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**CHAPTER 4:**  
**OTHER NEPA ANALYSES**



# CHAPTER 4

## OTHER NEPA ANALYSES

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### 4.1 INTRODUCTION

In addition to the analyses discussed in Chapter 3, this chapter discusses additional environmental analyses, including:

- Cumulative effects;
- Significant unavoidable negative effects;
- The relationship between short-term uses and long-term productivity; and
- Any irreversible or irretrievable commitment of resources.

Issues related to environmental justice and the protection of children are addressed in section 2.4.4 of this document.

### 4.2 CUMULATIVE EFFECTS ANALYSIS

A cumulative effect is an “impact on the environment which results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions” (40 CFR Section 1508.7; NOAA 1999). Cumulative effects can result from individually minor but collectively significant actions taking place over time (40 CFR Section 1508.7).

The CEQ’s guidance for considering cumulative effects states that NEPA documents “should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant” (CEQ 1997). Cumulative projects considered below in Section 4.2.2 are similar to the Proposed Action, large enough to have far-reaching effects, or are in proximity to the Proposed Action with similar types of effects.

#### **4.2.1 Cumulative Effects Evaluation Methodology**

The CEQ's cumulative effects guidance sets out several different methods to determine the significance of cumulative effects, such as checklists, modeling, forecasting, and economic effect assessment, where changes in employment, income, and population are evaluated (CEQ 1997). Very little definitive data are available at this time for determining cumulative effects of potential future projects (see Table 4-1). As a result, this EA looks primarily at resource trends and the expected effects the cumulative projects would have based on the individual project purpose; for example, a project that is expected to bring additional visitors to the Monument might be expected to result in minor disturbances to terrestrial species. In general, past, present, and future foreseeable projects are assessed by resource area.

Cumulative effects may arise from single or multiple actions and may result in additive or interactive effects. Interactive effects may be countervailing, where the negative cumulative effect is less than the sum of the individual effects, or synergistic, where the net negative cumulative effect is greater than the sum of the individual effects (CEQ 1997). Where applicable, the resource sections below include a discussion of whether project effects will accelerate any ongoing trends of resource degradation. The ROI for cumulative effects is often larger than the ROI for direct and indirect effects. The cumulative effect ROI is defined for each specific resource.

#### **4.2.2 Past, Present, and Reasonably Foreseeable Future Projects**

Cumulative effects include the analysis of the following:

- Present effects of past projects, which are represented by the conditions described in Chapter 2;
- Effects of the Proposed Action, which are analyzed in Chapter 3; and
- Potential effects from reasonably foreseeable future projects, which are listed in Table 4-1.

The analysis of cumulative effects considers the present effects of past actions to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of, the Proposed Action, and future projects would collectively result in a significant effect on the environment.

The project information provided in Table 4-1 was compiled from a number of sources, including NOAA, FWS, DLNR, USCG, the Navy, and the University of Hawai'i. The initial list of identified projects was reviewed and revised to include only those with some potential to contribute to cumulative effects.

#### **Filling at Whale-Skate Island**

Whale-Skate Island has been shrinking over the last decade and is now an ephemeral island. NOAA is evaluating a filling project to restore Hawaiian monk seal haul-out areas.

## Establish Regular Visitation at Midway Atoll

FWS was unable to offer a visitor program from early 2002 until early this year. FWS goal is to maintain Midway as the only remote island National Wildlife Refuge open to public visitation, primarily for wildlife and ecotourism tours. An Interim Visitor Services Plan, with a final EA, was approved in May 2007 and implemented in January 2008. A draft plan for a long-term visitor program based on this is included in the Monument Management Plan and analyzed in this document. Both the interim and proposed visitor plans include on-going monitoring and evaluation of effects.

**Table 4-1  
Cumulative Projects**

<b>Project</b>	<b>Related Project Location</b>	<b>Project Sponsor</b>	<b>Project Description</b>
Filling at Whale-Skate Island	French Frigate Shoals	NOAA Protected Species Division	NOAA is evaluating a filling project to restore Hawaiian monk seal haul-out areas.
Establish regular visitation at Midway	Midway Atoll	FWS	The goal is to re-establish public visitation at Midway on a regular basis.
New water treatment system	Midway Atoll, Sand Island	FWS	Upgrades to treatment system to accommodate future demands.
New wastewater treatment system	Midway Atoll	FWS	Upgrades to treatment system to accommodate future demands.
Airport runway resurfacing and restriping	Midway Atoll	FWS	Upgrade runway to meet FAA Part 139 standards.
Develop Biodiesel or Appropriate Alternative Fuel Capacity	Midway Atoll	FWS	To advance sustainable use at Midway Atoll.
Design and Construct a Low Impact Shelter	Midway Atoll	FWS	To develop housing with low impact on natural resources.
Replace Bravo Barracks	Midway Atoll	FWS	To provide safe housing for residents and transients working on future projects.
Complete Phase I Rehabilitation of the Commissary building and Midway Mall	Midway Atoll	FWS	To provide needed office, classroom, storage, and basic laboratory space.
Termite treatment on all wooden/historic structures	Midway Atoll	FWS	To extend the life of existing structures for future uses and to protect historic resources.
Redevelop Existing Boathouse into New Boathouse, Dive Center, and Water-based Storage Facilities	Midway Atoll	FWS	Convert existing structure to a multipurpose boathouse, dive center, and storage facility.
Construct New Finger Piers along North Wall of Inner Harbor	Midway Atoll	FWS	Construct piers for fueling, loading, and short-term in-water storage of vessels.
Design and Construct Marine Laboratory	Midway Atoll	FWS	To meet research and educational needs of future users.

<b>Project</b>	<b>Related Project Location</b>	<b>Project Sponsor</b>	<b>Project Description</b>
Complete Full Rehabilitation of Midway Mall	Midway Atoll	FWS	To provide office space, visitor services, and classrooms.
Rehabilitate Officers' Row Housing	Midway Atoll	FWS	To provide housing for projected increased Monument personnel.
Remodel or Replace Clipper House	Midway Atoll	FWS	To provide expanded food service needs.
Rehabilitate Seaplane Hangar	Midway Atoll	FWS	Work would be primarily to restore this historic structure.
Replace Charlie Barracks	Midway Atoll	FWS	Provide safe housing for visitors and transient personnel
Repair Inner Harbor Sea Wall	Midway Atoll	FWS	To protect the harbor repair of this seawall is needed.

### **New Wastewater Treatment System, Midway Atoll**

The wastewater treatment system at Midway Atoll includes 20,280 feet (6,181.3 meters) of underground line and lift stations, and a septic and leach field system that was added in 1997. FWS is rehabilitating and replacing the existing wastewater collection and treatment system as required to adequately service the buildings. Work will include constructing a new wastewater treatment system, including septic tanks and drain fields, eliminating rainfall entry into the system, and replacing distribution lines as required. Any major site work would take place August through October to minimize wildlife effects.

### **Airport Runway Resurfacing and Restriping, Midway Atoll**

The Midway Island runway is 7,904 feet (2,409 meters) by 200 feet (61 meters), with an asphalt surface. It is subject to the following weight limitations: 195,000 lbs for single wheel aircraft, 260,000 lbs for double wheel aircraft, and 390,000 lbs for double tandem aircraft. In the past, an average of 226 aircraft landed at Midway every year. This project is not yet funded in its entirety. Proposed construction will be beyond 2008.

### **Develop Biodiesel or Appropriate Alternative Fuel Capacity ad Midway Atoll**

In an effort to advance the use of sustainable technologies at Midway, small boats, vehicles, and heavy equipment will be evaluated and where feasible, transitioned to the use of biodiesel. Ideally, this fuel would be stored on the existing concrete pad along the north wall of the inner harbor near the location where new finger piers will be constructed. Alternatively tanks would be located near the newly constructed fuel farm on the southwest corner of the inner harbor.

### **Design and Construct a Low Impact Shelter**

Construct low impact shelter for short term housing in the housing zone. The housing will be constructed as a sustainable design pilot project intended to showcase the synergistic potential of innovative design on the island. The design will elevate the building off the ground, providing for human habitation while increasing the total amount of available wildlife habitat, and providing environmental security from tsunamis and storm surges. This structure will

incorporate Pacific Island regional design principles to consider local wind and sunlight patterns, will aim to be nonpolluting and will incorporate recycled materials. The use of solar power, composting toilets, and, if needed, a small rain catchment system will be explored in an effort to sustain the building off the power grid and minimize wildlife impacts.

### **Replace Bravo Barracks**

Demolition costs for existing building must be included in construction cost. Bravo Barracks replacement is essential in order to provide safe housing for permanent island residents and transients working on future maintenance/construction projects.

### **Complete Phase I Rehabilitation of the Commissary building and Midway Mall**

Collectively the commissary building and the Midway Mall present ideal central locations for Co-Trustee and partner office, classroom, storage, and basic laboratory space. Phase I rehabilitation of the commissary will include cleaning and maintenance, construction of office and classroom space, and a feasibility study of how best to incorporate solar power and other sustainable design principles. The Midway Mall will require more substantial design and a preservation plan for renovation to provide basic office and storage space along with visitor information.

### **Termite treatment on all wooden/historic structures**

By treating all wooden/historic structures immediately we buy ourselves 5-10 more years to find funding for ultimate rehabilitation/restoration. Without treatment these structures either need to be rehabilitated immediately or abandoned forever.

### **Redevelop Existing Boathouse into New Boathouse, Dive Center, and Water-based Storage Facilities**

Redevelop the existing boathouse at Midway into a multipurpose boathouse, dive center, and storage facility to support agency operations in the northwestern end of the Monument. The facility will have maintenance bays and equipment for servicing small boats; a dive locker including a compressor, recompression chamber; and appropriate storage and work areas. The dive center may also support the visitor program. The building will be re-sited or reconstructed and potentially raised to address concerns of flooding on the seaplane pad.

### **Construct New Finger Piers along North Wall of Inner Harbor**

To meet small boat needs, within 5 years construct three finger piers along the north wall of the inner harbor across from the existing concrete pad. These piers may be used for fueling, loading, and short term in-water storage of vessels. These vessels will be used to support programs at Midway and neighboring atolls in the future.

### **Design and Construct Marine Laboratory**

A variety of needs will be met by a marine laboratory at Midway. An evaluation and planning effort will help determine if the research and educational needs of potential users will be best met by developing several small facilities over time, or by a modular design that allow new requirements to be filled as they arise. Initially the lab would provide basic amenities to augment research and education capacity including field schools, seasonal research, and long-term monitoring. A Hawaiian monk seal captive care facility, wet/dry lab infrastructure, quarantine standards, and possibly freezer space will be included in the plan. Several locations are well suited for a small laboratory including the old commissary building adjacent to the Midway Mall as well as several sites on the seaplane apron. The commissary building may be ideal for a first phase location, but would have to be reevaluated in order to accommodate a captive care facility.

### **Complete Full Rehabilitation of Midway Mall**

Midway Mall would be rehabilitated as the “Midway Atoll Visitor Center” and would be used as office space for FWS, NOAA, State of Hawai‘i and other potential partner personnel; as well as a hub for visitor services, classrooms, and education. Phase I rehabilitation would allow for agency offices and be completed within 3 years.

### **Rehabilitate Officers’ Row Housing**

The 10 historic Officers’ row houses serve as examples of historic Albert Kahn architecture and will be restored. This increased housing capacity will accommodate increased agency and partner personnel

### **Remodel or Replace Clipper House**

The Clipper House presently serves as the primary food service facility for Midway. Overall food services will need to be expanded to accommodate future population increases and enlargement of the Clipper House, reuse of older existing food service facilities, or construction of a new dining facility will be evaluated.

### **Rehabilitate Seaplane Hangar**

Due to its size (large enough to hold such things as heavy equipment, boats, and workshops), its location (short distance from inner harbor and boat ramp) and its historic significance (designed by Albert Kahn, still contains scars from the Battle of Midway), this building needs to be utilized and preserved. Rehabilitation work will be guided by a detailed preservation plan.

### **Replace Charlie Barracks**

Charlie Barracks replacement is essential in order to provide safe housing for island visitors and transient personnel. Demolition costs for the existing building must be included in the construction cost. This replacement is expected to take place within 10 years.

**Repair Inner Harbor Sea Wall**

The harbor is critical to operations at Midway. Any future expansion of docking/pier facilities in the southwest corner of the harbor must be preceded by the repair of the existing sea wall.

**4.2.3 Cumulative Effects**

**Summary of Cumulative Effects**

The contributions of the No Action and Proposed Action to cumulative effects on various resource areas are summarized in Table 4-2. It is anticipated that the cumulative projects would have overall beneficial cumulative effect for all resource areas with the exception of cultural and historic resources and Environmental Justice, where the project will have no effects.

**Table 4-2  
Summary of Potential Contribution of the No Action and  
Proposed Action Alternatives to Cumulative Effects**

Resource Area	Effects
Natural Resources	Beneficial
Cultural and Historic Resources	None
Socioeconomics	Beneficial
Other	Beneficial
Environmental Justice	None

**Natural Resources**

For the evaluation of cumulative effects relative to natural resources, the ROI is the same as that described in section 2.2. The cumulative projects described above would not have an effect beyond the Monument boundary.

Cumulative effects for natural resources use are assessed based on the past trends described in section 3.2. These trends are important because they are used as the context for determining whether the project alternatives would contribute to negative trends occurring in the ROI. The effects of the project alternatives are then added to the past, present, and reasonably foreseeable future project effects to determine if the incremental effects of all the projects would add to the historical or existing trends in land use and recreation.

The impacts of the Proposed Action on natural resources were analyzed in Section 3.2. While some activities would have a minor negative effect on natural resources, the effects are inherently of short duration and are limited to the site where activities occur. Although it is expected that plan implementation will result in overall beneficial effects to the human environment, these beneficial effects do not represent a significant impact. This is because the magnitude of benefits expected to result from plan implementation will be incrementally modest within in the context of the essentially uninhabited pristine lands and waters of the Monument. Beneficial effects to natural resources by the cumulative projects are anticipated under both the No Action and Proposed Action alternatives. The infrastructure projects, which will be built on existing disturbed area, will improve waste treatment, communications, water treatment,

housing, and will result in better management of fuels and more efficient power generation. These projects will reduce potential pollution from wastewater discharges and fuel spills.

### **Cultural and Historic Resources**

For cumulative effects on historic, cultural, and archeological resources including Midway's historic context, the ROI would be the same as described in section 2.3, which includes all the islands and surrounding waters of the Monument. Hawai'i's rich history produced a large collection of historic properties on several of the islands. Since Western contact, commercial and military operations and natural forces have destroyed or damaged many cultural and historic resource sites and have caused negative cumulative effects. Today more is known about historic and cultural resources, their importance, and how to minimize effects on them. No other projects were identified in the foreseeable future that would result in cumulative effects to cultural and historical resources under the No Action or Proposed Action alternatives.

### **Socioeconomic Resources**

#### ***Human Uses and Activities***

For cumulative effects on human uses and activities, the ROI would be the same as described in section 2.4.1, which includes all the islands and surrounding waters of the Monument. Historic events have resulted in various levels and types of human use and activity. The height of human activity likely occurred in the 1940s during World War II, when military construction and use was at its highest. Over the past 65 years, the level of human use has decreased, with the military pulling out of Midway Atoll. Human use is now limited to Department of Defense training, testing, and missile defense activities, managers, contractors, researchers, and visitors of the Monument. Controlling human use will have a beneficial cumulative effect.

Under the No Action alternative, the cumulative effects to human use and activities would be beneficial. Activities may include SCUBA diving, snorkeling, bird watching, ecotours, and cruise ship visits, as safe mooring becomes available.

#### ***Human Health, Safety, and Hazardous Materials***

The ROI for the cumulative effects on hazardous materials and conditions is the same as described in section 2.4.2. Past activities and actions have caused spills of hazardous materials and conditions that threaten human health and safety. Hazardous conditions have included spills of oil and fuels from commercial and military activities, and hazardous conditions on commercial vessels are compounded by the remote location of the Northwestern Hawaiian Islands, making rescue and response operations difficult. The cumulative effects of past activities on human health and safety and hazardous materials are considered significant. However, present and future cumulative projects would improve conditions, particularly with the improvement of the infrastructure on Midway Atoll NWR. For example, improvement to the lodgings would improve living conditions, and improvements to the airfield would improve aircraft safety.

#### ***Land Use***

The ROI for the cumulative effects on land use is the same as described in section 2.4.3. Past activities have caused a major shift in land use from undisturbed native habitat to military uses.

This change is most notable at Midway Atoll, French Frigate Shoals, and Kure Atoll. The cumulative effects of past activities on land use are considered significant. However, present and future cumulative projects would take place on the existing footprint of buildings or facilities presently in place, with no changes in land use. The Proposed Action would result in a beneficial cumulative change as some developed area would be restored to native habitat.

### ***Economics***

For cumulative effects on socioeconomics, the ROI would be the same as described in section 2.4.4, which would include all the islands and surrounding waters of the Monument. Under the No Action and Proposed Action alternatives, the cumulative effects to socioeconomics would be beneficial, with the re-establishment of public visitation and construction of the infrastructure facilities at Midway Atoll. The increase in visitation could provide very minor increased income to cruise lines, air charter services, the service industry supporting these activities on the main Hawaiian Islands, and the agencies responsible for management activities.

### **Other Resources**

#### ***Water Quality***

For cumulative effects on marine water quality, the ROI would be the same as described in section 2.5.1, which includes all the islands and surrounding waters of the Monument. Historic activities and actions have resulted in discharges to the marine waters from wartime activities, including oils and fuels from downed aircraft and sunken vessels, to spills from fishing boats and other vessels that have sunk or run aground throughout the island chain. However, because of the long time span between events, in some cases decades, and the frequent exchange of waters surrounding the location of discharges, these past activities have had a minor negative cumulative effect.

Existing Federal laws and Monument regulations already provide safeguards for protecting marine water quality. The Monument Management Plan, which fulfills Comprehensive conservation planning requirements for the Midway Atoll NWR by FWS, and the upgrade of sanitation systems at Midway Atoll will allow for further control of vessel traffic and discharges. The net result is that there would be a beneficial cumulative effect on marine water quality.

#### ***Traffic and Communication Infrastructure***

For cumulative effects on marine traffic, the ROI would be the same as described in section 2.5.2, which includes all the islands and surrounding waters of the Monument. Historic activities and actions have had little effect on marine traffic. Commercial traffic has historically avoided the Northwestern Hawaiian Islands because of grounding hazards. Some ships do transit the chain between Pearl and Hermes Atoll and Laysan Island, but most skirt the chain to the north. Past and present projects have had no cumulative effect on marine traffic. The future cumulative projects listed in Table 3-1 would not affect marine traffic. There would be a beneficial effect on communications with the construction of the communications network proposed by FWS at Midway. This would provide a higher level of services in the area than presently exists. Neither these projects nor the Proposed Action would restrict marine commercial vessel transit; therefore, they would have no cumulative effects.

### ***Utilities***

The ROI for the cumulative effects on utilities is the same as described in section 2.5.3. Past activities included construction of a power plant, water treatment facility, sewage treatment, and fuel storage tanks as a result of military use, and more recently, FWS operations. These facilities can be found on Sand Island at Midway Atoll and Tern Island, FFS. There were no cumulative effects of past activities on utilities, as adequate capacity was constructed based on demand. However, some of the present and future cumulative projects would place a demand on the utilities that might exceed capacity. The balance of the proposed project is designed to upgrade sewage treatment to meet future demands. Therefore, the present and proposed projects would have no cumulative effect on utilities.

### **Environmental Justice**

For cumulative effects on environmental justice, the ROI would be the same as described in section 2.4.4, which includes all the islands and surrounding waters of the Monument. The cumulative projects listed in Table 3-2 would have no effect on environmental justice. No disproportionate negative environmental or health effects from the cumulative projects would occur on minority or low-income populations.

#### **4.3 SIGNIFICANT UNAVOIDABLE NEGATIVE EFFECTS**

No significant unavoidable negative effects have been identified.

#### **4.4 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY**

The short-term uses of the environment relating to the No Action and Proposed Action alternatives would improve the health and quality of the environment by managing vessel traffic through a permit system, requiring VMS on all vessels, and requiring hull inspections, thereby reducing the potential for groundings and hazardous spills, reducing the potential for the spread of invasive species, and reducing human activities and disturbance of special status species. In addition, control of terrestrial invasive species, restoration of native habitat and species populations, upgrades to infrastructure, and establishment of a permit process to control access and activities would reduce the potential of the spread of alien species, reduce stressors to special status species, reduce potential hazardous events, and improve health and safety for researchers, management staff, and visitors.

The long-term productivity related to the No Action and Proposed Action alternatives is based on the Presidential Proclamation 8031 establishing the Monument; prohibitions and regulated activities codified in Monument regulations; the December 2006 MOA between Co-Trustees that establishes the vision, mission, and guiding principles for the Monument; and the Monument Management Plan that defines strategies and activities to achieve long-term productivity of the resources.

#### **4.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

The No Action and Proposed Action alternatives would require minor commitments of both renewable and nonrenewable energy and material resources for the management, public use, and research activities associated with the Monument. The Proposed Action alternative in the Monument Management Plan would also commit substantial resources, staff time, and funds for conservation and management activities. Nonrenewable resources that would be used during management and research activities include fuel, water, power, and other resources necessary to maintain and operate the equipment and facilities at the field stations, field camps, vessels, and offices of the Monument.

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