contained within the territorial sea from mean high tide to 12 nmi.	Yes. Coral reefs and other underwater features untouched by humans.	Yes. Isolation from habitation both on surface and below.	Yes. Refuge has been closed to public access since establishment to protect unique and fragile natural resources; however opportunities are present.	Pristine coral reefs and associated marine fish, mammals, and turtles abound.	Yes	

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Rose Atoll Marine National Monument	Rose Atoll NWR	Rose Atoll NWR (1,620 acres)	Yes. Consists of two roadless islands with associated lagoon and reef.	Yes. Marine and terrestrial landscapes appear relatively pristine and affected primarily by the forces of nature. Not diminished by vessel grounding.	Yes. Uninhabited island 1,600 nmi from Hawaii and 70 nmi from Ta'u, the nearest inhabited island.	Yes. Refuge is closed to all recreational activities; however its natural state and remote location would provide opportunities for primitive and unconfined recreation.	Pristine coral reefs, reef fish, giant clams, beach strand, native terrestrial vegetation, unexplored deep slopes, localized upwelling currents, migratory shorebirds, seabirds.	Yes
Papahānaumokuākea Marine National Monument	Hawaiian Islands NWR	Terrestrial Unit (1,766 acres of emergent land)	Yes. Archipelago is a series of 8 roadless emergent islands, reefs, and atolls.	Yes. Temporary field camps and marine debris do not detract from overall naturalness. Runway at Tern Island minimally intrusive in the unit as a whole.	Yes. Temporary field camps at French Frigate Shoals and Laysan Islands do not detract from the solitude that characterizes the unit.	Yes. Refuge closed to public access to protect its unique and fragile natural resources; however opportunities are present.	Seabirds, shorebirds, marine mammals, marine fish, coral reefs, turtles, archeological sites. endangered Hawaiian monk seal.	Yes
		Marine Unit (252,652 acres of submerged lands and waters)	Yes. 252,652 acres of submerged lands and waters.	Yes. Marine debris does not detract from overall naturalness of the unit. Limited marine vessel traffic.	Yes. Isolation from habitation on and below water surface. Midway Atoll and Kaua'i are the nearest inhabited islands. Limited marine vessel traffic.	Yes. Refuge closed to public access to protect its unique and fragile natural resources; however opportunities are present.	Nearly pristine coral reefs and associated fish, mammals and turtles. endangered Hawaiian monk seal. High endemism. Military, maritime, and cultural resources.	Yes

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	Midway Atoll NWR	Terrestrial Unit (1,464 acres of emergent lands)	No. Does not contain 5,000 acres, is not a roadless island, and is not of sufficient size to make its preservation and use in an unimpaired condition practicable and of a size suitable for wilderness management. 20 miles of maintained roads. Active, maintained runway.	No. Landscape is highly modified and actively managed.	Yes. 1,260 nmi northwest of Honolulu. Despite inhabitants on Sand Island (approximately 65), opportunities for solitude many areas are present.	Yes. Various limitations on approved recreation activities; nonetheless, primitive and unconfined recreation opportunities are present.	Seabirds, migratory shorebirds, endangered Hawaiian monk seal and short-tailed albatross, sea turtles.	No
		Marine Unit (580,392 acres of submerged lands and waters to 12 nmi)	Yes. 580,392 acres of submerged lands and waters to 12 nmi.	Yes. Coral dredging does not detract from overall naturalness of unit.	Yes. 1,260 nmi northwest of Honolulu. Isolation from habitation above and below water surface.	Yes. Opportunities are present.	Sea turtles, marine mammals, corals, and fishes; endangered Hawaiian monk seal; wildlife-dependent recreation, historic significance of Battle of Midway.	Yes
Kaua'i National Wildlife Refuge Complex	Hanalei NWR	A: Hanalei NWR (917 acres)	No. Does not contain 5,000 acres, is not a roadless island, and is not practicable to manage as a wilderness.	No. Landscape is highly modified and actively managed.	No. Unit is actively and regularly managed.	No. Recreation is highly regulated and requires staff presence.	Endangered Hawaiian waterbirds and nēnē (Hawaiian goose)	No

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	Hulē'ia NWR	B: Hulē'ia NWR (241 acres)	No. Does not contain 5,000 acres, is not a roadless island, and is not practicable to manage as a wilderness.	No. Landscape is highly modified and actively managed.	No. Unit is actively and regularly managed.	No. Recreation is highly regulated and requires staff presence.	Endangered waterbirds, nēnē (Hawaiian goose), and 'ōpe'ape'a (Hawaiian hoary bat)	No
	Kīlauea Point NWR	Kīlauea Point NWR (405 acres)	No. Does not contain 5,000 acres, is not a roadless island, and is not practicable to manage as a wilderness.	No. Landscape is highly modified and actively managed.	No. Unit is actively and regularly managed.	No. Recreation is highly regulated and requires staff presence.	Migratory seabirds, endangered nēnē and Hawaiian waterbirds; wildlife-dependent recreation, historic lighthouse	No
<i>O'ahu National Wildlife Refuge Complex</i>	James Campbell NWR	James Campbell NWR (1,100 acres)	No. Does not contain 5,000 acres, is not a roadless island, and is not practicable to manage as a wilderness.	No. Landscape is highly modified and actively managed.	No. Unit is actively and regularly managed.	No. Recreation is highly regulated and requires staff presence.	Endangered Hawaiian waterbirds, migratory shorebirds, endangered and native plant species, endangered monk seals, green sea turtles.	No
	O'ahu Forest NWR	O'ahu Forest NWR (4,525 acres)	Yes. At 4,525 acres unit is of sufficient size to make its preservation and use in an unimpaired condition suitable for wilderness	Yes. Temporary container and airplane debris does not detract from overall naturalness.	Yes. Isolated unit high in the Ko'olau Range.	Yes. Refuge currently closed to public use, but difficult access and natural state enhance recreation	Endangered forest birds and plants.	Yes

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			management.			opportunities.		
	Pearl Harbor NWR	Pearl Harbor NWR (99 acres)	No. Does not contain 5,000 acres, is not a roadless island, and is not practicable to manage as a wilderness.	No. Landscape is highly modified and actively managed.	No. Unit is actively and regularly managed.	No. Recreation is highly regulated and requires staff presence.	Endangered Hawaiian waterbirds, migratory birds, and the endangered plant 'Ewa hinahina	No
Maui National Wildlife Refuge Complex	Kakahai'a NWR	Kakahai'a NWR (44.6 acres)	No. Does not contain 5,000 acres, is not a roadless island, and is not practicable to manage as a wilderness.	No. Landscape is highly modified and actively managed.	No. Unit is actively and regularly managed.	No. Recreation is highly regulated and requires staff presence.	Not evaluated.	No
	Keālia Pond NWR	Kealia Pond NWR (691 acres)	No. Does not contain 5,000 acres, is not a roadless island, and is not practicable to manage as a wilderness.	No. Landscape is highly modified and actively managed.	No. Unit is actively and regularly managed.	No. Recreation is highly regulated and requires staff presence.	Not evaluated.	No
	Molokini Unit <sup>1</sup>	Molokini Unit (19 acres proposed as an overlay)	Yes. Is a roadless islet.	No. Contains a permanent aid to navigation, highly visible within the tiny	No. Marine vessel and human presence around the islet is heavy.	Yes. Unit is not currently open to the public, however opportunities are	Not evaluated.	No

<sup>1</sup> Proposed as an overlay National Wildlife Refuge.

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		refuge)		islet.		present.		
Big Island National Wildlife Refuge Complex	Hakalau Forest	A: Kona Forest NWR (5,300 acres)	Yes. 5,300 roadless acres.	No. Landscape is highly modified and actively managed.	No. Small, confined area surrounded by ranches and highway.	Yes. Unit is not currently open to the public, however opportunities are present.	Endangered forest bird species, 'ōpe'ape'a (Hawaiian hoary bat), and at least six endangered plants.	No.
		B1: Hakalau Forest Unit (9,000 acres)	Yes. 9,000 roadless acres.	No. Landscape is highly modified and actively managed.	No. Use of motor vehicles; refuge management facilities.	No. Facilities and active regulation.		No.
		B2: Hakalau Forest Unit (23,000 acres)	Yes. 23,000 roadless acres.	Yes. Abandoned fences and gates do not detract from the unit's overall naturalness.	Yes. Large, isolated area.	Yes. Difficult access and natural state enhance recreation opportunities.		Yes.

## GUAM NATIONAL WILDLIFE REFUGE

The wilderness review for the Guam NWR was completed with the Refuge's CCP in September 2009. Visit <http://www.fws.gov/pacific/planning/main/docs/HI-PI/docsguam.htm> to download the CCP containing the Guam NWR wilderness review.

## MARIANA TRENCH NATIONAL WILDLIFE REFUGE

The Mariana Trench Refuge may creatively meet the minimum criteria for wilderness; however wilderness review is being deferred until a time when technological capabilities allow for a viable assessment of wilderness criteria.

## MARIANA ARC OF FIRE NATIONAL WILDLIFE REFUGE

### INVENTORY UNITS

One inventory unit was identified in order to evaluate whether the Mariana Arc of Fire NWR meets the minimum criteria for a WSA. This inventory unit will be referred to as the Mariana Arc of Fire NWR.

### SIZE

The Mariana Arc of Fire NWR consists of 21 separate submarine volcanic features situated along an arc lying west of and parallel to the Mariana Trench. The refuge boundary of each volcanic feature extends outward with a radius of 1nmi, with approximately 2662.5<sup>2</sup> acres at each location for a total of 55,912 acres. The Mariana Arc of Fire NWR meets the minimum size criteria for a wilderness study area.

### NATURALNESS

As a volcanic arc deep within the Pacific Ocean, the Mariana Arc of Fire NWR continues to exist in a completely natural state. No factors within the refuge serve to detract from its natural character. The Mariana Arc of Fire NWR meets the minimum criteria for naturalness.

### OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

While the Mariana Arc of Fire is currently closed to public access to protect its unique natural resources, it contains unique natural features that could be observed within technical diving limits that would allow individuals to experience both solitude and primitive and unconfined recreation opportunities. The Mariana Arc of Fire meets the criteria for opportunities for solitude and primitive and unconfined recreation.

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<sup>2</sup> The Maug vent site contains approximately 535 acres of excluded uplands within its 1nmi radial boundary.

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## SUPPLEMENTAL VALUES

The Mariana Arc of Fire NWR contains objects of scientific interest, including the largest active mud volcanoes on Earth. The Champagne vent, located at the Eifuku submarine volcano, produces almost pure liquid carbon dioxide. This phenomenon has only been observed at one other site in the world. The Sulfur Cauldron, a pool of liquid sulfur, is found at the Daikoku submarine volcano. The only other known location of molten sulfur is on Io, a moon of Jupiter. Unlike other reefs across the Pacific, the northernmost Mariana reefs provide unique volcanic habitats that support marine biological communities requiring basalt. Maug Crater represents one of only a handful of places on Earth where photosynthetic and chemosynthetic communities of life are known to come together. These supplemental values enhance the potential wilderness characteristics of the Mariana Arc of Fire NWR.

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## INVENTORY FINDINGS

The Mariana Arc of Fire NWR meets the minimum criteria for wilderness.

## WAKE ATOLL NATIONAL WILDLIFE REFUGE

The wilderness inventory for the Wake Atoll NWR is being deferred as access to the Refuge has been limited to one visit in 2009.

## JOHNSTON ATOLL NATIONAL WILDLIFE REFUGE

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## INVENTORY UNITS

Two inventory units have been identified in order to evaluate whether the Johnston Atoll NWR meets the minimum criteria for a WSA. These units are the Johnston Atoll NWR Islands Unit, which includes the emergent areas of Johnston, Sand, Hikina, and Akau Islands, and the Johnston Atoll NWR Marine Unit, which includes the emergent and submerged reefs and waters out to 12 nmi.

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## SIZE

The Johnston Atoll NWR Islands Unit contains 696 acres of emergent lands. Johnston Island contains an inactive runway, 10 miles of paved roadway, and 10 miles of gravel. The Islands Unit does not meet the minimum size criteria for a WSA.

The Johnston Atoll NWR Marine Unit contains approximately 539,814 acres of submerged reefs and waters and meets the minimum size criteria for a WSA.

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## NATURALNESS

The following were primary considerations in evaluating the naturalness of the Johnston Atoll NWR Islands Unit:

- 10 miles of paved roadway, 10 miles of gravel

- concrete pads
- foundations
- seawall
- bulkheads
- wharfs
- revetments
- permanent structure (JOC)
- toilets
- tent structures
- bunkers
- bait stations
- tracks from bicycles and all-terrain vehicle

The Johnston Atoll NWR Islands Unit has been highly altered in its use for Department of Defense military missions. While much of the military infrastructure has been removed, man's work is still extremely apparent throughout the Islands Unit. A field camp of four FWS representatives has been operating year-round. In order to support the island's temporary residents, tent structures and toilet facilities have been set up and are in use. Island residents use bicycles and a Gator for transportation on the island, with tire tracks further degrading the naturalness of graveled pathways. The Johnston Atoll NWR Islands Unit does not meet the minimum naturalness criteria for a WSA.

The following were the primary considerations in evaluating the naturalness of the Johnston Atoll NWR Marine Unit:

- dredged channel
- abandoned seaplane ramp
- piers
- debris from military missions

The Johnston Atoll NWR Marine Unit has been highly altered through coral dredging to allow large marine vessels to maneuver within the atoll. Remnants of piers and other structures within the marine areas of the atoll are very apparent around all of the islands, including a significant amount of submerged metal debris. While marine vessels trespass within the Marine Unit and FWS organizes 1-2 trips annually to the atoll, the impact of the transiting marine vessels on the naturalness of the unit is not visible. The Johnston Atoll NWR Marine Unit does not meet the minimum naturalness criteria for a WSA.

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#### OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

The Johnston Atoll NWR is closed to public access in order to protect its unique and fragile natural resources. The Islands and Marine Units comprise one of the most isolated atolls in the world. While the presence of temporary field camps and the installation of such camps may present a slight intrusion on solitude experienced at the atoll, the intrusions are minimal and temporary.

Likewise, while no plans currently exist to open the refuge for recreational use, opportunities for primitive and unconfined recreation are present within both the Islands and Marine Units.

The Johnston Atoll NWR Islands Unit and the Johnston Atoll NWR Marine Unit meet the minimum criteria for solitude as well as primitive and unconfined recreation.

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#### SUPPLEMENTAL VALUES

Johnston Atoll is an important rat-free habitat for central Pacific seabird populations. 14 species of seabirds breed at the atoll and 5 species of shorebirds migrate to Johnston for winter. Johnston's waters support diverse marine organisms, including the threatened green sea turtle. These supplemental values would enhance the potential wilderness characteristics of Johnston Atoll.

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#### INVENTORY SUMMARY

The Johnston Atoll NWR Terrestrial Unit and the Johnston Atoll NWR Marine Unit do not meet the minimum criteria for a WSA.

### KINGMAN REEF NATIONAL WILDLIFE REFUGE

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#### INVENTORY UNITS

One inventory unit was identified in order to evaluate whether the Kingman Reef NWR meets the minimum criteria for a WSA. This inventory unit will be referred to as the Kingman Reef NWR.

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#### SIZE

With approximately 3 acres of emergent coral rubble spits and 12 nmi of submerged reefs and their associated water column totaling 426,392 acres, the Kingman Reef NWR meets the minimum size criteria.

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#### NATURALNESS

The following were primary considerations in evaluating the naturalness of the inventory unit:

- Fishing boat wreck;
- Marine debris.

Kingman Reef is one of the most pristine atolls in the Pacific. A 25.5m fishing boat was found in August 2008 aground on the northeast side of the atoll, however most of the wreckage is localized and does not detract from the overall naturalness of the unit. Some evidence of fishing activity is the only other known evidence of human influence on the atoll. The Kingman Reef NWR meets the naturalness criteria for a WSA.

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#### OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

The Kingman Reef NWR is closed to public access in order to protect its unique and fragile natural resources. Refuge uses include scientific research and monitoring. Nonetheless, at approximately 930

miles from Honolulu, Kingman Reef NWR would provide outstanding opportunities for solitude or primitive and unconfined recreation if the refuge were open for these purposes.

The inventory unit meets the minimum criteria for opportunities for solitude and primitive and unconfined recreation.

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#### SUPPLEMENTAL VALUES

Kingman Reef's coral reefs are the most pristine of any under U.S. jurisdiction. The atoll supports spectacular stony coral species diversity, with an overwhelming abundance of mushroom corals. Deep diving submersible surveys reveal that Kingman Reef is home to stands of some of the oldest deep water corals ever observed. The unit is also home to the most abundant communities of giant clams within all of the remote islands Refuges. These supplemental values enhance the wilderness characteristics of the Kingman Reef NWR.

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#### INVENTORY FINDINGS

The Kingman Reef NWR meets the minimum criteria for wilderness.

### PALMYRA ATOLL NATIONAL WILDLIFE REFUGE

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#### INVENTORY UNITS

Two inventory units were identified in order to evaluate whether the lands and waters of the Palmyra Atoll NWR meet the minimum criteria for a WSA. The inventory units will be referred to as the Palmyra Atoll Terrestrial Unit and the Palmyra Atoll Marine Unit.

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#### SIZE

The Palmyra Atoll Terrestrial Unit contains 320 acres of emergent islets connected by roads and fill. The Palmyra Atoll Terrestrial Unit does not meet the minimum size criteria for a WSA.

The Marine Unit consists of 480,647 acres containing 3 central lagoons, submerged reefs, and open water out to 12 nmi. The Palmyra Atoll Marine Unit meets the minimum size criteria for a WSA.

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#### NATURALNESS

The following factors were primary considerations in evaluating naturalness of the Palmyra Atoll NWR Terrestrial Unit:

- roadways;
- causeways;
- refuge sign;
- potential UXO;
- abandoned well and mining activity;

The Palmyra Atoll NWR Terrestrial Unit has been highly altered through the construction of a network of roadways connecting the major islets, as well as the construction of a north-south causeway. Debris and hazardous waste remain throughout Palmyra and specifically on Quail and Barren Islands. A combination of wave erosion and vegetation growth are gradually eliminating the infrastructure and restoring the atoll to its natural state, although evidence of Navy activities remain. The Palmyra Atoll NWR Terrestrial Unit does not meet the naturalness criteria for a WSA.

The following factors were primary considerations in evaluating naturalness of the Palmyra Atoll NWR Marine Unit:

- dredged entrance channel;
- marine debris;
- shipwrecks

The Palmyra Atoll NWR Marine Unit contains some signs of man's influence on the atoll, however they are substantially unnoticeable in the unit as a whole. A 26-ft deep entrance channel was dredged through the southwestern reef. Shallow areas in the west lagoon were also dredged to create a seaplane runway. The impacts of marine debris and two shipwrecks at the atoll are expected to be transitory. Overall, these factors do not detract from the apparent natural character of the Palmyra Atoll NWR Marine Unit. The Palmyra Atoll NWR Marine Unit meets the naturalness criteria for a WSA.

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#### OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

The Palmyra Atoll NWR Terrestrial Unit provides a number of opportunities for solitude and primitive and unconfined recreation. While some of the permitted recreation activities at the atoll do have constraints, the atoll still contains a prime environment to experience solitude and observe wildlife in a remote atoll system. Service employees and staff of the Nature Conservancy reside on Cooper Island, which is not part of the Refuge, and visitors at Palmyra Atoll are limited to thirty at a time, which allows individuals to opportunities to experience solitude in several areas within the Terrestrial and Marine Units of the Refuge. Recreational bonefishing is also allowed within the Marine Unit on a catch-and-release basis, and offshore sport fishing allows visitors access to pelagic game fish for release or on-island consumption. The Palmyra Atoll NWR Terrestrial and Marine Units meet the criteria for solitude and primitive and unconfined recreation for a WSA.

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#### SUPPLEMENTAL VALUES

Located in the northern Line Islands, Palmyra is one of the most ecologically intact in the chain. A diverse land crab fauna including the coconut crab, predator-dominated fish assemblages, and large seabird populations are important resources within Refuge. The climate at Palmyra allows for lush vegetative cover, including one of the last remaining stands of *Pisonia* beach forest in the Pacific. These supplemental values would enhance the potential wilderness characteristics of Palmyra Atoll.

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#### INVENTORY FINDINGS

The Palmyra Atoll NWR Marine Unit meets the minimum criteria for a WSA, however the Palmyra Atoll NWR Terrestrial Unit does not meet the minimum criteria.

## JARVIS ISLAND NATIONAL WILDLIFE REFUGE

A wilderness review for Jarvis Island NWR was conducted in September 2008 in conjunction with the Refuge's CCP. Visit the [Howland Island, Baker Island, and Jarvis Island NWRs CCP website](#) to view the Jarvis Island wilderness inventory. Due to the expansion of Refuge jurisdictional boundaries by Secretary's Order 3284, the marine portion of the Jarvis Island NWR has been reevaluated for minimum wilderness criteria. The conclusions of the wilderness inventory and study for the terrestrial portion of the Refuge evaluated in the 2008 CCP remain valid.

### INVENTORY UNITS

One inventory unit has been identified for the marine portion of the Jarvis Island NWR. This unit will be identified as the Jarvis Island NWR marine unit.

### SIZE

With 428,580 acres of submerged lands out to 12 nmi, the Jarvis Island NWR marine unit meets the minimum size criteria for wilderness.

### NATURALNESS

The following were the primary considerations in evaluating the naturalness criteria of the Jarvis Island NWR marine unit:

- Shipwreck remains of *Amaranth*; and
- Marine debris.

An indirect human impact to the naturalness of Jarvis is the presence of marine debris that washes onto coral reefs and beaches. Attempts to remove and stockpile this debris for eventual removal occur during field camps. The marine debris and impacts of the shipwreck do not detract from the overall naturalness of the unit. Overall the forces of nature sculpt the Jarvis Island NWR marine unit's resources. Wave action erodes and accretes shorelines and rearranges underwater coral features.

The Jarvis Island NWR marine unit meets the naturalness criteria for a WSA.

### OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

The following factors and their cumulative effects were the primary considerations in evaluating the availability of outstanding opportunities for solitude or primitive unconfined recreation at Jarvis:

- distance to habitation, whether mainland or an inhabited island; and
- viewshed within and from refuge boundary.

Jarvis Island NWR is separated by over 1,263 nautical miles from Hawai'i, and approximately 184 nmi from Kiritimatai Island Atoll, the nearest inhabited island. The viewshed of Jarvis Island includes a mixture of short grass and shrubs, bare ground, and shoreline beaches and cobble. Expanses of open ocean with no other landform are visible from every angle. In the past, field camps have been temporary, with only 2 individuals spending 2 days every 2 years. Underwater, coral reefs are pristine and the open-water depths are devoid of human presence.

The Jarvis Light day beacon, within view from the water, does not detract from the feeling of solitude within the unit.

Since establishment, Jarvis Island NWR, including the marine unit, has been closed to general public access in order to conserve unique and valuable fish and wildlife resources. Research, survey, and management activities involving human presence are infrequent and temporary and thus would not detract from opportunities for solitude or primitive and unconfined recreation. While the potential for primitive and unconfined recreation within the refuge is limited, such opportunities are present.

The Jarvis Island NWR marine unit meets the minimum criteria for opportunities for solitude and primitive and unconfined recreation.

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#### SUPPLEMENTAL VALUES

The coral reefs and deep water areas of the Jarvis Island NWR marine unit compose a complete and functioning marine ecosystem. Nearshore waters, coral reefs, and associated currents combine and provide food resources for foraging seabirds and coral reef communities. The position and underwater gradient of Jarvis in deep ocean currents allows these currents to reach the surface, thereby increasing rates of productivity for plants, corals and vertebrate species. These rich ecological resources in a relatively pristine and unaltered environment provide unique opportunities for scientific study and environmental education. These supplemental values enhance the wilderness characteristics of the Jarvis Island NWR marine unit.

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#### INVENTORY FINDINGS

The Jarvis Island NWR marine unit meets the minimum criteria for wilderness.

### HOWLAND ISLAND NATIONAL WILDLIFE REFUGE

A wilderness review for Howland Island NWR was conducted in September 2008 in conjunction with the Refuge's CCP. Visit the [Howland Island, Baker Island, and Jarvis Island NWRs CCP website](#) to view the Howland Island wilderness inventory. Due to the expansion of Refuge jurisdictional boundaries by Secretary's Order 3284, the marine portion of the Howland Island NWR has been reevaluated for wilderness. The conclusions of the wilderness inventory and study for the terrestrial portion of the Refuge evaluated in the 2008 CCP remain valid.

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#### INVENTORY UNITS

One inventory unit has been identified for the marine portion of the Howland Island NWR. This unit will be identified as the Howland Island NWR marine unit.

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#### SIZE

With 410,351 acres of submerged lands out to 12 nmi, the Howland Island NWR marine unit meets the minimum size criteria for wilderness.

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#### NATURALNESS

The following factor was the primary consideration in evaluating the naturalness of the inventory units:

- marine debris.

An indirect human impact to the naturalness of Howland is the presence of marine debris that washes onto coral reefs and beaches. Attempts to remove this debris for eventual removal occur during field camps.

The Howland Island NWR marine unit meets the naturalness criteria for a WSA.

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#### OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

The following factors and their cumulative effects were the primary considerations in evaluating the availability of outstanding opportunities for solitude or primitive unconfined recreation within the Howland Island NWR marine unit:

- distance to habitation; and
- viewshed within and from Howland Island NWR marine unit.

Howland Island NWR is separated by over 1,600 nautical miles from Hawai'i, and approximately 330 nmi from Kanton Atoll, the nearest inhabited island. Expanses of open ocean with no other landform are visible from every angle. Within view from the water is Howland Island covered with a mixture of short grass and shrubs, bare ground, and shoreline beaches and cobble. Underwater, coral reefs are pristine and the open-water depths are devoid of human presence.

Since establishment, Howland Island NWR, including the marine unit, has been closed to general public access in order to conserve unique and valuable fish and wildlife resources. Research, survey, and management activities involving human presence are infrequent and temporary and thus would not detract from opportunities for solitude or primitive and unconfined recreation. While the potential for primitive and unconfined recreation within the refuge is limited, such opportunities are present.

The Howland Island NWR marine unit meets the minimum criteria for opportunities for solitude or primitive and unconfined recreation.

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#### SUPPLEMENTAL VALUES

The waters, coral reefs, and associated currents within the Howland Island NWR marine unit provide food resources for foraging seabirds and coral reef communities. The position and underwater gradient of Howland in deep ocean currents allows these currents to reach the surface, thereby increasing rates of productivity for plants, corals and vertebrate species. These rich ecological resources in a relatively pristine and unaltered environment provide unique opportunities for scientific study and environmental education.

These supplemental values within the Howland Island NWR marine unit enhance the wilderness characteristics of the area.

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## INVENTORY FINDINGS

The Howland Island NWR marine unit meets the minimum criteria for wilderness.

## BAKER ISLAND NATIONAL WILDLIFE REFUGE

A wilderness review for Baker Island NWR was conducted in September 2008 in conjunction with the Refuge's CCP. Visit the [Howland Island, Baker Island, and Jarvis Island NWRs CCP website](#) to view the Baker Island wilderness inventory. Due to the expansion of Refuge jurisdictional boundaries by Secretary's Order 3284, the marine portion of the Baker Island NWR has been reevaluated for wilderness. The conclusions of the wilderness inventory and study for the terrestrial portion of the Refuge evaluated in the 2008 CCP remain valid.

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## INVENTORY UNITS

One inventory unit has been identified for the marine portion of the Baker Island NWR. This unit will be identified as the Baker Island NWR marine unit.

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## SIZE

With 409,653 acres of submerged lands and an associated water column, the Baker Island NWR marine unit meets the size criteria for a wilderness study area.

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## NATURALNESS

The following factors were primary considerations in evaluating the naturalness of the inventory units:

- marine debris; and
- cuts in berm to channel.

An indirect human impact to the naturalness of Baker is the presence of marine debris that washes onto coral reefs and beaches.

There is a small channel cut in the coral reef to aid navigation, and there are scattered sections of chain and anchor, but these do not detract from Baker's submerged lands meeting the naturalness criteria.

Being over 60 years old, new coral growth along the channel has made it practically indistinguishable from adjoining coral reef areas.

Although the U.S. Navy documented the loss of 11 LCMs in the nearshore waters, their presence has yet to be confirmed. Taken collectively, these impacts to naturalness in the marine environment are a minor component of the overall marine area.

The Howland Island NWR marine unit meets the naturalness criteria for a WSA.

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#### OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

The following factors and their cumulative effects were the primary considerations in evaluating the availability of outstanding opportunities for solitude or primitive unconfined recreation within the Baker Island NWR marine unit:

- distance to habitation, whether mainland or an inhabited island; and
- viewshed within and from refuge boundary.

Howland Island NWR is separated by over 1,690 nautical miles from Hawaii, and approximately 1110 nmi from Kiritimati Island Atoll, the nearest inhabited island. Expanses of open ocean with no other landform are visible from every angle. Within view from the water is Howland Island, which is covered is a mixture of short grass and shrubs, bare ground, and shoreline beaches and cobble. Field camps have been temporary, with only 2 individuals spending 2 days every 2 years. Underwater, coral reefs are pristine and the open-water depths are devoid of human presence.

Since establishment, Baker Island NWR, including the marine unit, has been closed to general public access in order to conserve unique and valuable fish and wildlife resources. Research, survey, and management activities involving human presence are infrequent and temporary and thus would not detract from opportunities for solitude or primitive and unconfined recreation. While the potential for primitive and unconfined recreation within the refuge is limited, such opportunities are present.

The Baker Island NWR marine unit meets the minimum criteria for opportunities for solitude or primitive and unconfined recreation.

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#### SUPPLEMENTAL VALUES

The coral reefs and deep water areas within the Baker Island NWR marine unit compose a complete and functioning marine ecosystem. The inventory unit provides food resources for foraging seabirds and coral reef communities. These rich ecological resources in a relatively pristine and unaltered environment provide unique opportunities for scientific study and environmental education.

These supplemental values within the Howland Island NWR marine unit enhance the wilderness characteristics of the area.

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#### INVENTORY FINDINGS

The Baker Island NWR marine unit meets the minimum criteria for wilderness.

## ROSE ATOLL NATIONAL WILDLIFE REFUGE

### INVENTORY UNITS

Rose Atoll NWR is located approximately 130 nautical miles east-southeast of Pago Pago Harbor, American Samoa. The atoll consists of approximately 21 acres of emergent land, which includes Rose and Sand islands at 14 and 7 acres, respectively, as well as 1,600 acres of lagoon.

### SIZE

As a low-lying atoll with two roadless islands and associated lagoon and reef, Rose Atoll NWR meets the size criteria for a wilderness study area.

### NATURALNESS

The following were primary considerations in evaluating the naturalness of inventory units:

- PVC plots
- stainless steel plots
- *Jin Shiana Fa* longliner wreckage

Rose Atoll's remote location and difficult access have allowed nature to remain the primary sculpting force of the atoll's resources. Crustose coralline algae continue to build up the reef crest on the barrier reef. The littoral forest and beach strand host colonies of seabirds and migratory shorebirds, nesting green sea turtles, land crabs, and geckos. Underwater, patch coral reefs and pinnacles are pristine, supporting a dense community of fish, foraging green and hawksbill turtles, and giant clams.

The 1993 grounding of the longliner *Jin Shiang Fa* and resultant oil spill and wreckage have not affected the refuge's overall naturalness, despite damages on the southwestern side of the barrier reef. All debris from the grounding has been removed as of 2007 and the atoll continues to recover. Other forms of marine debris have been rarely observed and do not constitute a significant visual presence in the atoll.

Historic markers, monuments, and visible signs of past human occupation are not present.

Physical evidence of management and research activities are limited to a few monitoring plots on Rose Island and in reef areas, composed of PVC and steel, respectively, as well as infrequent, temporary field camps. These features are substantially unnoticeable in the refuge as a whole.

The Rose Atoll NWR meets the naturalness criteria for a WSA.

### OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

Solitude is an overwhelming force that visitors experience on Rose Atoll. The island is separated by over 1,600 nautical miles from Hawai'i, and approximately 70 nmi from Ta'u, the nearest inhabited island. Expanses of open ocean with no other landform are visible from every angle. Since establishment, Rose Atoll has been closed to general public access in order to conserve unique and valuable fish and wildlife resources. Research, survey, and management activities involving human presence are infrequent and temporary and thus would not detract from opportunities for solitude or primitive and unconfined recreation. While the potential for primitive and unconfined recreation within the refuge is limited due to the remote location of the atoll, particularly dangerous access to the area, and threat of anthropogenic damage to its natural resources, such opportunities are present. The Rose Atoll NWR meets the minimum criteria for solitude and primitive and unconfined recreation.

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#### SUPPLEMENTAL VALUES

One of the smallest atolls in the world, Rose supports the largest populations of giant clams, nesting sea turtles, nesting seabirds, and rare species of fish in American Samoa. The diversity of coral species in the atoll is significant given its small size. Rose Island is home to the only remaining *Pisonia* forest community in Samoa, and is also the most important seabird colony in the region. These resources, along with the atoll's small size, well-defined boundaries, and limited anthropogenic influence make it of significant value for studying the processes of atoll systems. Healthy crustose coralline algae, the primary reef-building species, give Rose a striking pink hue. More water pours into the lagoon over the reef crest than exits the pass and causes the reef crest to grow higher, which makes it one of the few atolls with an elevated lagoon and enriches its scenic quality. These unique features of scientific, educational and scenic value enhance the wilderness characteristics of the Rose Atoll NWR.

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#### INVENTORY FINDINGS

Rose Atoll NWR meets the minimum criteria for wilderness.

### MIDWAY ATOLL NATIONAL WILDLIFE REFUGE

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#### INVENTORY UNITS

Two inventory units were identified in order to evaluate whether the lands and waters of the Midway Atoll NWR meet the minimum criteria for a WSA. These inventory units will be referred to as the Midway Atoll NWR Terrestrial Unit and the Midway Atoll NWR Marine Unit.

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#### SIZE

The Midway Atoll NWR Terrestrial Unit consists of 1,464 acres in the form of 3 sandy islets. Sand Island contains an active runway and 20 miles of maintained roads. Though no longer an active airfield, Eastern Island contains several runways that cover a majority of the islet. The Midway Atoll NWR Terrestrial Unit does not meet the minimum size criteria for a WSA.

The Midway Atoll NWR Marine Unit consists of 579,528 acres of submerged lands and open water. The Midway Atoll NWR Marine Unit meets the minimum size criteria for a WSA.

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## NATURALNESS

The following were primary considerations in evaluating the naturalness of the Midway Atoll NWR Terrestrial Unit:

- Refuge and administrative signs;
- Paved areas;
- Administrative buildings;
- Residences;
- Shelters;
- Sheds;
- Fueling station;
- Containers;
- Sea wall;
- Piers;
- Seaplane hangar; and
- Runway.

Paved areas and structures compose approximately 30% of the Midway Atoll NWR Terrestrial Unit. Despite the significant habitat that Midway provides for wildlife, man's imprint on the Terrestrial Unit is dominant, and signs of development are visible from nearly every viewpoint. The Midway Atoll NWR Terrestrial Unit does not meet the minimum criteria for a WSA.

The following were primary considerations in evaluating the naturalness of the Midway Atoll NWR Marine Unit:

- Buoys;
- Dredged coral;
- Container;
- Piers; and
- Marine debris.

The Midway Atoll NWR Marine Unit has been altered by the dredging of a channel and harbor, which was used for submarine refit and repair. The lagoon contains a number of buoys and markers, and outside of the lagoon lies a corroding container that sits above the water line. These unnatural alterations do not detract from the overall naturalness of the Midway Atoll NWR Marine Unit, which contains healthy coral communities that provide important habitat to marine animals. The Midway Atoll NWR Marine Unit meets the naturalness criteria for a WSA.

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## OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

Midway Atoll is approximately 1,200 miles from Honolulu. Its nearest land masses are Kure, the northwestern-most emergent island in the Hawaiian chain, and Pearl and Hermes Atoll, part of the Hawaiian Islands NWR. Despite the year-round human presence on Sand Island, Eastern and Spit Islands allow one to experience a great deal of solitude in the Midway Atoll NWR Terrestrial Unit and Marine Unit, with historic remnants not detracting from the current feeling of seclusion that pervades at Eastern and Spit. A few areas on Sand Island also offer opportunities for one to experience solitude. Air traffic,

including landing and departure of aircraft, as well as some marine vessel traffic may detract slightly from the solitude one experiences within the Midway Atoll NWR Terrestrial Unit and Marine Unit.

The lack of development at Eastern and Spit Islands make them ideal locations for primitive and unconfined recreation; however such recreation opportunities are also possible at Sand Island. The Midway Atoll is the only site within the Papahānaumokuākea Marine National Monument open to the public. As part of the Monument, refuge activities are limited to research, education, conservation and management, Native Hawaiian practices, and special ocean use, and are by permit only. Nonetheless, various companies apply for permits and offer tours at the Refuge. The tours themselves do not specifically enhance opportunities for solitude or primitive and unconfined recreation for visitors due to their structured nature; however they do not detract from the overall opportunities for solitude or primitive and unconfined recreation required for a WSA. The Midway Atoll NWR Terrestrial Unit and the Midway Atoll NWR Marine Unit meet the criteria for opportunities for solitude and primitive and unconfined recreation.

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#### SUPPLEMENTAL VALUES

Midway Atoll is designated as a National Memorial, commemorating the pivotal Battle of Midway. The atoll contains 63 historic properties eligible for inclusion in the National Register of Historic Places, most of which are products of Commercial Pacific Cable Company development at Midway, Naval occupation of the atoll, and WWII and Battle of Midway. The atoll hosts the largest population of Laysan albatross in the world. It is also a foraging area for the threatened green sea turtle and resting area for the endangered Hawaiian monk seal. The waters are part of one of the last apex predator-dominated systems in the world. The Refuge also contains a number of maritime and military heritage resources. The reefs support high numbers of endemic reef fish and limpets in addition to healthy coral communities. The atoll is significant geologically as one of the oldest in the Hawaiian chain. These supplemental values would enhance the potential wilderness characteristics of Midway Atoll.

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#### INVENTORY FINDINGS

The Midway Atoll NWR Marine Unit meets the minimum criteria for a WSA, however the Midway Atoll NWR Terrestrial unit does not meet the minimum criteria.

#### HAWAIIAN ISLANDS NATIONAL WILDLIFE REFUGE

In 1974, 1,742 acres of emergent lands of the Refuge were recommended to Congress by the Secretary of Interior and the President for inclusion in the NWPS and the submerged lands in the refuge were determined "...ecologically appropriate for incorporation in the National Wilderness Preservation System." but were excluded from the proposal due to an ambiguity as to the precise extent of the Refuge's jurisdiction. Since then, the Proposed Hawaiian Islands Wilderness (i.e., the emergent lands recommended in the President's transmittal to Congress) has been managed to maintain wilderness character. An inventory for the entire Refuge has been conducted in order to reassess whether or not the Refuge still possesses the minimum criteria for wilderness.

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## INVENTORY UNITS

Two inventory units were identified in order to evaluate whether the lands and waters of the Hawaiian Islands NWR meet the minimum criteria for a WSA. These inventory units are Hawaiian Islands NWR Terrestrial Unit; and Hawaiian Islands NWR Marine Unit.

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## SIZE

As a series of 8 roadless<sup>3</sup> emergent islands, reefs, and atolls, Hawaiian Islands NWR Terrestrial Unit meets the size criteria. The Hawaiian Islands NWR Marine Unit, with 252,652 acres of submerged reefs and their associated water column meets size criteria.

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## NATURALNESS

The following were primary considerations in evaluating the naturalness of inventory units:

Hawaiian Islands NWR Terrestrial Unit:

- Marine, concrete, and metal debris;
- Field station, ramp, seawall;
- Refuge sign;
- Water catchment, shadehouses, camp trail, radio antenna, solar array, hurricane shelter, Temporary tent structures.

Hawaiian Islands NWR Marine Unit:

- Marine debris; and
- Batteries, capacitors, barrels.

The Hawaiian Islands NWR Terrestrial Unit has limited anthropogenic modifications in the form of temporary field camps and administrative signs. The marine debris that washes ashore throughout the Northwestern Hawaiian Islands does not detract from the otherwise natural appearance of the terrestrial portions of the Refuge. The field station and sea wall at Tern Island, French Frigate Shoals does not detract from the overall naturalness of the Hawaiian Islands NWR Terrestrial Unit as a whole.

The Hawaiian Islands NWR Marine Unit contains marine debris in the form of trawl, gill, and seine nets, lobster traps, fishing floats Fish Aggregation Devices, and other materials. This debris, along with some contaminated debris, does not detract from the naturalness of the Marine and Terrestrial Units of the Hawaiian Islands NWR as a whole.

Both inventory units meet the naturalness criteria for a WSA.

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<sup>3</sup> Tern Island at French Frigate Shoals contains an inactive runway. All other islands in the refuge are without roads or runways.

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## OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

The Hawaiian Islands NWR is closed to public access in order to protect its unique and fragile natural resources. Refuge activities are limited to research, education, conservation and management, Native Hawaiian practices, and special ocean use, and are by permit only.

Nonetheless, the remoteness of the Hawaiian Islands NWR Terrestrial Unit and lack of development would provide outstanding opportunities for solitude or primitive and unconfined recreation if the refuge were open for these purposes.

The Hawaiian Islands NWR Marine Unit likewise due to its remoteness as well as limited and dangerous access would also provide outstanding opportunities for solitude and primitive and unconfined recreation if it were open for these purposes.

Both inventory units meet the criteria for opportunities for solitude or primitive and unconfined recreation.

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## SUPPLEMENTAL VALUES

The Hawaiian Islands NWR is a highly significant area within the Hawaiian archipelago and within the Pacific Ocean. The Units contain some of the last remaining natural terrestrial and marine ecosystems in the Hawaiian archipelago. The Terrestrial Unit contains a significant number of archeological sites including residential features, agricultural terraces, ceremonial structures, cairns, and burial sites. The islands also possess important habitat for a number of threatened, endangered, and endemic species and major nesting sites for seabirds, shorebirds, and green sea turtles. The area also hosts the largest breeding colony of the endangered Hawaiian monk seal. The islands are also significant to the geologic history and formation of the Hawaiian archipelago, featuring some of the oldest of the Hawaiian Islands.

The Hawaiian Islands NWR Marine Unit also contains a number of features that enhance the wilderness character of the area. The waters are one of the last apex predator-dominated systems in the world. The Marine Unit also contains a number of maritime and military heritage resources. The reefs support high numbers of endemic reef fish and limpets in addition to healthy coral communities.

Part of the Papahānaumokuākea Marine National Monument, the northwestern Hawaiian Islands are deeply significant to Native Hawaiian culture and cosmology, receiving a mixed property World Heritage designation from the UNESCO World Heritage Center in 2010 as a place of natural and cultural significance.

These supplemental values within the Hawaiian Islands NWR Terrestrial Unit and Marine Unit would enhance the wilderness characteristics of the inventory units.

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## INVENTORY FINDINGS

The Hawaiian Islands NWR Terrestrial Unit and Marine Unit meet the minimum criteria for wilderness.

## KAUA'I NATIONAL WILDLIFE REFUGE COMPLEX

### INVENTORY UNITS

Three inventory units were identified in order to evaluate whether the lands and waters of Hanalei, Hulē'ia, and Kīlauea Point NWRs meet the minimum criteria for a WSA. These inventory units are identified as Unit A: Hanalei NWR; Unit B: Hulē'ia NWR; and Unit C: Kīlauea Point NWR.

### SIZE

Each of the three inventory units, Kīlauea Point NWR (Unit A), comprised of 203 acres, Hanalei NWR (Unit B), comprised of 917 acres, and Hulē'ia NWR (Unit C), at 241 acres, does not meet the minimum size criteria for wilderness.

### NATURALNESS

The following factors were primary considerations in evaluating the naturalness of the inventory units:

#### Unit A (Kīlauea Point NWR):

- Residences, administrative, and maintenance buildings;
- Buried water and electrical lines, communications building and antennas, remnants of "historic" military structures;
- Gates, paved parking lots, and roadways;
- Lighthouse, visitor center.

#### Unit B (Hanalei NWR):

- Maintenance buildings, office, seven residences, agricultural infrastructure, utility lines;
- Ditches, canals, siphons, earthen dikes, water control structures;
- Gates, parking lots, trails, and county and maintenance roadways.

#### Unit C (Hulē'ia NWR):

- Maintenance building;
- Ditches, canals, siphons, earthen dikes, water control structures;
- Roadways, parking lots, and gates.

The impact of man's work within Units A, B, and C is highly visible, strongly reducing the natural appearance of the units. The Kīlauea Point NWR, Hanalei NWR, and Hulē'ia NWR do not meet the minimum criteria for naturalness for a WSA.

### OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

Kīlauea Point NWR receives approximately 50,000 visitors per year. Hanalei NWR contains 9 active taro farms and a county road bisecting the refuge. Hulē'ia is closed to the public. These inventory units do not offer opportunities for solitude or primitive and unconfined recreation. Daily management activities

occur on these inventory units. These activities include road maintenance, mowing and disking of fields, operation of a visitor service center and refuge office, and manipulation of water control structures. None of the inventory units offer opportunities for solitude or a primitive and unconfined type of recreation.

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#### SUPPLEMENTAL VALUES

Based upon the findings of the required components for a WSA, supplemental values were not evaluated.

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#### INVENTORY FINDINGS

Kīlauea Point, Hanalei, and Hulē'ia NWRs do not meet the minimum criteria for consideration as WSAs.

### OAHU NATIONAL WILDLIFE REFUGE COMPLEX

#### O'AHU FOREST NATIONAL WILDLIFE REFUGE

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#### INVENTORY UNITS

One inventory unit was identified in order to evaluate whether the O'ahu Forest NWR meets the minimum criteria for wilderness. This inventory unit will be referred to as the O'ahu Forest NWR.

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#### SIZE

At 4,525 acres, the O'ahu Forest NWR is an area of less than 5,000 contiguous acres that is of sufficient size as to make practicable its preservation and use in an unimpaired condition, and of a size suitable for wilderness management. The Refuge is bounded by Schofield Barracks Military Reservation to the North and Northwest, Kahana Valley State Park to the Northeast, and Waiahole Forest Reserve in the Southeast. These surrounding areas are also dedicated to land preservation and the FWS works. The O'ahu Forest NWR meets the minimum size criteria for a WSA.

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#### NATURALNESS

The following were primary considerations of the naturalness of the O'ahu Forest NWR:

- Trail;
- Container; and
- Buried airplane debris.

Located in the middle and upper elevations of the central Ko'olau mountains, the O'ahu Forest NWR retains a natural appearance with no permanent structures or development. The Kīpapa trail, which follows the southern boundary of the refuge, does not detract from the otherwise natural groundcover. A container lies within the O'ahu Forest NWR and is used on occasion by refuge staff for management within the refuge, however the container is not a permanent structure. Likewise, the buried airplane

debris scattered in two parts of the refuge do not detract from the apparent naturalness of the unit as a whole. The O'ahu Forest NWR meets the naturalness criteria for a WSA.

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#### OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

The O'ahu Forest NWR is currently closed to public access to protect its unique and fragile natural resources, including endangered snails and plants. Nonetheless, the isolated location of the refuge high in the Ko'olau mountains provides an excellent environment for one to experience solitude. Access to the unit by Refuge staff is limited, occurring monthly in general. The challenging terrain and lack of development within O'ahu Forest NWR also makes it an outstanding location for primitive and unconfined recreation, including experiences defined by risk and challenge. The O'ahu Forest NWR meets the criteria for outstanding opportunities for solitude and primitive and unconfined recreation.

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#### SUPPLEMENTAL VALUES

The O'ahu Forest NWR is a habitat for many of O'ahu's rare and endangered plants and snails, such as the *Cyrtandra viridifolia* and *Achatinella decipiens*. The forest represents some of the last native plant communities on the island of O'ahu. It is likely that native Hawaiians collected materials such as feathers, ferns, herbs, and shrubs that occur within the unit. These supplemental values enhance the potential wilderness characteristics of the O'ahu Forest NWR.

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#### INVENTORY FINDINGS

The O'ahu Forest NWR meets the minimum criteria for wilderness.

#### PEARL HARBOR NWR

A wilderness review for Pearl Harbor NWR was conducted in August 2010 in conjunction with the Refuge's draft CCP. Visit the [James Campbell and Pearl Harbor NWRs planning website](#) to download the draft CCP and view the Pearl Harbor NWR wilderness review.

#### JAMES CAMPBELL NATIONAL WILDLIFE REFUGE

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#### INVENTORY UNITS

The James Campbell National Wildlife Refuge was evaluated as one unit to determine whether it meets the minimum criteria for wilderness. It will be referred to as the James Campbell NWR.

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#### SIZE

At 1,100 acres, the James Campbell NWR does not meet the minimum size criteria for a WSA. It is not of sufficient size to make practicable its preservation and use in an unimpaired condition and not of a size suitable for wilderness management.

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## NATURALNESS

The following factors were primary considerations in evaluating the naturalness of the Refuge:

- Permanent and temporary structures;
- Fencing, weather station;
- Ditches, dikes, impoundments;
- Water control structures, wells, pumps; and
- Gates, parking lots, and roadways.

The Refuge units are all highly modified land parcels, containing earthen dikes, ditches, a perimeter roadway, water control structures, buildings, and water pumping stations. The unit does not meet the naturalness criteria.

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## OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

The inventory unit does not offer opportunities for solitude or primitive and unconfined recreation. Daily management activities occur on these inventory units. These activities include road maintenance, mowing and disking of fields, and manipulation of water control structures. Recreational and educational activities are only conducted in group settings, and only allowed as staff-guided activities. The unit does not meet the minimum criteria for solitude or recreation.

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## SUPPLEMENTAL VALUES

James Campbell NWR provides an important habitat for endangered Hawaiian waterbirds and migratory shorebirds. The unit supports a number of endangered and native plant species. The endangered Hawaiian monk seal and threatened green sea turtle are marine wildlife resources within the unit.

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## INVENTORY FINDINGS

The James Campbell NWR does not meet the minimum criteria for a WSA.

## MAUI NATIONAL WILDLIFE REFUGE COMPLEX

### INVENTORY UNITS

Three inventory units were identified in order to evaluate whether the lands and waters of Keālia Pond NWR, Kakahai'a NWR, and the proposed Molokini Unit meet the minimum criteria for wilderness. These inventory units are identified as Keālia Pond NWR, Kakahai'a NWR, and Molokini Unit.

### SIZE

Keālia Pond NWR is a highly modified 691-acre parcel of land located on the island of Maui. Kakahai'a NWR is also a highly modified 44.6-acre parcel of land located on the island of Moloka'i. Neither of these inventory units meets the minimum size criteria for a WSA. The Molokini Unit, a roadless islet (18 acres proposed as an overlay refuge), meets the minimum size criteria for a WSA.

### NATURALNESS

The following factors were primary considerations in evaluating the naturalness of the inventory units:

#### Keālia Pond NWR:

- Administrative and storage containers, greenhouse;
- Well pumps, earthen dikes, exposed water lines, water control structures;
- Gates, parking lots, and roadways.

#### Kakahai'a NWR

- Storage container, shed, refuge boundary sign;
- Pumps, earthen dikes, water control structures;
- Fences, gates, parking lots, and roadways.

#### Molokini Unit

- Navigation aid beacon.

Keālia Pond NWR is bounded and bisected by State-owned and refuge-owned roadways maintained for travel by passenger vehicles. This inventory unit contains numerous earthen dikes, ditches, roadways, buildings, and water control structures. Kakahai'a NWR is also bounded and bisected by State-owned and refuge-owned roadways maintained for travel by passenger vehicles. This inventory unit also contains earthen dikes, ditches, a perimeter roadway, water control structures, and storage buildings. Public access to the Molokini Unit has been limited since the early 1900s due to the sensitivity of burrowing seabird nest sites. Therefore, seabird habitat is intact and nesting birds have been successful. Nonetheless, the navigation aid beacon, an active and permanent U.S. Aids to Navigation System erected from a cement foundation on top of the islet has a strong visual presence on the islet. The Molokini Unit does not meet the minimum naturalness criteria for a WSA.

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## OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

Neither the Keālia Pond NWR nor Kakahai‘a NWR offers opportunities for solitude or primitive and unconfined recreation. Daily management activities occur on both refuges. These activities include road maintenance, mowing and disking of fields, and manipulation of water control structures. Recreational and educational activities are only conducted in group settings and only allowed as staff-guided activities. The Keālia Pond and Kakahai‘a NWRs do not meet the minimum criteria for solitude or primitive and unconfined recreation for a WSA.

Although the Molokini Unit is free from human habitation, the marine environment surrounding the islet, managed by the Hawai‘i Department of Land and Natural Resources as the Molokini Shoal Marine Life Conservation District, is one of the most popular dive and snorkeling sites in the Hawaiian Islands. The constant presence of people and marine vessels around the inventory unit therefore does not allow for an individual to experience solitude within the overlay refuge. The Molokini Unit is and will remain closed to public access to protect the fragile nests of burrowing seabirds. However, given the lack of development on the island, opportunities for primitive and unconfined recreation are theoretically possible. The Molokini Unit does not meet the minimum criteria for solitude for a WSA, however it does meet the minimum criteria for primitive and unconfined recreation.

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## SUPPLEMENTAL VALUES

Based upon the findings of the required components for a WSA, supplemental values were not evaluated.

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## INVENTORY FINDINGS

Keālia Pond NWR, Kakahai‘a NWR, and the Molokini Unit do not meet the minimum criteria for a WSA.

## BIG ISLAND NATIONAL WILDLIFE REFUGE COMPLEX

Wilderness reviews for the Big Island NWRC were completed with the Refuge’s CCP in March 2011. Visit <http://www.fws.gov/hakalauforest/planning.html> to download and view the wilderness review and CCP.