# National Facilities and Exhibits Master Plan



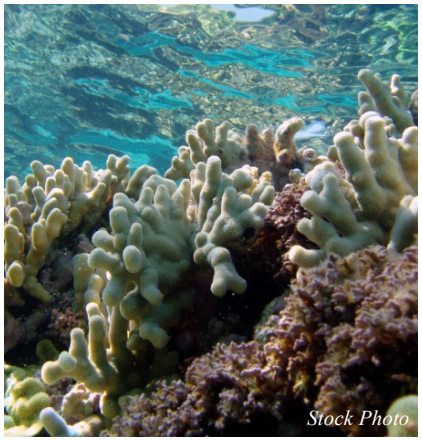
**presented to NOAA's OFFICE OF NATIONAL MARINE SANCTUARIES**

**Final**
**August 2010**


**Facility Programming and Consulting**

**TranSystems**

**Fraser & Fogle Architects**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# PURPOSE

NOAA's Office of National Marine Sanctuaries (ONMS) has engaged Facility Programming and Consulting and TranSystems to prepare a National Facilities and Exhibits Master Plan.

The master plan serves as a vision and a blueprint for marine sanctuaries' physical development in the future. This report covers a broad range of existing conditions at the sites, including facilities, signs and exhibits. The master plan is meant to be a strategic framework for effective facilities and exhibits in support of the ONMS mission.



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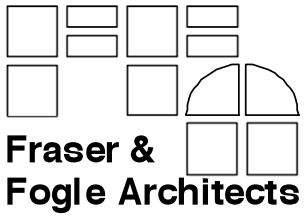


*The contents of this document are not for regulatory approval, permitting or construction.*

*Final published 2010.*

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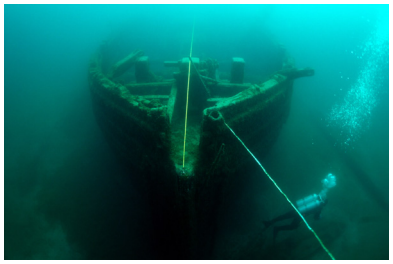



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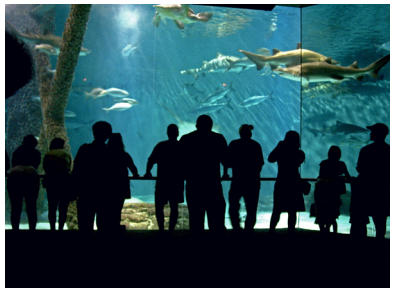

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In 1972 the nation made a commitment to preserving its marine treasures by establishing the Office of National Marine Sanctuaries. Representing a wide variety of ocean environments, our national marine sanctuaries embrace part of our collective riches as a nation.

# INTRODUCTION

The master plan is meant to give a broad overview of ONMS' programs and establish a basis for facilities and exhibits planning over the next five years. The planning is meant to assist the ONMS in expanding facilities and exhibits to better meet its mission. Facilities and other physical assets directly affect the ability of the program to protect marine resources and enhance public awareness of these resources and play a vital role in supporting expansion in coming years. Facilities and assets are a primary vehicle to support the sanctuaries as a successful national program that preserves ocean habitats and connects the public to marine environments and the importance of protecting them.

## Background of the ONMS

The National Oceanic and Atmospheric Administration (NOAA) manages marine sanctuaries through authority of the National Marine Sanctuaries Act (NMSA), passed in 1972. Since the designation of the first national marine sanctuary site in 1975, ONMS has experienced steady growth, currently encompassing 13 national marine sanctuaries plus one marine national monument nationwide. Most of the sanctuary sites have been dedicated during a 25-year period in both near-shore and offshore areas. With the last designation occurring in 2000, NOAA designated the Thunder Bay National Marine Sanctuary in the Great Lakes as the nation's 13th national marine sanctuary. 2006 brought the designation of the Papahānaumokuākea Marine National Monument, which provides protection to approximately 140,000 square miles, making it the largest single conservation area in the history of the country.

The ONMS now serves as the trustee for a system of protected areas encompassing more than 158,000 square miles of marine and Great Lakes waters from Washington State to the Florida Keys and from Lake Huron to American Samoa. Collectively, the 14 sites provide protection for sensitive marine ecosystems, such as coral reefs and kelp forests, habitat used by important or vulnerable marine species, and historically significant shipwrecks and artifacts.

## ONMS Organization

The National Marine Sanctuary System (NMSS) is divided into four regions, the Pacific Islands Region, the South East Region, the North East Region, and the West Coast Region. The organization of the system into regions was developed to help the ONMS better manage its resources.


*Locations of current NMSS sites*

## ONMS Vision

The vision of the Office of National Marine Sanctuaries is to inspire people through education, research, public outreach, ocean exploration, and marine management to value marine sanctuaries as treasured places today and for generations ahead.

## ONMS Mission

It is the mission of the National Marine Sanctuary System to protect, conserve, and enhance the living and nonliving resources of the system for this and future generations.

# Master Plan Purpose and Goals

The ONMS National Facilities and Exhibits Master Planning effort is meant to provide a strategy and future direction for facilities, exhibits, and infrastructure to sustain the federal mandates and program missions. The document is meant to provide a snapshot of current facility and exhibit needs and the role these physical assets play in supporting the system to meet the mission and goals of the ONMS. This master plan is not a budget document and is intended for program planning purposes. Execution of all projects will be contingent on available resources.

Additionally, the purpose of this master plan is to update the previous master plan completed in 2001 and updated in 2005. That original master plan established for the first time the direction for ONMS facilities planning, and this document is a continuation of that effort. While sanctuary management plans and annual operating plans spell out more specific and detailed needs at sites and throughout the overall system, the national plan is meant to help identify how these assets support the mission of the ONMS now and in the future.

This report is meant to be a "living document" that is easily updateable as the system grows and matures; to both validate present requirements and guide the planning and sequencing of projects in the future.

## How to Use This Document

The master plan documents the status of current facilities and exhibits across the system and the direction that the system is heading with its facilities and exhibits. Several thematic areas, along with how physical assets support them, are considered throughout the document, including:

- **Facilities and Supporting Infrastructure**
  - Condition: Facility and Asset Management
  - Capacity
  - Sustainability
- **Exhibits, Signs, and Kiosks**
- **Vessels and Support**
- **Science and Research**
- **Outreach and Education**
- **Emergency Response and Enforcement**

While the ONMS has proven to be successful in achieving its mission with existing facilities, a path is needed to determine future facility and exhibit requirements, gaps in current funding streams, and longer-range planning to support a growing federal program that manages more than 158,000 square miles of ocean.

The document should provide a framework and context for both the current requirements and projected paths for the future, which will assist in the distribution of funds allocated to the ONMS. It establishes standards and best practices for the acquisition, maintenance, and utilization of facilities and other assets used to support activities of the program.

The master plan also demonstrates that ONMS facilities and exhibits are developed through a strategic planning process, thus improving opportunities to achieve the mission and goals in an open forum. The master plan has been compiled using input from individual sites, regional staff, headquarters staff, and subject matter experts. The document is not meant to prioritize any of the facility and exhibit requirements and presents conditions and practical realities known at the time of the document.

# Acronyms

Many terms used in this document have been abbreviated. Following is a list of the common abbreviated terms used throughout.

**COBIT**
Control Objectives for Information and related Technology

**CO-OPS**
Center for Operational Oceanographic Products and Services

**DOC** Department of Commerce
**FPC** Facility Programming and Consulting
**FY** Fiscal Year
**GBCI** Green Building Certification Institute
**GLMHC** Great Lakes Maritime Heritage Center
**GSA** General Services Administration
**GSF** Gross Square Feet
**HAZMAT** Hazardous Materials
**HVAC** Heating, Ventilation, and Air Conditioning
**ITIL** Information Technology Infrastructure Library
**LEED**
Leadership in Energy and Environmental Design
**MOA** Memorandum of Agreement
**MOC** Marine Operations Center
**M&R** Maintenance and Repair
**NM** Nautical Mile
**NMFS** National Marine Fisheries Service
**NMS** National Marine Sanctuary
**NMSA** National Marine Sanctuaries Act
**NMSF** National Marine Sanctuary Foundation
**NMSS** National Marine Sanctuary System
**NOAA**
National Oceanic and Atmospheric Administration
**NPS** National Park Service
**O&M** Operations and Maintenance
**OCTOS**
Outreach Center for Teaching Ocean Sciences
**ONMS** Office of National Marine Sanctuaries
**ORF** Operations, Research, and Facilities
**OSEB** Ocean Science Education Building
**PAC** Planning, Acquisition, and Construction
**PIR** Pacific Islands Region
**PRC** Pacific Regional Center
**R/V** Research Vessel
**ROV** Remotely Operated Vehicle
**SF** Square Feet
**UCSB** University of California, Santa Barbara
**SME** Subject Matter Expert
**USCG** United States Coast Guard
**USF** Useable Square Feet
**USGBC** U.S. Green Building Council

## Sanctuary Site Abbreviations

| | |
|---|---|
| **CINMS** | Channel Islands National Marine Sanctuary |
| **CBNMS** | Cordell Bank National Marine Sanctuary |
| **FBNMS** | Fagatele Bay National Marine Sanctuary |
| **FGBNMS** | Flower Garden Banks National Marine Sanctuary |
| **FKNMS** | Florida Keys National Marine Sanctuary |
| **GFNMS** | Gulf of the Farallones National Marine Sanctuary |
| **GRNMS** | Gray's Reef National Marine Sanctuary |
| **HIHWNMS** | Hawaiian Islands Humpback Whale National Marine Sanctuary |
| **MNMS** | *Monitor* National Marine Sanctuary |
| **MBNMS** | Monterey Bay National Marine Sanctuary |
| **OCNMS** | Olympic Coast National Marine Sanctuary |
| **PMNM** | Papahānaumokuākea Marine National Monument |
| **SBNMS** | Stellwagen Bank National Marine Sanctuary |
| **TBNMS** | Thunder Bay National Marine Sanctuary |

# Graphs



# Tables

# Sign Offs and Acknowledgements




## ONMS National Facilities and Exhibits Master Plan 2009

The following people have approved the master plan:

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# Executive Summary

**Executive Summary**

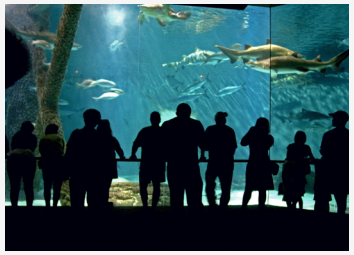
The National Marine Sanctuaries Act (NMSA) is one of the most important pieces of federal legislation for protecting natural and cultural submerged resources in the ocean and Great Lakes. Day-to-day management of national marine sanctuaries has been delegated by the Secretary of Commerce to NOAA's Office of National Marine Sanctuaries (ONMS).

# ONMS Success Stories: What We Are Doing

The ONMS leverages community partner support to achieve its missions of resource protection and education. The examples below demonstrate how the ONMS leverages its investment dollars, develops creative partnerships, and supports.

## Spotlight On: Highlights in Facilities and Exhibits

*ONMS' Crissy Field Campus in the Presidio, San Francisco, CA, has helped revitalize the renovation and efficient use of these federal facilities. Photo: FPC*



*The California Academy of Sciences attracts two million visitors yearly, just one example of the nearly ten million that are reached each year by ONMS' various facilities and exhibits. Photo: ONMS*

### The ONMS optimizes use of underutilized federal space

- A major contribution to the revitalization and reuse of the Presidio in San Francisco is the ONMS renovation of five buildings in Crissy Field to create a visitor center, office space, K-12 education facilities, and the Center for Climate Change, in partnership with the National Park Service.
- NOAA accepted ownership of a dilapidated historic government facility in Kīhei, Maui, HI. ONMS is currently renovating two buildings to create a visitor center and administrative office space.
- NOAA assumed ownership of a portion of the Truman Annex Navy Facility in Key West, FL, and restored one former warehouse with historic and aesthetic qualities into the Florida Keys Eco-Discovery Center, along with the construction of office and maintenance facilities and a boat dock.

### ONMS leverages partnerships to connect to communities and to stimulate local economies

- ONMS has partnered with the University of California, Santa Barbara to design and build the Ocean Science Education Building that will serve as headquarters for the Channel Islands NMS and support K-12 science education.
- ONMS has partnered with the City of Santa Cruz to design and build the Monterey Bay NMS Exploration Center on city-owned property adjacent to the boardwalk and beach in the downtown area.
- Fagatele Bay NMS is working closely with the American Samoa Department of Commerce to renovate the convention center to provide administrative office space, conference space, and build exhibits interpreting regional marine resources.

### ONMS has made greening of their facilities a priority

- The Dr. Nancy Foster Florida Keys Environmental Complex in Key West, FL, is LEED© Silver certified and features a green roof, photovoltaic panels, and visitor center exhibits that showcase these green features.
- The Stellwagen Bank NMS campus in Scituate, MA, has completed major renovation work designed to LEED© standards and installed a geothermal heat exchange system.


*The Great Lakes Maritime Heritage Center in Alpena, MI, is a LEED Gold building that features exhibits that explain building features designed to reduce energy consumption. Photo: ONMS*

## How Our Facilities and Exhibits Support the ONMS Mission

The following are summaries describing the importance of facilities and how they relate to specific ONMS missions:

**Facilities and Infrastructure**: Facilities and physical spaces support the many missions of the ONMS program and give a home to the many programs, exhibits, research, and everyday operations.

**Exhibits, Signs, and Kiosks**: Exhibits and signs are physical assets that display the ONMS message in a variety of locations and methods; they also support the recognition and branding of the ONMS to the public as a federal agency that focuses on preserving the ocean for future generations.

**Vessels and Support**: Vessels and vessel support facilities, such as maintenance shops, pier space, dive lockers, and storage are imperative to a successful boat program, and serve to support many missions of the ONMS, including monitoring, research, enforcement, and outreach.

**Science and Research**: Science and research missions play a vital role in the goals of marine conservation and protection; to effectively manage the resources within the marine sanctuary system, scientists must understand the natural and cultural resources and the threats they face. To do this, the right facilities and spaces are needed, such as wet and dry labs, dive lockers, storage, and bunking facilities for visitors.

**Outreach and Education**: Assets such as exhibits, classrooms and training spaces, learning labs, and signs are the tools used for outreach and education activities and help spread the message of ocean literacy and conservation.

**Resource Protection / Emergency Response and Enforcement**: Laboratories and proper technology can help the ONMS better respond to disasters.

## Planning to Improve Our Facilities

Strategic planning and projecting future facility requirements are the backbone to any credible acquisition process. With proper programming and planning, short- and long-term needs and requirements have the opportunity to be aligned with resources and funding streams. Three levels of facilities planning facilitate this process within ONMS:

1. A **National Master Plan** (this document) and similar ONMS documents establish a global direction for facilities and exhibits.
2. **Regional Master Plans** identify the best way to deliver the ONMS mission within the regional agenda.
3. **Site Master Plans** define exact initiatives and capabilities at each location, and translate them into specific needed projects.

### Spotlight On: ONMS' Community Involvement

The ONMS positions itself very well within local communities. The sanctuary designation process is community driven along with periodic sanctuary management plan reviews, and historically modest budgets have resulted in a greater dependence by the ONMS on community support. The ONMS is seen as a leader in marine stewardship and conservation. In addition to accommodating programmed functions, each facility also serves as an icon for marine conservation within the local community.

ONMS facilities encourage "community-based infrastructure" promoting local economies, creating job opportunities, and emphasizing local business partnerships in areas surrounding national marine sanctuaries.

## Five Year Facility Outlook

Currently, the ONMS occupies approximately 145,200 SF within 27 facilities. An estimated 37,000 square feet of new construction and facility renovations are underway in 2010. The chart gives an outlook for future facility requirements for a dynamic national program. All ONMS facilities act as the lifeline for each sanctuary and support a wide range of functions. Each function fulfills an important programmatic role at each site, and also contributes to the branding of the ONMS and NOAA. Therefore, the ONMS plans new capital project endeavors to be completed every year.

Table 2.1 illustrates facility needs for each National Marine Sanctuary System site or satellite office. The facility requirements often relate to functional or thematic areas previously discussed, such as education and outreach space, research spaces, and resource protection. These facility needs can be accomplished through a variety of alternatives, including expansion of current spaces, new construction, leasing, Memorandum of Agreements (MOA), and partnerships.

*Table 2.1 ONMS Five Year Facility Outlook*

| | | | Facility Function | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Region | State | Site/Location Name | GROWTH OR EXPANSION SPACE | SATELLITE OFFICE | EDUCATION AND OUTREACH | RESOURCE PROTECTION | RESEARCH AND SCIENCE | CONFERENCE OR TRAINING SPACE | VESSEL OPERATIONS | VESSEL STORAGE | TECHNOLOGY UPDATES |
| West Coast | CA | Monterey Bay | ● | | ● | | ● | | ● | ● | |
| | | Coastal Discovery Center - San Simeon | | | | | | | | | |
| | | West Coast Regional Office | ○ | | | | | ○ | | | |
| | | Channel Islands | ● | | ● | | | ● | ○ | ○ | ○ |
| | | State Street Office | | | | | | | | | |
| | | Oxnard Harbor | | | | | | ● | | | |
| | | Gulf of the Farallones | ● | | | ○ | ● | | | | ● |
| | | Half Moon Bay | ○ | | ○ | | | | | | |
| | | Cordell Bank | ● | ○ | | | ◐ | | | | |
| | WA | Olympic Coast | ○ | ○ | | | ○ | | ○ | | |
| Pacific Islands | HI | Hawaiian Islands Humpback Whale (Kīhei) | | | | | ● | | | | |
| | | Hawai'i Kai | ● | | | | | | | | |
| | | Līhu'e, Kaua'i | ○ | | | | | | ◐ | | |
| | | Kona | ○ | | ○ | | | | ○ | | |
| | | Papahānaumokuākea MNM | ○ | | ◐ | | | | | | |
| | | Hawai'i Kai | ● | | | | | | | | |
| | | Hilo | ◐ | | | | | ◐ | | | |
| | American Samoa | Fagatele Bay | ○ | | ○ | | | ○ | | | |
| North East (Great Lakes) | MI | Thunder Bay | ○ | | ○ | | | | | | |
| | MA | Stellwagen Bank | ● | | ◐ | | ● | | ● | | ○ |
| | VA | *Monitor* | | ○ | ○ | ○ | ◐ | ◐ | ◐ | ◐ | |
| South East (Gulf of Mexico) | TX | Flower Garden Banks | | ○ | ○ | | ● | ● | | | |
| | GA | Gray's Reef | | | ◐ | | | | ○ | ○ | |
| | FL | Florida Keys (Lower Keys) | | | | ○ | | | | | |
| | | Florida Keys (Upper Keys) | | | ○ | | | | | | |
| | | Marathon | | ○ | | | | ◐ | | | |

**Key:** ○ *Facility need* ◐ *Facility Need; possible partnership opportunity* ● *Facility need that is already underway*

# Operations and Maintenance Costs

NOAA's Office of National Marine Sanctuaries needs to operate and maintain their facilities properly, including projecting Operations and Maintenance (O&M) expenditures for leased and owned facilities.

**ONMS construction funding for facilities and exhibits comes from PAC, and funding for O&M comes from ORF**

The primary intent of Procurement, Acquisition, and Construction (PAC) appropriated funds is to pay for the expense of capital assets, acquisition or construction including alteration and modification costs. ONMS uses PAC funding to build new capital assets that are used to support its mission. ONMS seeks to leverage its PAC funding to encourage partnerships with other institutions that share common goals and interests and also to stimulate economic growth and connect with local communities.

The appropriation of Operations, Research, and Facilities (ORF) funds is to pay for the expenses of activities authorized by law for NOAA, including programs (e.g., education and outreach, research and monitoring, damage assessment and restoration, enforcement), staffing, contracts, and other acquisitions such as cooperative agreements and grants. ORF funds are also used to cover O&M costs as well as the cost of human capital to operate and maintain facilities. As PAC funds are spent to create new facilities and exhibits, an increased level of ORF funding is needed to cover O&M costs.

**Consistent with Industry Standards, O&M Costs for FY2010 are estimated to be $2.175 million and expected to increase in the future**

The Whitestone Building Maintenance and Repair Cost Reference 2008-2009 for O&M costs [1] indicates that for every 10,000 square feet of leased space or new construction, an annual average allocation of $150,000 should be made to pay for necessary O&M costs. These O&M costs include:

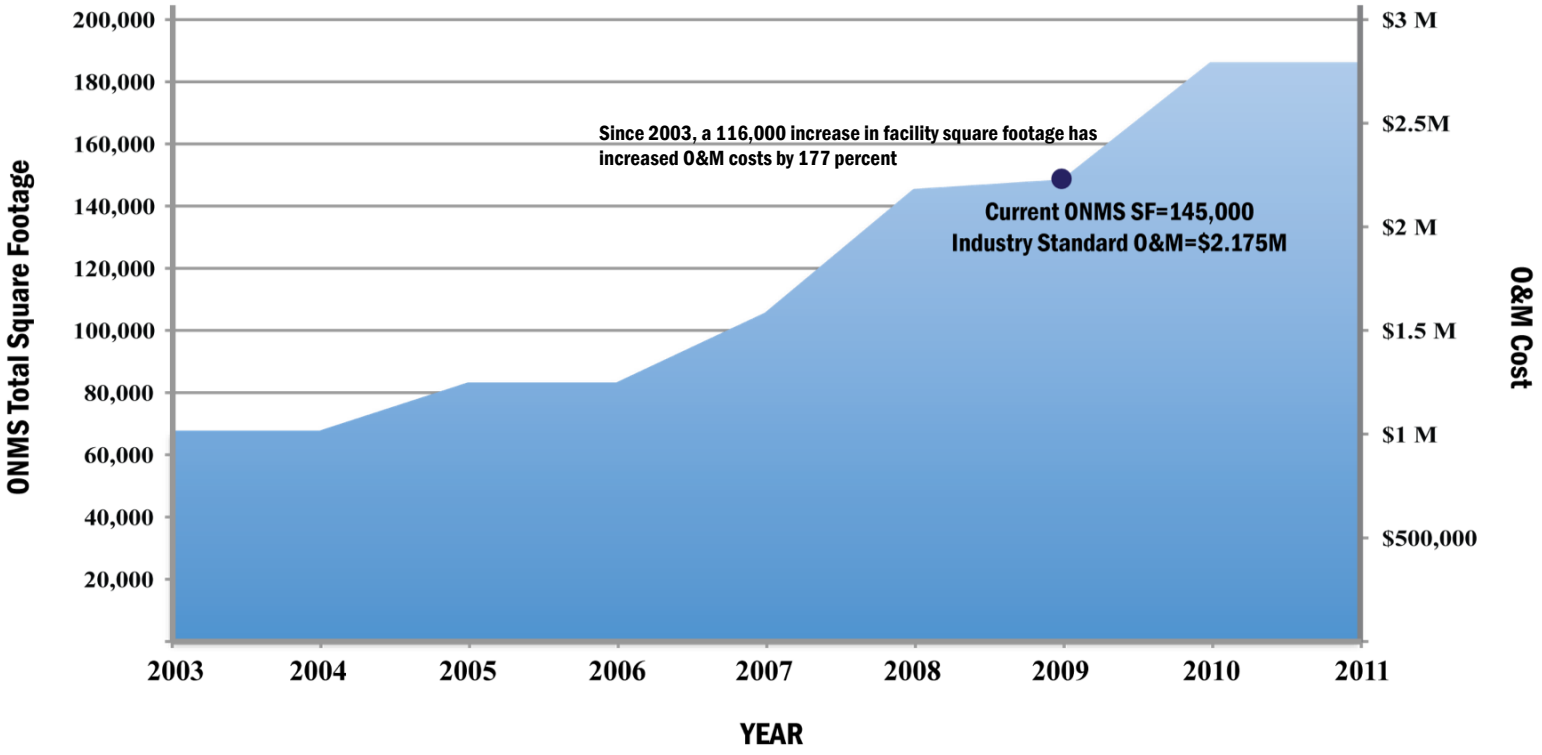
- Custodial service
- Energy
- Grounds
- Maintenance & repair
- Management
- Pest control
- Refuse
- Road clearance
- Security
- Communications
- Water
- Sewer

**What is Facility Operations and Maintenance?**


[1] *ONMS and NOAA, along with other Federal agencies, use the Whitestone Building Maintenance and Repair Cost Reference (as opposed to the GSA or other industry standards) because it is based upon an annual study covering several facility types that better reflects the nature of NOAA's diverse facilities (e.g., laboratories, visitor centers, vessel support, satellite data tracking stations).*

The industry standard does not include the human capital costs associated with managing facilities. O&M costs for ONMS facilities in 2010 are nearly $2.175 million. Since 2003, O&M costs have increased by 177 percent (Figure 1) based on increased square footage and inflation.

**Graph 2.1: The growth in O&M costs**



## ONMS Planned Capital Projects

Total 2010 spending for new and existing ONMS facilities, including what is anticipated for O&M, is approximately $19 million. This cost is projected to grow as the ONMS matures. Every dollar allocated to the ONMS can be used to improve the organization's position and reach the community.

**ONMS Construction Projects Have a Positive Impact on Local Economies**

*Groundbreaking ceremony for the Ocean Science Education Building on the campus of the University of California at Santa Barbara; a partnership project between the ONMS and UCSB's Marine Science Institute that will generate 100 jobs lasting 18 months in Goleta, CA. (Photo: NOAA)*

**ONMS Visitor Centers Encourage Community Involvement**


*The Thunder Bay NMS' Great Lakes Maritime Heritage Center in Alpena, MI, encourages community pride and connectivity, provides jobs, and attracts 70,000 visitors a year, helping to revitalize the local economy. (Photo: ONMS)*

**ONMS Occupies Historic Buildings Which Incur High Renovation and O&M Costs**

*In addition to basic O&M costs, periodic overhauls and repairs are needed on facilities. The restoration work on this historic structure in Kīhei, Maui, will repair long-term structural damage. (Photo: Paul Wong)*

*Interpretive signs placed along the coast educate visitors on the importance of marine conservation and other NOAA messages. Photo: ONMS*


*Partnerships such as that with the Mariner's Museum's USS Monitor Center are an important way to leverage resources to carry out ONMS' education mandate. Photo: ONMS*

*Exhibit rendering of proposed feature in the Santa Cruz Exploration Center. Photo: BIOS*

# ONMS Exhibits, Signs, and Kiosks

NOAA's Office of National Marine Sanctuaries exhibits, signs, and kiosks are physical assets that display marine conservation messages, educate the public, and improve NOAA's public visibility. The master planning effort recognized the importance of interpretation in serving to help protect resources by enhancing awareness of marine conservation and educating the public. Exhibits, signs, and kiosks bring sanctuaries to the public, allowing people to experience our nation's underwater treasures without getting wet.

NOAA collaborates with partners to carry out this important mission.

The ONMS plans for new exhibits, signs, and kiosks in the future, including:

- Development of new exhibits that showcase NOAA's role in the community in Lāhaina, Maui. Plans include indoor exhibits and community use areas.
- ONMS interactive kiosks use innovative technology to serve as a NOAA portal that provides information on sanctuary resources and up-to-the-minute weather and marine forecast information.
  - New interactive kiosks are being installed at various sanctuaries around the system.
- Planning integrated exhibits, sign, and kiosk strategies for Gray's Reef NMS and Stellwagen Bank NMS is underway.
- New ONMS visitor centers are being built in the West Coast Region including the Santa Cruz Exploration Center and the Ocean Science Education Building at the University of California Santa Barbara.
- The ONMS interpretive sign program connects residents and visitors with sanctuary resources in specific communities by placing interpretive signs in strategic locations.


*ONMS uses a combination of interpretive signs, exhibits, kiosks, and interactive media to impart sanctuary messages. Photo: ONMS*

## Exhibit, Sign, and Kiosk Five Year Outlook

This chart references major exhibit, sign, and kiosk elements planned for 2009-2015.

The ONMS exhibit, sign, and kiosk program faces many of the same issues as facilities; while there is no industry standard associated with the operation and maintenance of signs, exhibits, and kiosks, it should be noted that the same operation and maintenance cost consideration that applies to facilities should also be applied to interpretive assets.

*Table 2.2 Exhibit, Sign, and Kiosk Five-Year Outlook*

| Region | State | Site/Location Name | Exhibit Type: Visitor Center | Store Front | Exhibits | Interpretive Signs | Interactive Kiosk | Partnerships |
|---|---|---|---|---|---|---|---|---|
| West Coast | CA | Monterey Bay | | | | | | |
| | | Monterey | | ○ | ○ | ● | ○ | ● |
| | | San Simeon | ● | | ● | ● | | ● |
| | | Santa Cruz | ◐ | | ◐ | ○ | ○ | ● |
| | | Channel Islands | | | | | | |
| | | Santa Barbara | ◐ | | ◐ | ● | ●○ | ● |
| | | Oxnard Harbor | | ● | ◐ | ● | ● | ● |
| | | Gulf of the Farallones | | | | | | |
| | | San Francisco | ● | | ● | ● | ● | ● |
| | | Half Moon Bay | ○ | | | ● | | ● |
| | | Cordell Bank | | | | | | |
| | | Point Reyes | | | ● | ● | ● | ● |
| | | Oakland | | | ◐ | | | ● |
| | WA | Olympic Coast | | | | | | |
| | | Port Angeles | ● | | ● | | | ● |
| | | Seattle | | ○ | ○ | | ○ | ○ |
| Pacific Islands | HI | Hawaiian Islands Humpback Whale | | | | | | |
| | | Oahu | | | ◐ | ● | ●◐ | ● |
| | | Maui | ● | | ●◐ | ●◐ | ● | ● |
| | | Kauai | | ○ | ○ | | | ○ |
| | | Papahānaumokuākea MNM | | | | | | |
| | | Oahu | | | | | | ● |
| | | Hawai'i | | ● | ● | ○ | | ● |
| | American Samoa | Fagatele Bay | ◐ | | ●○ | ● | ○ | ● |
| North East | MI | Thunder Bay | ● | | ●◐ | | ● | ● |
| | MA | Stellwagen Bank | | | | | | |
| | | Scituate | | | | | | ● |
| | | Boston | | | | | | ○ |
| | | Gloucester | | | ● | | | ● |
| | | Provincetown | | ○ | ○ | | | ○ |
| | VA | *Monitor* | | | | | | |
| | | Virginia | | | ● | | ◐ | ● |
| | | North Carolina | | | ◐ | | ◐ | ● |
| South East | TX | Flower Garden Banks | | | | | | |
| | | Galveston | | | ● | | ◐ | ● |
| | | Corpus Christi | | | ● | | ◐ | ● |
| | | Tennessee | | | ● | | | ● |
| | GA | Gray's Reef | | | | | | |
| | | Savannah | | ○ | ○ | ○ | ○ | ○ |
| | | Tybee Island | | | ● | ○ | ○ | ● |
| | | Atlanta | | | ●◐ | | | ● |
| | FL | Florida Keys (Lower Keys) | ● | | ●○ | ◐ | ○ | ● |
| | | Florida Keys (Upper Keys) | | ○ | | ◐ | ○ | ● |

**Key:** ● In Place ◐ Programmed (funded) ○ Planned

### Spotlight on: ONMS Green Initiatives

The Blue Seas, Green Communities initiative encourages all sanctuary advisory council members and employees to practice green habits. Each NMSS site is asked to work with single members or a working group of their council to initiate or enhance a project in their local community that contributes to the greening of the community and to protect sanctuary resources.

To build on past successes, the greening of ONMS's future and current facilities is another important goal of the ONMS. Plans include:

- The MBNMS Santa Cruz Exploration Center aspires for a LEED Silver or higher rating.
- The CINMS OSEB/OCTOS Building in Santa Barbara aspires for a LEED Silver or higher rating.
- The FKNMS Dr. Nancy Foster Florida Keys Environmental Complex plans to add solar panels to reduce energy costs.

## Sustainability in ONMS Facilities

Sustainable building design seeks to reduce negative impacts on the environment and improve the health and comfort of building occupants, thereby improving building performance. The basic objectives of sustainability are to reduce consumption of non-renewable resources, minimize waste, and create healthy, productive environments. The ONMS is committed to incorporating green design principles in all existing facilities and new construction. The ONMS has set standards such as the Leadership in Energy and Environmental Design (LEED®) rating system, Executive Order 13423, and the Energy Policy Act 2005 as general guidelines for the "greening" of facilities, but recognizes that while these standards are an achievable goal, the final level of sustainable design should be determined during site selection and design and should be integrated when possible on a site-by-site basis.

Utilizing a sustainable design philosophy encourages decisions at each phase of the design process that will reduce negative impacts on the environment and the health of the occupants, without compromising the bottom line.

Sustainable design principles include the ability to:

- Optimize site potential;
- Minimize non-renewable energy consumption;
- Use environmentally preferable products;
- Protect and conserve water;
- Enhance indoor environmental quality; and
- Optimize operational and maintenance practices.

Using sustainable building practices throughout the organization can also lead to long-term cost savings. Conversely, like many ONMS facilities, greening has an associated front end cost premium that should be considered when planning future facilities and renovations.

*The Great Lakes Maritime Heritage Center and the Dr. Nancy Foster Florida Keys Environmental Complex, two of ONMS's recent LEED accomplishments. (Source: FPC, Wikimedia)*

The following table suggests ways that the ONMS can implement greening strategies in facilities that can help reduce environmental impact. While these are merely suggestions, there are numerous ways for an organization to incorporate sustainable practices in everyday operations.

*Table 2.3 Strategies for "Greening" Facilities*

**Key**

| | |
|---|---|
| $ | Can be accomplished at a minimal cost to the ONMS |
| $$ | Can be accomplished with a moderate investment by the ONMS |
| $$$ | Would likely require a significant investment by the ONMS |

| Strategy | Outcome | Cost |
|---|---|---|
| **Optimize site potential** | | |
| Renovation / reuse of existing buildings | Adaptive re use of a building that otherwise might have been demolished and diverted to a landfill and minimizes use of open space | $$$ |
| Control Erosion Through Improved Landscaping Practices | Reduction of stormwater runoff, improving water quality, and mitigating urban heat-island effects | $$ |
| Occupy / construct buildings that are flexible and able to adapt to the ONMS changing needs | By occupying flexible spaces the ONMS reduces the need for renovations, moves, and new construction | $$$ |
| **Minimize non-renewable energy consumption** | | |
| Install photovoltaic systems when possible at existing ONMS facilities | Installing PV systems to offset the energy use will help NOAA meet the Energy Policy Act 2005 renewable energy requirements | $$$ |
| Upgrade windows for better energy perfomance | Properly sealed, R4 windows with a U factor of .25 can reduce heat loss by 75 percent | $$$ |
| Adjust workplace temperature in the summer months at ONMS facilities | The California Energy Commission estimates a 1-3 percent energy savings for each degree the thermostat is set above 72°F | $ |
| Use of geothermal heating and cooling system | Geothermal HVAC system is 50-70 percent more efficient at heating and 20-40 percent more efficient at cooling than a conventional, fossil-fuel fired systems | $$$ |
| Install occupancy sensors in ONMS facilities | Occupancy sensors ensure the lights will be off when the spaces are not occupied, therefore reducing energy consumption | $$ |
| **Optimize operational and maintenance practices** | | |
| Conolidate and reduce the number of printers and copiers | A lower equipment to people ration will cut paper use, energy savings of around 50 kWh per person, and increase collaboration among staff therefore increasing productivity | $$ |
| Encourage staff to recycle and ensure recycling bins are available to all staff | Divert trash from landfills | $ |
| **Protect and conserve water** | | |
| Use low flow fixtures in ONMS facilities | By using fixtures approved by the EPAct, potable water use can reduce water consumption by 2 percent annually | $$ |
| **Use environmentally preferable products** | | |
| Use Energy Star appliances in ONMS facilities; Ensure that new electronic purchases are EPEAT rated | Energy Star appliances use 10–50 percent less energy and water than standard models | $$ |
| Replace CRT monitors with LCD monitors | Reduction of energy conumption by up to 30 percent across the program | $$ |
| Greening of sanctuary vessel and vehicle operations | Use of biodiesel fuel and hybrid vehicles can reduce impact on the environment | $$ |
| **Enhance indoor environmental quality** | | |
| Replace HVAC Filters on schedule and with high performance filters | Low particulate levels will increase user satisfaction and keep HVAC operating costs down | $ |

# ONMS Facility and Exhibit Requirements

**ONMS Facility and Exhibit Requirements**

# Introduction


*Three examples of facilities owned by ONMS include the Dr. Nancy Foster Florida Keys Environmental Complex in Key West, the Hawaiian Islands Humpback Whale NMS headquarters campus, and the Great Lakes Maritime Heritage Center in Alpena, MI. (Source: ONMS)*

This section highlights several areas where additional funding can help NOAA's Office of National Marine Sanctuaries (ONMS) grow, reach out to additional people in the community, and protect its investments while supporting both the mission and the vision of the program.

To better understand the needs of the sanctuary system, one must first understand issues facing sanctuary sites, and how improvements in facilities can help the ONMS meet directives set forth in the National Marine Sanctuaries Act and continue to serve local communities through education, outreach, and monitoring. Outside analysis of the ONMS has warned that funding shortfalls threaten to hamper the maintenance and operation of vessels and some visitor interpretive centers, thus limiting the future successes of the ONMS.

## Facilities and Infrastructure

***Facilities are vital to directly support and house the ONMS with administrative bases, visitor centers, vessel support, and other buildings that further the sanctuary mission and goals of resource protection and public awareness.***

ONMS occupies approximately 145,200 SF within 27 facilities with various functions such as administrative, visitor center or storefront, and boat maintenance. Of the 27 facilities, 10 are owned by the Department of Commerce (DOC) within three NMSS sites and the remaining are leased through the DOC or the General Services Administration (GSA).

The 2005 Long Range Master Plan for Facilities, Real Property, Signage and Exhibits established the overall vision for facilities as determined by the ONMS staff. The overall objective of the ONMS with respect to its physical facilities is to establish and manage facilities and real property that:

- Is readily identifiable by the public as expressing the mission and activities of the ONMS that provide visibility to a national program.
- Fully supports the activities and programs of the ONMS.
- Is unique, yet whose architecture reflects the historical and cultural context of the region.
- Features exhibits that have common themes and common signage throughout, all representing the ONMS branding and mission.

The ONMS has made significant strides in recent years with several prominent new facilities being opened, including the Florida Keys NMS Dr. Nancy Foster Florida Keys Environmental Complex in Key West, FL, and the Thunder Bay NMS Great Lakes

Maritime Heritage Center in Alpena, MI. These facilities embody the above objectives, provide a model of operation for the ONMS, and greatly influence and inspire facilities at other ONMS sites.

The following table presents current facilities as determined during site visits. Many of the existing locations are inadequate to fully support the ONMS vision, mission, and goals.

## Current Facilities

The following table details the current facilities at each NMSS site, along with satellite offices.

*Table 3.1 Existing ONMS Facilities*

| | | | Facility Function | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Region | State | Site/Location Name | Site Headquarters or Administrative Facility | Education and Outreach (Visitor or Interpretive Center) | Vessel Support | Research And Science | Conference or Training Facility | Other |
| West Coast | CA | Monterey Bay | ○ | ◐ | ◐ | | | |
| | | San Simeon | | ◐ | | | | |
| | | West Coat Regional Office | ○ | | | | | |
| | | Channel Islands | ○ | | | | ◐ | |
| | | State Street | ○ | | | | | |
| | | Oxnard Harbor | ○ | | | | | |
| | | Gulf of the Farallones | ◐ | ◐ | | | | ◐ * |
| | | Half Moon Bay | ○ | | | | | |
| | | Cordell Bank | ◐ | ◐ | | | | |
| | WA | Olympic Coast | ○ | | | | | ● ** |
| Pacific Islands | HI | Hawaiian Islands Humpback Whale (Kīhei) | ● | ● | ● | | | |
| | | Hawai‘i Kai | ○ | | | | | |
| | | Līhu‘e, Kaua‘i | ○ | | | | | |
| | | Kona | ◐ | | | | | |
| | | Papahānaumokuākea MNM (Headquarters) | ○ | | | | | |
| | | Hawai‘i Kai | ○ | | | | | |
| | | Hilo | | ◐ | | | | |
| | American Samoa | Fagatele Bay | ◐ | | | | ◐ | |
| North East | MI | Thunder Bay | ○ | ○ | | ○ | ○ | |
| | MA | Stellwagen Bank | ● | | | | ● | ● *** |
| | VA | Monitor | ○ | ◐ | | ◐ | | |
| South East | FL | Florida Keys (Lower Keys) | ● | ● | ● | | | |
| | | Florid Keys (Upper Keys) | ○ | | ○ | | | |
| | TX | Flower Garden Banks | ◐ | | ◐ | | | |
| | GA | Gray's Reef | ◐ | | ◐ | | | |

● ONMS Owned Facility ◐ Shared facility through a partnership ○ Leased Facility

* *Commanders house on campus being programmed for climate change visitors center and other uses*

** *Rented warehouse serves as equipment storage, vessel storage, and wet lab space*

*** *Boat House renovation proposed to accommodate lab space, office expansion, etc.*

## Space Standards and Utilization

***The lack of efficient space standards throughout the ONMS has led to spaces that are not "right sized" to operational level or function; implementing existing space standards will improve the success of a growing national program.***

Currently, the ONMS has 14 individual sites with various facility and space requirements. Although each site shares a common mission, all sites have different facility needs due to varying factors such as staffing requirements, maturity of the sanctuary, research operations, complexity, outreach and education functions, community size, and operational needs. During the data-gathering phase for the master plan, many observations were made regarding existing ONMS facilities; many of the sanctuary facilities are at capacity, including the Silver Spring, MD, ONMS headquarters space. This leaves little room for growth in staff, programming, and public connectivity. Historically, many sanctuary facilities have often been acquired through opportunities with local partners and relationships, or through a reaction to an opportunity that is not well planned, which has led to a number of facilities that do not fit the individual site requirements or mission.

Most sites are outgrowing existing facilities due to an increase in staffing, increase in programs, and operational requirements. When a sanctuary is first proposed and designated, a small administrative facility is adequate to support the mission of the new sanctuary. However, as the sanctuary matures and the mission becomes more visible to the community and functional requirements increase, larger facilities and/or additional types or functions of spaces are required.

The ONMS adopted the US General Services Administration (GSA) space standards in 2002, which recommends space allowances for different staffing levels and space functions. However, this standard does not specify useable or gross square feet and does not take into consideration the complexity and the uniqueness of each function, and requirements for individual sites. It also does not recommend a factor for converting useable to gross square feet. In addition, many required support spaces such as IT and vessel support spaces (such as a dive locker) are not included and/or are too generic for planning and programming purposes. The adopted GSA space standard is a maximized size not to be exceeded, and is very generous when compared to commercial standards and industry best practices.

The following tables present the GSA space standards.

*Table 3.2 Space Standards 2002 Long Range Master Plan for Facilities and Real Property*

| Grade | Enclosed Office (SF) | Open Space (SF) |
|---|---|---|
| | 350 | |
| GS 14 to 15 | 225 | 150 |
| GS 12 to 13 | 150 | 100 |
| GS 7 to 11 | 100 | 75 |
| GS 1 to 6 | | 60 |
| Up to GS-11* | | 75 |
| GS 12-13* | | 100 |

*Table 3.3 Support Space Standards*

| Space | Space Allowance | Remarks |
|---|---|---|
| Visitor Center | 15 SF per visitor | |
| Interpretive Exhibits | 800-1,500 SF | Estimate. Add to Visitor Center |
| Reception | 80-120 SF | |
| Conference and Training | 150-200 SF | Or, larger at 9-12 SF per occupant |
| Library and Research | 150-200 SF | May also serve as conference room |
| Boat Operations | Dependent on level of operation | |
| Storage (Admin and Office) | Dependent on storage needs | |

Most sites did not implement the space standard recommendations due to lack of funding for renovations. "Turnkey" operation was implemented at most leased facilities, meaning the building was occupied by the ONMS "as is."

An observation from site visits was poor space utilization, as individual offices, conference rooms, and training rooms were found to be either over or underutilized. Space utilization is defined as the practical use of what is available; room utilization measures how often the rooms are being used. While many sites expressed a need to have bigger conference rooms or more administrative offices, observations determined this need to be only on a surge basis (only needed at peak occupancy times). Conversely, several sites were found to have a severe space shortage, with many people fit into small spaces. For many leased facilities, existing standards and guidelines were not followed due to lack of renovation budget.

A more refined space standard with realistic sizes and a budget that can implement these standards through renovation may allow the ONMS to save money in the long-term by not having to adjust facilities (through relocation, new construction, or renovation) as often.

## Facility and Asset Management

***A comprehensive understanding of facility and asset management costs is needed to better assist the ONMS in budget requirements as they apply to their facilities. Understanding the cost associated with operating and maintaining facilities will help with projecting future requirements for the program.***

The ONMS has encountered some challenges in the upkeep of its facilities due to the lack of a rigorous operations and maintenance program. In addition to maintaining operations for current ONMS facilities and the need to replace several sites in expanded or more mission-appropriate facilities, the current Congress has two legislative expansion proposals that will likely increase facility needs at the affected sites (at three sanctuaries) along with possibility for new sanctuary designations. New sanctuaries are likely to require "start-up" facilities such as offices, and expanded sanctuaries are likely to require additional office space and satellite office locations to manage a larger territory.

However, resource constraints and annual escalation have put pressures on existing Operations, Research, and Facilities (ORF) funds.

According to an outside analysis,[1] this problem will continue and resolution remains outside NOAA's control if Procurement, Acquisition, and Construction (PAC) funds continue to be allocated to build new facilities without commensurate increases in ORF funding to operate and maintain vessels and facilities.[2] After providing ORF funds for ONMS programs and day-to-day operations, very little has been allocated to building operation and maintenance.

Without a maintenance program, the ONMS will likely encounter the following issues:

- A growing list of deferred maintenance tasks that will take funding away from programs.
- Components and infrastructure will deteriorate sooner than expected.
- Replacement of major components will occur much sooner, thus taking funds away from other operational needs such as staffing or research missions.
- The integrity of the ONMS will be affected by unscheduled closures of facilities due to major repairs or unexpected system failures.
- Energy and other resources will be wasted, as components and systems will not be operating to specifications.


*The Dr. Nancy Foster Florida Keys Environmental Complex is one of several ONMS sites that could benefit from operations and maintenance funding. (Source: ONMS)*

## Technology Infrastructure

***Technology infrastructure and capability should support the organizational missions and goals of the ONMS to share knowledge with the community and reach the public; facilities should support this with the right spaces to support new technologies as they emerge.***

As technology has risen in importance in modern society, IT capability in both new and existing facilities has become a priority for the ONMS. Today's society is increasingly technology driven;

[1] *US Department of Commerce Office of Inspector General National Marine Sanctuary Program Final Inspection Report, No. IPE-18591, February 2008*

[2] *US Department of Commerce Office of Inspector General National Marine Sanctuary Program Final Inspection Report, No.IPE-18591, February 2008*

sophisticated and state-of-the-art conference facilities, offices, visitor centers, and real-time technology capability are vital for the program to meet many of its missions.

Technology-rich spaces will help foster partnerships with local communities, colleges and universities, and K-12 educational programs, along with increasing communication among individual sanctuary sites.

Several ONMS sites suffer from a lack of IT infrastructure or an IT management plan which has led to the following situations:

- Staffers must be pulled from day-to-day operations to support IT duties.
- Resources must be expended for required operations on an "ad hoc" basis when problems arise.
- Recurring "black-outs" are common.
- Existing facilities cannot support additional or new technologies.
- There is no standardization of hardware and software throughout the program.
- There is a lack of capabilities to share knowledge, both within the sites and with the public.

An increase in IT capabilities, as related to facilities and infrastructure, was desired across all NMS sites, including:

- **Telepresence** – The ability to connect people to the ocean and research missions through live video feeds and real-time technology.
- **Video conferencing, interactive desktop, or similar capability** that encourages communication among sanctuary sites, colleges and universities, and school children.
- **Video labs** that provide ONMS staff the right space to produce webinars, videos, and educational materials, and manage live video feeds, connected to the sanctuary.
- **Improved IT infrastructure** that meets NOAA IT standards at all ONMS sites, including work areas, telecommunications rooms, equipment rooms, and adequate data ports in all office spaces.

Currently, many NMSS sites are operating with IT infrastructure and facilities that are not based on common IT standards (NOAA Facility IT Standards Guide and the NOAA Strategic IT Plan) and industry best practice. Implementing proper facilities and infrastructure to achieve the desired state for the various capabilities listed previously can produce significant time savings for staff members, allowing them to focus on the ONMS goals, and financial savings by improving work efficiency and reducing travel times. While many of the requirements have been identified and plans for implementation have been developed, funding is needed to implement more comprehensive IT planning and infrastructure.

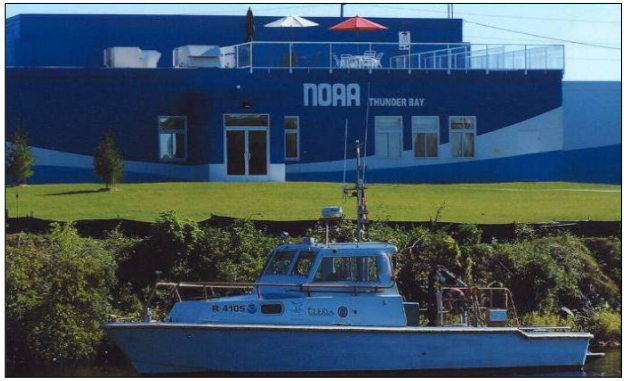
## Sustainability

***The ONMS remains committed to implementing more green building practices and green operating procedures in new and existing facilities.***

A focus on developing a master plan based on sustainable design principles that encourages stewardship and efficient use of local resources at all sanctuary sites is an important priority for this document. The ONMS has incorporated sustainable building policies and practices into new construction and renovations, as well as in day-to-day operations and maintenance of its assets; the "greening" of many NOAA operations is a directive that will become evident in many future facilities in the program. The built environment has a profound impact on our natural environment, economy, health, and productivity. In the United States alone, buildings account for:[3]

- 72 percent of electricity consumption,
- 39 percent of energy use,
- 38 percent of all carbon dioxide (CO2) emissions,
- 40 percent of raw materials use,
- 30 percent of waste output (136 million tons annually), and
- 14 percent of potable water consumption.

NOAA and ONMS have several guidelines and directives as standards to drive sustainable construction, including the Leadership in Energy and Environmental Design (LEED®) Green Building Rating System, developed by the Green Building Certification Institute (GBCI), provides a suite of standards for environmentally sustainable construction. Also included in the directives are Executive Order 13423 and the Energy Policy Act of 2005. Executive Order 13423 sets goals in the areas of energy efficiency, acquisition, renewable energy, reduction of toxins, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. In 2003, ONMS issued its first LEED® policy memo, giving the system a direction for sustainable building design for the first time.




*The Great Lakes Maritime Heritage Center, home of the offices of Thunder Bay NMS, is now a Gold Certified LEED® building (Source: ONMS)*

[3] *Source: GBCI*

Since the original directives, the ONMS has made great strides toward the greening of its facilities:

- In 2007, the ONMS opened the Dr. Nancy Foster Florida Keys Environmental Complex in Key West, FL; the complex has achieved a LEED® Certified rating and features a green roof and recycled building and interior materials. The Dr. Nancy Foster Florida Keys Environmental Complex marks one of the first major ONMS construction projects to reach LEED® certification.
- The Thunder Bay Great Lakes Maritime Heritage Center has been awarded a LEED® Gold certification.
- The ONMS has received several awards for its green building practices.
- LEED® Silver is the goal for the planned MBNMS Exploration Center in Santa Cruz, CA, the GFNMS Crissy Field Campus renovations, and the CINMS Ocean Science Education Building on the University of California Santa Barbara campus.

The Stellwagen Bank NMS headquarters is the third NOAA building in the nation to incorporate a geothermal heating and cooling system. This HVAC system reduces dependency on fossil fuels by using the earth as a heat source in the winter and a heat sink in the summer.

In 2007, NOAA issued an updated sustainable building design directive to all divisions and line offices stating the "minimum design criteria for all: new construction, major repair / renovation and lease construction to attain a LEED® certification from the U.S. Green Building Council." The ONMS has modified this statement to say that projects should be analyzed on a site-by-site basis by the design team to provide the best and most achievable method of sustainability.

The ONMS must continue to follow these successful models for high performance buildings, learn from past mistakes, and adopt new and innovative technologies for sustainability to become leaders in energy conservation. This is the first step in setting an example in the community and will have a positive long term impression on the public.

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# Exhibits, Signs, and Kiosks


*Several examples of existing ONMS signs and exhibits, which are the public face of NOAA and demonstrate One NOAA, are visited by millions of people every year. (Source: ONMS)*

***Exhibits, signs and kiosks are physical assets that serve as interpretive media to convey the sanctuary message to a wide variety of constituents in many venues, including beaches, museums, aquaria, and storefronts or visitor centers.***

Interpretive assets serve as tools for outreach, education, and branding for the ONMS and no matter the complexity of the sanctuary, all should employ a network of signs, kiosks, and various exhibit venues to get across the message of marine resources and the sanctuary system. Unlike national parks, which can be easily accessed and experienced by the public, the underwater marine environments protected by the ONMS are remote and not readily accessible; with millions of people each year visiting coastal sites, signage and exhibits are vital to connect them to the sanctuary marine and cultural resources.

The ONMS also serves as the "face" for the greater NOAA organization and promotes the "One NOAA" agenda of NOAA as an integrated system of offices. The ONMS often uses exhibits and signs to explain other NOAA activities and programs, such as wildlife protection under National Marine Fisheries Service (NMFS) or how climate change is affecting ecosystems under the National Weather Service.

The need for more and updated signs, as well as exhibits, is a common priority at many NMSS sites.

Signs and exhibits are often located at places with high rates of visitation by both travelers and local residents, including:

- Coastal educational, directional, and enforcement signs, and roadside turnarounds;
- Weather and marine interactive kiosks;
- Small and major interpretive centers, including both dedicated ONMS visitor centers and those shared through partnerships with aquaria and museums.

The ONMS National Signage Plan, which lays out the direction and standards for ONMS signs on a national level, lists the outcomes and goals of a comprehensive exhibit and signage plan as the following:

- Recognition of roles of both sanctuary and partner agencies in protecting marine and coastal resources by region visitors and residents.
- Awareness and appreciation of marine and coastal resources by visitors and residents.
- Improved levels of information and education service to visitors and residents.
- Providing information to educate the public on the resources in the sanctuaries.
- Consistent standards for quality of facilities and message content.

Current partnerships with local, state and national parks, along with local businesses, have allowed for exposure by leveraging visitors at these various locations. However, these same partnerships can also present a challenge because the ONMS often has to abide by the different design standards and sometimes conflicting messages of the partner organizations.


*Storefront exhibits such as this one for the Hawaiian Islands Humpback Whale NMS at a local bookstore are often a cost-effective solution for displaying the sanctuary message in highly visited areas. (Source: ONMS)*

Technology plays a big part in the exhibit and signage industry because museums, visitor centers, aquariums, and other related facilities are competing with each other for visitation, and often the high-tech facilities tend to attract younger visitors. The ONMS often has to create distance-learning and virtual experiences for those who may not have the opportunity to physically visit the sanctuary. While the ONMS has employed many high-tech exhibits, more are desired at additional locations, along with the ability to create new and exciting ways for people to experience the sanctuary.

## The ONMS Interactive Kiosk Program

The ONMS currently utilizes a number of interactive touch screen kiosks at many locations that present up-to-date weather, ocean conditions, surface temperature, and a variety of other links about national marine sanctuaries. Maintaining the program's commitment to outreach and education, the portable kiosk, which can be placed virtually anywhere, serves as an interactive collection of knowledge and information for marine sanctuaries. The first prototype kiosk was installed at the Channel Islands NMS in April 2005. In the first 90 days of operation there were more than 2,100 users and nearly 300 hours of recorded use[4]. The kiosk program has steadily been expanded since then, with more than 17 kiosks currently in place throughout the nation. The kiosks can be used by children or tourists, local fishermen, sailors and boaters, and anyone else interested in marine environments and the sanctuary system. The kiosks are often located in high-traffic locations that reach large amounts of people and school field trips (aquaria, museums, visitor centers).

[4] *Source: National Marine Sanctuaries Interactive Kiosk Program Catalog, 2008*

The kiosks help the ONMS convey a variety of different messages at many locations, with touch screen buttons, videos, live weather and news feeds, and information on the sanctuary system in a fun and interactive format that is easily used by anyone.

While interactive media such as the kiosks can provide a variety of interesting solutions, it sometimes is too complicated, does not hold the attention of the user, or may look like a slide presentation. Technology is evolving rapidly, and providing a standard message at different sites that is both easy to understand and operate while still conveying the complex missions of the ONMS has been a challenge. The ONMS works with several vendors including Nanonation, Meridian, King Kiosks, and Eurotouch for software and hardware solutions and to coordinate and revise kiosk programming. Through this planning and programming, the kiosks have been equipped to be user friendly, and have been successful at all current locations, with an average visitation time of approximately six minutes per user.

Kiosks have proven to be a very flexible and adaptable option for the ONMS to reach the public with a variety of messages and information in many locations, but have also presented a very complicated set of issues to be considered, including:

- Content design and programming.
- System requirements, including power and high speed internet, and installation.
- Cost.
- Maintenance of the kiosk and components.
- Coordination of ONMS staff with vendors on programming and messaging.
- Constant coordination between ONMS staff with partner facilities where the kiosk is placed.
- Periodic updates of programming after kiosks are installed.

These issues have continued to be revised and improved by ONMS exhibits staff.


*An ONMS sign on the California coastline as part of the California Signage Plan in 2008 is educational and lets visitors know they are in a special place. (Source: ONMS)*

## National Signage Plan and Standards

The ONMS National Signage Plan, completed in 2005, provides the ONMS with consistent graphic standards and guidance for the design, fabrication, and installation of informational, interpretive, identification, and directional signs relating to the sanctuaries. The signage plan is a

direct extension of the Facilities Master Plan because like facilities, signs are vital physical assets that work to expand public recognition and visibility of the ONMS. Since the original signage plan, several regional and site specific signage plans have been developed, including the California Signage Plan in 2008. The California Signage Plan has become the national model for future ONMS signs. Several goals and positive outcomes of these signage plans include:

- Developing and maintaining a comprehensive signage inventory within the system.
- Help in working with partners to identify additional signage needs and to develop, fund, install, and maintain signs.
- Working with partners to identify and prioritize resources for interpretive trail projects.
- Developing consistent standards and criteria to establish and support recognition and branding of ONMS.

Since the National Signage Plan and subsequent California Signage Plan, many new developments and challenges have arisen for the ONMS signage program. Determining how to handle and budget for maintenance and upkeep of existing signs, how to deal with vandalism, revision of the content of signs as the program grows, and continual placement of new signs are just a few physical considerations for the ONMS signage program. The ONMS looks to further develop directional signage within the system to both inform people that they are in the vicinity of a marine sanctuary and to direct visitors to ONMS facilities. Also, as partnerships within the ONMS expand, working with other organizations and blending signage standards has become an issue for ONMS staff.


*A regulatory sign at a dock in the Florida Keys provides sanctuary rules and regulations to protect local reefs and sea beds from boating accidents. (Source: FPC)*

## Exhibits

Exhibits are among the most important physical assets for ONMS buildings. ONMS exhibit teams must consistently come up with ways to attract and inspire the public about marine sanctuaries to garner the support of the community. The exhibit team is often planning and designing new exhibits or updating existing exhibits on a regular basis; exhibits can require the same amount of upkeep and maintenance that is associated with facilities or signs.

*Visitors explore California coastal exhibit at the California Academy of Sciences (Source: ONMS)*

*The NOAA exhibit at the* USS Monitor *Center at the Mariners Museum in Newport News, VA, guides visitors through an auditory and visual experience about the* USS Monitor. *(Source: MNMS)*

Exhibits need to be viewed as a direct extension of other ONMS efforts and should directly align with the overall vision, mission, and strategies of the organization. More and more, exhibits are attempting not only to provide an interesting and educational environment, but to give visitors an experience with entertainment value that will be remembered. The experience at ONMS interpretive facilities often involves re-creating what it is like to experience underwater environments and can also be about immersing the visitor in the mission of research and conservation. If visitors can experience the ONMS mission, vision, and goals through an exhibit, they will retain a more memorable message that they will then share with others. The most frequently used techniques for creating experiential exhibits are:

- Technology and visual media, including projection, touch screens, wrap-around video screens, and high-definition video.
- Aquariums and other living installations where the user can view and experience natural habitats.
- Interactive exhibits that require the user to touch, smell, hear, move, or operate.
- Lighting and sound.
- Oral histories.
- Conservation and research labs where the user can view sanctuary activities in action.
- Attractive and interesting materials including metal, wood, and fabrics.

Trends and technology for exhibits are constantly evolving, and ONMS must keep up with the trends to attract visitors to ONMS installations.

The ONMS has been successful in placing exciting and educational exhibits at numerous locations throughout the system, at both dedicated sanctuary facilities and partner locations. Leveraging partners for placing exhibits is often the most successful and cost effective method for reaching large amounts of people. An example of a successful and memorable experience at a partner location is the California Academy of Sciences exhibit, a partnership between the academy and the Gulf of the Farallones NMS. The three-story, 100,000-gallon "California Coast" tank highlighting the habitats of Gulf of the Farallones NMS showcases the marine animals and plants of the California Current ecosystem. An estimated 1.2 million people are expected to visit the academy every year and learn how the sanctuary system protects its valuable natural, cultural and historical resources.

Similar to signs and kiosks, the exhibit program faces issues such as the need for maintenance and updates, vandalism, cost, coordination with partners, and the constant requirement to place new exhibits at additional locations. While many partner facilities are interested in placing a branded exhibit in their facility, the sanctuary site may need the required funding for the content design, planning, and installation of the exhibit.

The following table provides a programmatic range of options for the ONMS in planning for signs, exhibits, and kiosks. The ranges assume different developmental stages for a sanctuary site.

*The following cost ranges provided are meant to give an idea of the costs associated with providing these assets and would vary from site to site and with the complexity of each project.*

*Table 3.4 Exhibit, Sign, and Kiosk Requirements*

| Signs, Exhibits, and Kiosks | Type I (Baseline) | Type II (Developed) | Type III (High Function) |
|---|---|---|---|
| **Signage** | The site has a network of directional and educational signs. | The site has a network of directional, educational, and enforcement signage. | The site has a network of directional, educational, and enforcement signage. |
| **Kiosks** | The site may have one or more kiosks | The site has several kiosks | The site may have several kiosks, both indoor and outdoor locations. |
| **Exhibits** | The site has exhibits / storefronts at partner locations, including aquaria and museums. | The site has exhibits / storefronts at partner locations, including aquaria and museums. | The site has exhibits at several partner locations, including aquaria and museums. |
| **Buildings** | N/A | The site may have a small exhibit or storefront location. | Small or large dedicated visitor center. |
| **Maintenance** | The site must maintain signs, including fading, vandalism, and updated information when needed. Kiosk maintenance is also a consideration. | The site must help to operate, maintain, and periodically update signs, kiosks, and exhibits at partner facilities along with any facilities owned by the ONMS. May require dedicated staff or vendor. | |
| **Associated Costs** | Cost per sign is approx. $3,000<br>Cost per kiosk approx. $5,000-$30,000; see Table A.10 for more information regarding kiosk pricing | Static Exhibits - Approx. $350 per SF<br>Interactive Exhibit - Approx. $450-$550 per SF<br>Living or High Technology Exhibit - Approx. $600 per SF | |
| **Cost Range*** | **$3,000 - $30,000 +** | **$30,000 - $400,000** | **$400,000 +** |

* *Based on known costs for exhibits, signs and kiosks*

# Vessels and Support

***Vessel support facilities, such as maintenance shops, pier space, access for equipment, and equipment storage, are imperative to a successful at-sea platform to protect and monitor sanctuary sites.***

The ONMS currently manages and protects more than 150,000 square miles of marine and Great Lakes waters with potential for future sanctuary area expansions. The program maintains a fleet of approximately 46 vessels currently, with the potential of new or replacement vessels being added in the near future. Vessels and related support sustain many ONMS missions, including research missions and buoy installation and maintenance programs, monitoring ocean areas through enforcement, and increasing public awareness by representing the sanctuary on the water.

While the *Small Boats Requirements Study 2006-2015* details exact needs for vessels at each sanctuary site, it does not address the imperative facility needs related to vessels, such as piers, shops, storage, access, and security. These facilities needed to support the vessel programs are required for all sites, especially those operating a Type II (30'-49') or III (>50') vessel, which are the larger research and monitoring vessels. Without adequate vessel support facilities, each site will encounter:

- Longer down time for vessels for outside maintenance at distant locations.
- More unexpected down time due to lack of regular maintenance and upkeep practices.
- Longer transition time, wasting fuel and staff hours, due to location of storage and maintenance facilities that are remote from administrative facilities or vessel mooring / piers.
- Shorter operational time for monitoring, research, and enforcement missions.

*Construction of new docking for the R/V* Manta *at the Flower Garden Banks NMS in Galveston, TX, will improve vessel operations at the sanctuary. (Source: FPC)*

The Small Boats Study predicts that within the next 10 years, the demand for on-water small boat access will increase by nearly 60 percent, and the annual requirement for days-at-sea is projected to exceed 730 by 2015.

In addition, a strategy has been developed to address requirements for enforcement and as a framework for developing the enforcement capabilities; while the ONMS is currently in the early stages of developing enforcement capability, an increase in vessels, facilities, and technology will be needed to expand the program. Enforcement is a resource management tool for the ONMS to ensure natural and cultural marine resources are protected. The Enforcement Needs Document determines that the three year strategy will consist of enhanced staffing, vessels, and aircraft, along with additional investments in technology and vessel acquisition.

The growth of the boat program as predicted by both the Small Boats Study and the Enforcement Needs Document will directly affect the requirement for additional or expanded facilities for vessels. Facility requirements include:

- **Mooring and / or piers** with access for equipment and the proper support services, including electrical, water, telephone and data.
- **Storage**, including storage for boat equipment, dive lockers, and research equipment such as buoys and ROVs.
- **Maintenance shops** to maintain vessels with tools, benches, HAZMAT storage for chemicals, and offices for vessel personnel.
- **Security** at each vessel site to prevent theft or tampering with NOAA assets and ensure the safety of the general public.

The following table details facility and mooring requirements for vessels as determined in the Small Boats Report. *The following cost ranges give an idea of the costs associated with the facility needs for each vessel type and will vary from site to site and with the complexity of each case.*

*Table 3.5 Vessel Support Facility Requirements*

| Mooring and Facility Requirements | Type I (Baseline) | Type II (Developed) | Type III (High Function) |
|---|---|---|---|
| **Vessel Type** | Up to 29 feet length overall | 30 to 49 feet with limited overnight capability with small lab space | 50 feet or greater with extended overnight capability and lab space |
| **Mooring Facility** | Trailer / Boat Ramp | Pier or Trailer | Pier w/ utilities & access for equipment |
| **Seasons Required** | Seasonal Usage | Extended Season | Year Round |
| **Capital Required** | N/A | Rent / Own | Owned |
| **Vessel Storage** | Yard or Canvas | Yard or Warehouse | In-Water (Pier or dock) |
| **Equipment Storage** | Storage for vessel equipment and chemicals is needed (with access to vessel) | Dockside storage facility (lockable) with chemical storage, space to support visual inspection of dive tanks (can be associated with dive locker but needs to be accessible) | |
| **Buildings** | N/A | Office and optional shop | Office and boat maintenance workshop is needed |
| **Vessel Maintenance** | Berth upkeep and power, along with regular vessel maintenance | | |
| **Cost Range*** | **$4,000 - $7,000** | **$8,000 - $10,000** | **$11,000 - $13,000** |

* *Based on the 2005 Small Boats Report*

While many NMSS sites are expanding and acquiring new and additional vessels, facilities are not keeping up with this growth. Vessel support facilities are required for every vessel owned by the ONMS and are imperative for a successful vessel program to support the many missions of the sanctuary, including research and monitoring, enforcement, and buoys.


*A Diving Expedition at Cordell Bank NMS will give the sanctuary new understanding of the problems facing our oceans and help the site better protect the resource. (Source: ONMS)*

# Science and Research

***While the significance of science and research to marine ecology and preservation is not new, the need for facilities and support spaces related to research is an emerging priority for the ONMS.***

Science and research missions play a vital role in the goals of marine conservation and protection; to effectively manage the resources within the marine sanctuary system, scientists must understand the natural and cultural resources and the threats they face. The ONMS works to recognize, understand, assess and respond to natural and human-caused environmental changes within the sanctuaries through science and research missions. Many research missions are conducted in partnership with universities and federal, state, and private research organizations.

Science related facilities are needed to provide the platform needed to develop the research and monitoring activities necessary to make informed decisions about protecting sanctuary resources. Building and/or developing research capability and infrastructure support at sites directly affects the ability to manage the sanctuary effectively.

Additional research and science spaces can also be utilized by both NOAA researchers and visiting scientists (from other government agencies or universities). By providing this space, ONMS can attract partnerships in the future. Several common examples of science and research facility needs found during facility tours include:

- **Laboratory space**, including wet labs for water testing and sampling, as well as dry labs for video projects connected to sanctuary underwater sites.
- **Storage** for equipment such as monitoring buoys and remotely operated vehicles that assist in tracking conditions in the sanctuaries.
- **Meeting spaces** with video teleconferencing capability to encourage interaction and data sharing with partners including visiting scientists and university programs.
- **Bunking space** to support visiting scientists, interns, and university students; this provides the ability to complete long-term research projects, attracts students, and provides sleeping quarters in areas where hotels are cost prohibitive or unavailable.
- Access to dedicated **dive lockers for** NOAA dive programs.
- Proper **vessel capability** that matches the research needs of each specific marine sanctuary site.
- **Library spaces** to store and catalog research reports and data (can be combined with other functions).
- Development of an ONMS **research database** to improve information sharing of

science and research endeavors within the NMSS and to document science in the sanctuary to publicize research results. This tool will help to increase awareness of the ONMS, help promote conservation, and encourage more research.

While the specific facility needs related to science are different at each site, the overall goal of the facilities is the same; a focus on the research needed for resource management by providing the proper facilities to accomplish this.

The ONMS is currently in the process of considering building diving operations and training capabilities within the organization. With nearly 100 divers, the ONMS conducts over 1,500 dives a year and supports over 4,700 reciprocity and volunteer dives across the system of sanctuaries supporting all aspects of management and field operations. A systematic effort to promote safety, minimize risk and maximize efficiency of investments in diving capabilities and technologies would benefit the ONMS and work to create a community and culture of diving focused on operational excellence. At the heart of a future ONMS diving program is a physical location that satisfies the ONMS diving program needs and allows for growth.

The TBNMS campus currently has a significant level of potential infrastructure available for an ONMS diving program. The need for a diving program and the potential for such a program have been explored; however, this proposal needs to be further developed, particularly in the context of creating an ONMS diving center.

*The submersible "Delta" in the Monterey Bay NMS on the deck of the R/V* Velero *will deliver important information to sanctuary scientists. (Source: ONMS)*

The following tables show ranges for science and research and dive facilities based on the developmental stages of a sanctuary site. *The cost ranges give an idea of the cost associated with the facilities needed for each stage and will vary from site to site and with the complexity of each case.*

*Table 3.6 Science and Research Facility Requirements*

| Research and Monitoring | Type I (Baseline) | Type II (Developed) | Type III (High Function) |
|---|---|---|---|
| **Vessel Requirements** | Up to 29 feet length overall | 30 to 49 feet with limited overnight capability with small lab space. | 50 feet or greater with extended overnight capability and lab space. |
| **Research Capability** | | Research, Diving, Monitoring, Buoys | |
| **Buildings and/or facilities** | | | |
| **Wet Lab** | Small wet lab with one or two sinks, refrigerator and freezer, benches with space for equipment and sample storage (includes small chemical storage). | Small wet lab with approximately three sinks, refrigerator and freezer, benches with space for equipment and sample storage (includes chemical storage). | Large wet lab with four to five sinks, fume hood, large supercool freezer, refrigerator, benches, storage for chemicals. Some sites may consider additional emergency response capability (i.e. facilities for oiled animals and water retention for pollutants). |
| **Bunking** | Minimal capability to house two to three people with kitchenette and sleeping quarters and/or access to partner facility for bunking. | Ability to accommodate housing for up to 10-12 (interns, students, and staff for extended stays), with kitchenette and sleeping quarters. | Ability to accommodate housing for up to 20 (interns, students, and staff for extended stays), with kitchenette and sleeping quarters. |
| **Dry Lab** | N/A | Small dry lab with computers, equipment storage, battery recharging stations, multiple power outlets, and video display. | Large dry lab with computers, equipment storage, battery recharging stations, sound insulation, multiple power outlets and video display.* |
| **Meeting Space** | | Conference room with video teleconferencing capability. | |
| **Storage** | Storage for research equipment is needed (with access to vessel). | Dockside storage facility (lockable), space to support visual inspection of tanks (can be associated with dive locker). | Dockside storage facility (lockable), space to support visual inspection of tanks, storage and counter space for evaluation and manned testing of closed-circuit diving equipment, storage for research equipment. |
| **Dive Locker** | Storage and floor space for gear with racks to hang wet suits / dry gear (with proper ventilation), with basic air compressor for tanks. | Storage and floor space for gear with racks to hang wet suits / dry gear (with proper ventilation), with basic air compressor and Nitrox capability. | Large storage and floor space for gear with racks to hang wet suits / dry gear (with proper ventilation), air compressor for tanks, Nitrox and Cascade System, exterior access for trailers (buoys, gear, equipment), access to recompression chamber (may be through partner). |
| **Associated Costs** | Dry Lab - Approx. $300-$400 per SF (150 SF lab approx. $50,000 to build out); Approx. $100,000 per person for equipment | Dry Lab - Approx. $300-$400 per SF (225 SF lab approx. $75,000 to build out); Approx. $100,000 per person for equipment | Dry Lab - Approx. $300-$400 per SF (150 SF lab approx. $200,000 to build out); Approx. $100,000 per person for equipment |
| | Low Service Wet Lab - $250 per SF (300 SF Lab is approx. $75,000 to build out) | Low Service Wet Lab - $250 per SF (600 SF Lab is approx. $150,000 to build out) | High Service Wet Lab - $350 per SF (900 SF lab is approx. $315,000 to build out) |
| **Cost Range **** | **$30,000 - $225,000** | **$225,000 - $700,000** | **$700,000 +** |

** Can be regional asset*

*** Based on both management plan estimates for research activities and programs*

*Table 3.7 Dive Facility Requirements*

| Diving | Type I (Baseline) | Type II (Developed) | Type III (High Function) |
|---|---|---|---|
| **Staffing** | Three to five minimum number of staff divers | Six to nine divers at the site | Ten or more divers |
| **Equipment Needs** | Approximately ten tanks | Large air or Nitrox compressor; 20-30 tanks | Nitrox or Trimix compressors/booster pumps; 40-50 tanks; Cascade system; technical diving gear |
| **Facility Needs** | 80 - 100 SF minimum | 150 - 200 SF minimum | 300 - 400 SF minimum |
| **Associated Costs** | Initial setup - $5,800 | Initial setup - $33,500 | Initial setup - $98,500 |
| | Cost per diver to setup initially- $1,450 (based on four divers) | Cost per diver to setup initially - $5,583 (based on six divers; 20 tanks; Nitrox compressor; basic dive locker) | Cost per diver to setup initially - $9,850 (based on 10 divers; Nitrox compressor; booster pump; 40 tanks; four sets of tech gear) |
| | O&M Cost to maintain per diver per year $653 * | O&M costs to maintain per diver per year $1,343 ** | O&M costs to maintain per diver per year $2,223 *** |
| | | | Optional: Permanent Chamber - $100,000 initially, $2,000 O&M; Portable Chamber - $25,000 initially, $1,000 O&M; Rebreather - $10,000 initially, $1,000 O&M; Tech Gear - $4,000 initially, $500 O&M; Diver recall unit - $1,200; NOAA SEP gear fees - $450; Dive computer - $275 |
| **Cost Range **** | **$5,800 - $14,000** | **$33,500 - $75,000** | **$98,500 - $238,000** |

* *Approximately 14% of setup costs + cost of NOAA gear per diver/number of divers*

** *Approximately 16% of setup costs + cost of NOAA gear per diver/number of divers*

*** *Approximately 18% of setup costs + cost of NOAA gear per diver/number of divers*

# Outreach and Education

*Outreach and education programs within the ONMS accomplish a key mission; to broaden public awareness and understanding of resources in the marine sanctuary system. (Source: CINMS, FPC)*

***Outreach and education efforts are activities to promote awareness of marine sanctuaries and wise use of ocean habitats, and use a number of tools, including technology, exhibits, signs, and facilities such as classrooms and learning labs to accomplish this mission.***

The goal for this master plan is to help identify and build the capacity for outreach and education programs that increase ONMS visibility, public awareness and marine stewardship. Outreach and education has always been a challenge for the ONMS due to the physical location of sanctuary sites; because the ocean habitats are not easily accessible to the public, the ONMS must reach people through a variety of creative outlets where people can experience the sanctuary in different ways. Often, the general public is unable to access marine offshore sites, so the idea of bringing the sanctuary to the public is a vital part of outreach and education programs. However in recent years, due to the existence of visitor centers, interpretive signs, kiosks, volunteer programs, and dedicated staff visiting students and other underserved audiences, awareness in the sanctuary system has grown.

Educational programs are varied in the sanctuary system, and are primarily focused on professional development for educators, curriculum, and educational presentations and seminars offered in sanctuary communities. The ONMS is the only agency taking the lead on Ocean Literacy programs in many coastal areas. The target audiences are not only local children and teachers, but the tourist, boating, and recreational industry. For much of the target audience, the challenge is to reveal what's beneath the ocean surface and how to conserve such natural resources.

Public outreach encompasses many programs and efforts within the NMSS, including volunteer programs, visitor centers and storefronts, kiosks, exhibits and signs, and various other media designed to enhance public awareness, promote understanding, educate, and promote wise use to the public.

Facilities and infrastructure directly help support outreach and educational programs. Several examples of facilities the ONMS is currently using to reach the public include:

- **Visitor centers**
- The ONMS **Interactive Kiosk Program** that can be placed virtually anywhere to inform people about weather and sanctuary habitats.
- **Roadside turnarounds and pull offs** highlighting marine life along the shoreline highways.

- **Storefront locations or ONMS dedicated exhibits at partner facilities** including aquaria, museums, and state or national parks.
- **Meeting or classroom spaces** for education seminars and volunteer training (such as the conference center at Stellwagen Bank NMS).
- **Teaching wet labs and research labs** for students (for example, the pier facility at Gulf of the Farallones NMS).
- **Technology** and support spaces for electronic outreach, such as video labs, and other electronic media including websites with interactive media, facilities equipped with Internet2, and video seminar programs.

Other outreach sites are achieving visibility and outreach with other methods, such as the Sharkmobile at GFNMS. The Sharkmobile is a van that travels to local schools to teach students about shark biology and conservation. The Sharkmobile presentation is an exciting 60-minute classroom program that explores the biology and natural history of sharks from around the world. While assets such as the Sharkmobile have been extremely successful, facilities and funding are vital to support such programs, and to create similar programs at other NMSS sites.

Another extremely successful outreach and education method is sanctuary volunteer programs, such as Team OCEAN. Team OCEAN is an education and information service that protects sanctuary resources while enriching the experience of visitors. It involves the stationing of trained volunteer teams at heavily visited sanctuary sites during peak recreational seasons in order to educate and inform visitors and boaters about the unique nature of the habitats, share knowledge of the best approach to certain areas, demonstrate the use of a mooring buoy, and give out various safety information. Training and classroom facilities are vital to support volunteer programs such as Team OCEAN, as well as other outreach programs.

*The GFNMS SharkMobile serves as a mobile outreach and education tool that visits hundreds of local schools every year. (Source: GFNMS)*

Perhaps the most common facility requirement for public outreach and education is sanctuary visitor centers, which can provide a venue to support many different missions, including classrooms,

labs, exhibits and signs, and other interpretive media. While several ONMS sites have dedicated visitor centers that highlight the sanctuary system and ONMS mission and branding, additional visitor centers are planned as an operational model for the ONMS. A common finding at many NMSS sites with existing visitor centers was a decrease in Operations, Research, and Facilities (ORF) funding and / or the lack of commensurate increases to ORF budgets for operations and maintenance of these facilities; effects of this decrease were found to include a decrease in hours of operation, a decrease in staffing, old and/or outdated exhibits and signs, and other negative impacts. These impacts have directly affected the ability of ONMS to fulfill outreach and education missions, decreased visibility, and hampered the ability to reach the public.

**Example 1: Gulf of the Farallones NMS Visitor Center**

The Gulf of the Farallones NMS Visitor Center saw a 25 percent decrease in the number of visitors when the operational days were reduced. The annual savings from the two days was approximately $50,000.

2005 (Seven Days of Operation) = 40,000 estimated visitors

2009 (Five Current Operating Days) = 30,000 estimated visitors

It is clearly visible that reducing operating days to five days a week has decreased the number of people who are touched by the ONMS by approximately 10,000 people.

*Children at the GFNMS visitor center at the Presidio can experience the ocean through interactive exhibits. (Source: GFNMS)*

**Example 2: Florida Keys NMS Eco-Discovery Center**

The Florida Keys Eco-Discovery Center has seen a seven percent rise in visitorship in 2008 from the year the building was opened and a potential 45 percent rise in visitorship in 2009.

2007 (Five Days of Operation) = 27,505 visitors

2008 (Five Days of Operation) = 29,497 visitors

2009 (Five Days of Operation) = 20,000 visitors as of June 4, 2009

Conversely, while visitation to Eco-Discovery Center has steadily increased since its opening in 2007, additional operating days and promotion of the center could easily increase visitation to the center even more, allowing ONMS to reach more people.

While facilities such as these have been very successful in general, operations and maintenance funding is needed for general upkeep of facilities, including repairs, building and exhibit improvements, and general operating costs. Also, because of successes in outreach and education, such as the Great Lakes Maritime Heritage Center at Thunder Bay NMS, the visitor center has become the model of operation for the ONMS in the future. Such successes can be duplicated at other sanctuary sites, furthering many outreach and education activities.

The following table details a model case of facility needs and requirements as they relate to outreach and education. Because they so closely relate to informal education, signs, exhibits, and kiosks have been included. The ranges are based on the developmental stages of a sanctuary site.

*The cost ranges give an idea of the costs associated with the operations needed for outreach and education activities and will vary from site to site and with the complexity of each case. Construction costs of new and/or additional facilities have not been considered in these ranges.*

*Table 3.8 Outreach and Education Facility Requirements*

| Outreach and Education | Type I (Baseline) | Type II (Developed) | Type III (High Function) |
|---|---|---|---|
| **Signage** | The site has a network of directional and educational signs. | The site has a network of directional, educational, and enforcement signs. | |
| **Kiosks** | | The site may have several kiosks. | |
| **Exhibits** | N/A | The site has exhibits / storefronts at partner locations, including aquaria and museums. | |
| **Buildings and/or facilities** | Storage for educational materials | Large classroom or training room | Small or large owned visitor center that may run formal education programs on-site in theaters, classrooms, class labs, and outdoor educational space (shoreline). |
| **Programs** | Many programs through partners such as museums and aquaria, printed materials and curriculum, informal education through ONMS signs and exhibits. | Informal (signs and exhibits) and formal education: On-site educational programs and seminars, mobile education (i.e. the Sharkmobile), and volunteer programs. | Informal education, on-site education, and technology outreach methods such as Internet2 (OceansLIVE), podcasts, and media production. |
| **Cost Range*** | **$3,000 - $35,000** | **$35,000 - $55,000** | **$55,000 +** |

** Based on averages from management plans for outreach and education activities and programs (does not include facility costs)*

# Emergency Response and Enforcement

***Resource protection plays a vital role in the ONMS's mission with key functions in enforcement, continuity of operations (COOPS), contingency planning, damage assessment, restoration, and monitoring.***

*A Common Murre with oil on its feathers from a spill is an example of the life that can be saved by increasing ocean awareness and conservation efforts. (Source: ONMS)*

The ONMS manages and protects more than 150,000 square miles of ocean with the possibility of future expansions at Thunder Bay NMS, Gulf of the Farallones NMS, and others. The ability to respond immediately to both natural and man-made disasters is an important function for the NMSS to sustain the natural habitats that are its mission to protect.

Facility and infrastructure requirements are difficult to plan as each emergency has its own unique set of challenges. The ONMS may play a secondary role to the Coast Guard and other government agencies in hosting a command center-type function for major incidents but the lessons learned suggests that similar facility capabilities are required more often than not.

The incident with *Cosco Busan* in November 2007 was not considered a major oil spill disaster. However, due to the location near the GFNMS site and San Francisco Bay current, the spill caused major damage to various ocean resources and killed more than 2,500 birds. Additionally, an estimated 20,000 birds were harmed from the after-effects of the spill. The GFNMS responded beautifully due to trained personnel and the utilization of the facilities at Crissy Field. However, this incident highlighted the need for the required communications connectivity, including multiple phone lines and video-teleconference capability.

Currently, there is no space in any of the ONMS facilities that has the capability to serve as a dedicated command center to coordinate and manage all the staff, volunteers, and partner agencies during an emergency. While a dedicated war room is not possible at every NMSS site, the needed capabilities and infrastructure described above are common needs that have been previously described for other functions. Although partner relations with local universities and businesses are important for small incidents, processes and capabilities in support of larger emergency response have to be recognized by the area contingency plan.

The following chart makes some suggestions for how the ONMS can handle future emergencies by providing the right capability at ONMS sites that are prone to the these kinds of emergency events.

*The cost ranges give an idea of the cost associated with the operational costs needed for outreach and education activities and will vary from site to site and with the complexity of each case. Construction costs of new and/or additional facilities have not been considered.*

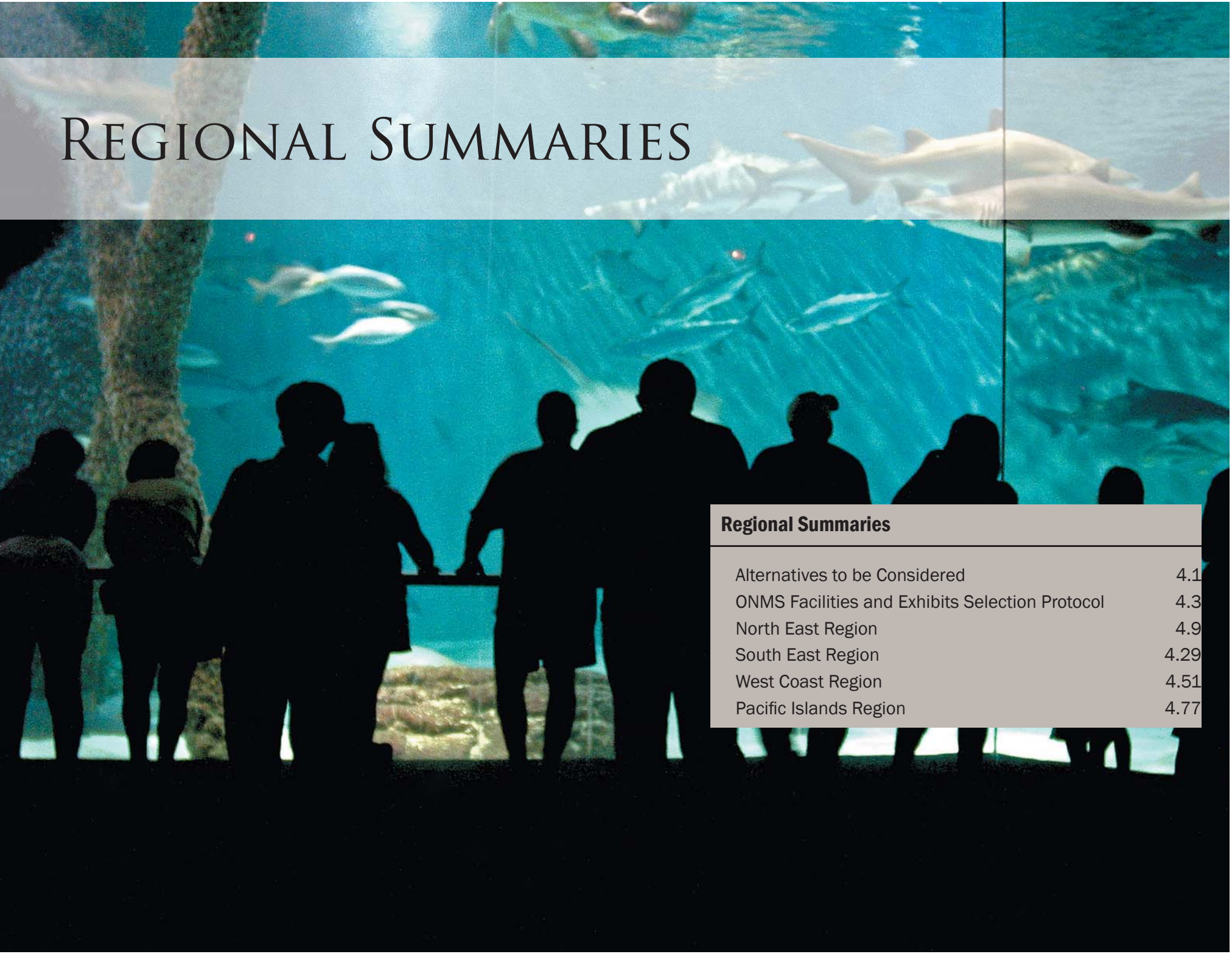
*Table 3.9 Emergency Response Facility Requirements*

| Emergency Response | Type I (Baseline) | Type II (Developed) | Type III (High Function) |
|---|---|---|---|
| **Buildings and/or facilities** | Access to a conference room with multiple phone lines, high speed internet connectivity, and teleconferencing capability through a partner facility. | A conference room with multiple phone lines, high speed internet connectivity, and teleconferencing capability. | A dedicated command room/conference room with multiple phone lines, high speed internet connectivity, and teleconferencing capability, animal intake facility or lab with retention for polluted water. |
| **Mobile Command Center*** | Cargo vans with communication and wireless capabilities **$98,000 - $118,000** | 20' to 25' step vans with workstation and bench, pre-wired for radios, emergency lights, TV, and communications **$124,000 - $300,000** | Step van to extended cab chassis with war room capabilities **$300,000 - $1.1M** |
| **Cost Range **** | **$0 - $60,000** | **$60,000 - $300,000** | **$300,000 +** |

* *Can be regional asset, Source: LDV Inc.*

** *Based on management plan estimates f or activities and programs related to emergency response*

# Regional Summaries



**Regional Summaries**

# Alternatives to be Considered


Stock Photo

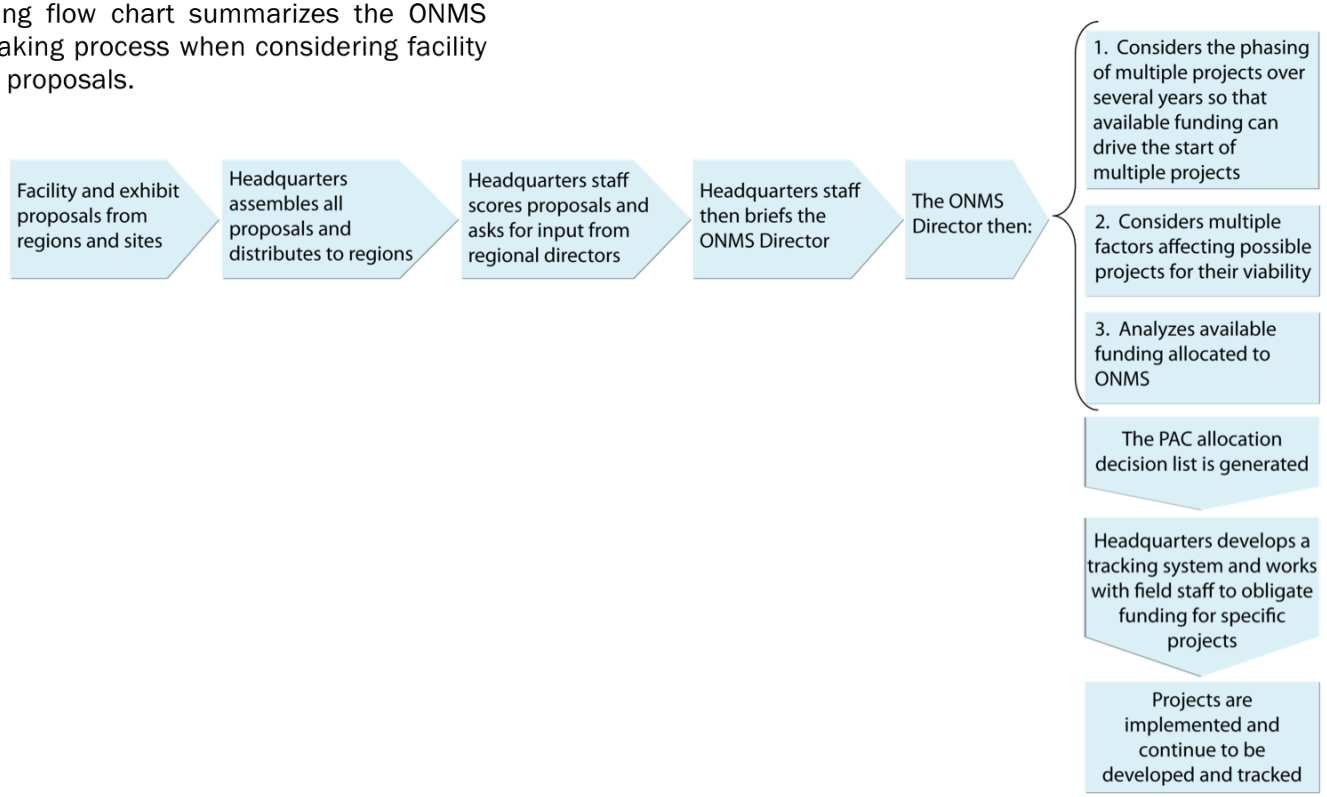
Each facility decision made by NOAA's Office of National Marine Sanctuaries (ONMS) must be based on a thorough exploration of the alternatives. Then each alternative should be evaluated against a number of criteria. The following regional summaries site analysis uses the following criteria to determine the alternatives at the site regarding facilities and/or exhibits. The range of alternatives typically results in one of six probable outcomes:

1. **No Action/Continue As Is:** Under this alternative, the sanctuary will continue to operate out of the current facilities and will retain all associated assets.
2. **Renovate In-place:** Sometimes inherited facilities suffer from legacy problems. It is often wise to invest in buildings that have "good bones" and can be updated and/or expanded to improve functionality, reduce operating costs, and/or accommodate growth. The ONMS has been very successful in this recycling of old buildings for new uses.
3. **Lease Additional or New Space:** For this alternative, the sanctuary operations will be consolidated in a leased facility, or additional leased space added to an existing facility. This alternative is best for co-locating with a strategic partnership where resources can be shared, but may have constraints in design and signage. These constraints need to be considered and may dictate whether or not this alternative should be used.
4. **Purchase and Re-purpose an Existing Facility on a New Site:** This alternative should be considered in collaboration with other federal agencies, local government, or local businesses. Opportunities in real property are available in various scenarios, including Base Realignment and Closure, foreclosures, disposal, etc. However, such "good deals" may bring hidden problems. ONMS should consider this alternative only if the location, physical size, condition, infrastructure, etc. meet all the facility and operational criteria specifically for that sanctuary, and resources for required renovation have been identified.
5. **Construct a New Facility:** This alternative allows ONMS to construct a new facility that can be "custom designed" to fit the program and support all operational requirements. This alternative also provides an opportunity to prominently showcase the ONMS branding and mission, unless the site is too remote. New buildings typically have the highest initial cost, but if properly planned, can reduce operating expenses over time.

6. **Demolish an Existing Owned Building and/or Dispose of a Site:** Sometimes an old, inefficient building simply costs too much to renovate, and it is best to consider a new facility. Demolishing an old building may be an opportunity to "stop throwing good money after bad." This option may involve demolishing a single building or consider moving to a new location.

## ONMS Decision-Making Process

The following flow chart summarizes the ONMS decision-making process when considering facility and exhibit proposals.



# ONMS Facilities and Exhibits Selection Protocol

The following section presents the ONMS Facilities and Exhibits Selection Protocol that supports the National Facilities and Exhibits Master Plan.

## Section 1. Purpose

This protocol establishes the policies and procedures to be followed in:

a) The identification, review, and approval for funding of ONMS Facilities and Exhibits projects. It further establishes the responsibilities of individuals and organizations involved in these policies and procedures.

b) Assuring that there is compatibility between projects selected for funding and (1) the NMSP Long Range Master Plan for Facilities, Real Property, Signage and Exhibits (Phase II), 2005, (2) ONMS National Facilities and Exhibits Master Plan, 2009; (3) NOAA's Planning, Programming, Budget, and Evaluation System (PPBES), and (4) the terms of NOAA NAO 217-104, Facility Capital Planning and Project Management Policy.

## Section 2. Policy

The procedures called for in this protocol will be performed once every year and are designed to integrate into the annual federal, Department of Commerce, and NOAA budget cycle. Facilities and Exhibits projects proposed for funding will be submitted annually by the sanctuaries to a Project Review Panel so that the panel's funding recommendations can reflect the limits on funding set by the President's Budget for the following fiscal year. The recommendations for funding established by the ONMS director will be made final only after the actual amount of funding has been identified by the congressional appropriations act. Furthermore, the priority listing of projects will be inserted into NOAA's PPBES eight-year cycle.

## Section 3. Scope

This protocol encompasses the policies and procedures to be utilized by ONMS in funding Facilities and Exhibits projects, with primary emphasis on expenditures from NOAA's Procurement, Acquisition, and Construction (PAC) Account. These projects generally involve the acquisition of capital assets by the agency, including real property, new construction, renovations, signs, exhibits, etc. The protocol addresses leasing only in passing since leases are generally within the responsibilities of the Chief Administrative Officer and/or the General Services Administration (GSA). However, under certain circumstances (such as ONMS financed improvements to leased facilities), such projects will fall within the scope of this protocol.

## Section 4. Definitions

01. **Facilities** refer to buildings or other structures intended for use by ONMS units.

02. **Exhibits** refers to displays, interpretive material, and signs generally accessible to the public which are intended to provide educational and practical information about the marine environment, and about the missions, activities, location, and regulations of the ONMS.

03. **Construction** means building activity associated with new construction, renovations, remodeling, rehabilitation, and improvements.

04. **Major equipment** means equipment used to support ONMS field operations, including vessels, survey equipment (e.g., remote operating vehicles), diving equipment, emergency response and damage assessment equipment.

05. **Leasing** means the right to occupy real property by ONMS granted by a private or public owner, usually for a predetermined period of time. The term lease may encompass arrangements for ONMS occupancy other than through formal lease contracts, and may or may not involve payment of funds.

06. **Acquisition**, in the case of Facilities Projects, refers to gaining possession by ONMS of real property by direct purchase or gift in fee simple or less than fee simple, such as through an easement. In the case of Exhibits Projects, Acquisition refers to the design, purchase, fabrication, and installation of interpretive material.

07. **NOS** means the office of the Assistant Administrator, NOAA's National Ocean Service.

08. **CAO** means the NOAA Chief Administrative Office.

09. **Funding** generally refers to funds appropriated by Congress under NOAA's Procurement, Acquisition, and Construction (PAC) account. It is recognized, however, that portions of facilities and exhibits projects may be supported utilizing Operations, Research, and Facilities (ORF) funds.

## Section 5. Standards and Procedures

01. Project Identification

    a) Regional Directors and Sanctuary Superintendents will maintain a list of program mission objectives that are not being fully achieved because of inadequate facilities or exhibits, and will identify ways in which improvements can be made in order to fully achieve such objectives, including unique available opportunities. Regional Directors and Superintendents will maintain regular contact throughout the year with the staff

of the ONMS Deputy Director for Facilities, Safety, Vessels, and Aviation (FSVA), and Chief of Staff for Communications to assure that those offices are aware of project activities as they occur.

b) The ONMS Deputy Director for Facilities, Safety, Vessels, and Aviation (FSVA) will issue a call each year to the ONMS Leadership Team, which includes Regional Directors, Sanctuary Superintendents, and ONMS headquarters leadership positions (ONMS-HQ) for facilities and exhibits projects for which they propose funding. This call will normally be made so that responses from Regional Directors, Superintendents, and ONMS-HQ can be submitted in late spring, which allows for the evaluation of proposals and development of a spending allocation plan prior to the final appropriation of funds for the next fiscal year. Regional Directors, Superintendents, and ONMS-HQ leaders who continue to see a requirement for a project which was submitted in a prior year but not funded will re-submit the request for the current year, indicating any alterations brought on by changing conditions.

c) In general, many major renovation and new construction projects, as well as major exhibit projects, may need to be phased over two or more fiscal years, and need not be re-evaluated after the first year.

d) In general, project submissions will not include requests for funding for facility leases. Regional Directors and Superintendents should make the Deputy Director, FSVA, aware of their desire to acquire leased space, but because leases are not financed though PAC funds, are for recurring expenses, and are managed by an arm of the CAO and not the sanctuaries themselves, they will not be considered in the priority setting procedures. Only in exceptional circumstances, such as where PAC funds are proposed for improvements to leased property, will they be considered under this protocol. Upon approval of the ONMS Director, Regional Directors, Sanctuary Superintendents, or the Deputy Director, FSVA, may request leasing actions for facilities from field representatives of the CAO, and shall render all possible assistance toward completion of such lease.

e) Each submission in response to the call will contain the following information:

   i. Sanctuary submitting project (if more than one sanctuary is submitting the same project, a lead sanctuary will be designated to be responsible for the submission)

ii. Common name to be applied consistently to the project

iii. Location

iv. Purpose/intent of project

v. Project description and actions requested

vi. Justification for project (how the project will assist in meeting programmatic objectives)

vii. Any partner organizations involved

viii. Proposed funding schedule, including fiscal year in which project should be complete

ix. Estimated cost, including a judgment (high/medium/low) of estimated cost accuracy

x. Estimated annual costs of operations and maintenance

02. Project Review

a) A Project Review Panel (Panel) consisting of the ONMS Deputy Director for FSVA, Chief of Staff for Communications, and the four Regional Directors will be convened following submission to Congress of the President's Budget for the ensuing fiscal year.

b) The Panel will adopt separate project selection criteria for Facilities and Exhibits.

c) In reviewing projects, the Panel will apply the relevant selection criteria against each project, resulting in separate ranking orders of priority for Facilities and Exhibits. (See Appendix G: Project Scoring Process of the Long Range Master Plan for Facilities, Real Property, Signage and Exhibits (Phase II) Revision Number 1 document, dated June 30, 2005).

d) The Panel will also consult the ONMS National Facilities and Exhibits Master Plan (2009) and the Long Range Master Plan for Facilities, Real Property, Signage and Exhibits (Phase II) (2005) to assure that projects being considered for funding are compatible with activities proposed in the plans. Discrepancies may require further discussion with Regional Directors, site Superintendents, and/or changes to the plans in future revisions.

e) The Panel may make additions, deletions, or amendments to submitted projects, and document the reasons for such actions. In addition, it will identify any costs associated with national administration and support of the Facilities and Exhibits Program.

f) The Panel will prepare recommendations to the Director, ONMS, for funding for the ensuing fiscal year. These

recommendations will include national administrative and support costs as well as the costs of individual projects in order of priority, the total of which does not exceed the amounts called for in the appropriations law for the following fiscal year, or approximates the current appropriation marks in the House and Senate appropriation bills.

g) All projects in the priority planning list will be placed within NOAA's Planning, Programming, Budgeting, and Execution System (PPBES), by fiscal year based upon estimates of funding anticipated in those years.

03. Project Approvals

a) The Director, ONMS, may make changes in the recommendations and will have final approval authority regarding implementation of the Panel's recommendations. The Director, ONMS, may consider other factors that the Panel does not necessarily incorporate into its review, including political pressures, economic conditions, evenness across the National Marine Sanctuary System, and information not yet available to the public.

b) The Director's final approval of funding will await enactment of appropriation legislation for the ensuing fiscal year, which may entail making alterations to the recommendations.

c) The final Director's recommendations will be forwarded to NOS and the CAO for their information.

04. Project Execution

a) Once the ONMS Director has approved a project, appropriations have been received, and appropriate funding allocations made to the Region or Sanctuary where the project is located, the Regional Director or Superintendent will assume primary responsibility for overseeing execution of the project.

b) Regional Directors and Superintendents have a variety of means for completing projects, including but not limited to assigning day-to-day management responsibilities to field representatives of the CAO, other federal agencies with long experience in specific areas, contractors, or partner organizations. Assistance should be sought from the staff of the ONMS Deputy Director for Facilities, Safety, Vessels, and Aviation (FSVA), and Chief of Staff for Communications, in how to proceed, and should keep those offices regularly informed of project progress.

c) Regional Directors and Superintendents will assure that project expenditures are documented and tracked, and reported on to ONMS Headquarters on a regular basis.

## Section 6. Responsibilities

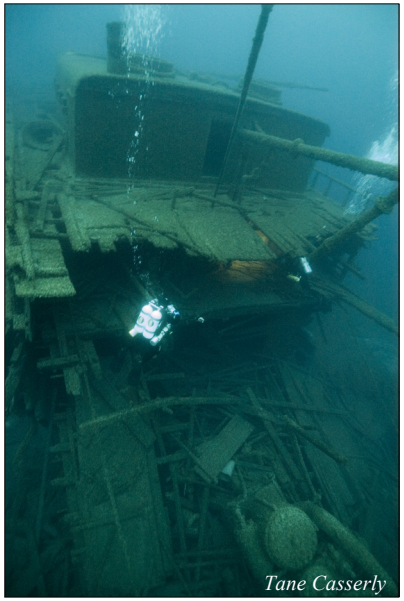
The responsibilities of various ONMS components and individuals called for in this protocol are identified in Section 5, STANDARDS AND PROCEDURES, above.

## Section 7. Authorities

01. National Marine Sanctuaries Act (16 U.S.C. §§ 1431 et. seq.)

02. NOAA Administrative Order 217-104, with implementing manual.

# FINDINGS




*NOAA archaeologists document the damaged stern of the wooden freighter* SS Florida *(Source: ONMS)*

## North East Region

The following presents a regional summary of existing conditions including facilities and infrastructure, exhibits and signage, vessels and research, and education and outreach. The North East Region includes:

- Thunder Bay NMS (Michigan)
- Stellwagen Bank NMS (Massachusetts)
- *Monitor* NMS (Virginia, North Carolina)

The following information was compiled through site visits and interviews, facility and infrastructure questionnaires, site websites, and sanctuary management plans.

The North East region is currently the only ONMS region without a regional office location.

### Regional Priorities

North East regional priorities include moving the regional headquarters offices. While there is no specific location that is central to all of the three North East sites, the MNMS facility in Newport News, VA, may have available space if a satellite location in North Carolina is acquired. Additionally the NMFS campus in Gloucester, MA, may have available space in the near future. Other options for a regional headquarters office should be explored.

Other regional priorities include:

- Relocate regional headquarters offices to the North East Region.
- Implement planned improvements to the Thunder Bay NMS's Great Lakes Maritime Heritage Center, which include the addition of exhibit space, new exhibits, and the replacement or enhancement of existing exhibits.
- Design, fabricate and install ONMS exhibits in partnerships with local communities and institutions located in coastal areas in North Carolina.
- Develop and implement a plan to design, fabricate, and install exhibits in Boston and other coastal communities adjacent to Massachusetts Bay that will increase public awareness and understanding of the Stellwagen Bank NMS, enhance ONMS' visibility in local communities and help stimulate local economies.
- Design and build/renovate a Marine Operations Center using the existing boat house and pier at the Stellwagen Bank NMS campus in Scituate, MA.

# FINDINGS

## Thunder Bay National Marine Sanctuary

The Thunder Bay National Marine Sanctuary (TBNMS) is the thirteenth national marine sanctuary in the system and encompasses 448 square miles of northwest Lake Huron, off the northeast coast of Michigan's Lower Peninsula. The addition of Thunder Bay to the sanctuary system enhances NOAA's management of underwater cultural resources in a number of ways. Lake Huron's cold, fresh waters have created a remarkable state of shipwreck preservation that is unmatched by the other sanctuaries' saltwater environments. Thunder Bay's collection of shipwrecks represents the diversity of vessels that navigated the Great Lakes in the 19th and 20th centuries. These sunken ships reflect transitions in vessel architecture and construction while conveying stories of Great Lakes transportation and commerce; known shipwrecks rest as close to the surface as 12 feet and as deep as 180 feet. Some of the wreck sites remain largely intact while other sites are only remnants of vessels' boilers, engines, rudders, windlasses, and anchors. However, the known wrecks are only a small section of the total wreckages that have occurred; many of the wrecks remain undiscovered.

### Facilities and Infrastructure

TBNMS currently occupies the Great Lakes Maritime Heritage Center (GLMHC) in Alpena, MI. The center is the headquarters for the sanctuary and features:

- 9,000 square feet of state-of-the-art shipwreck and Great Lakes exhibits.
- A 93-seat auditorium.
- An archaeological conservation lab and climate controlled artifact storage.
- 2,000 square feet of innovative education space.
- Research facilities with bunking quarters.
- Administrative space for the headquarters staff.

The GLMHC building is Gold Certified by the US Green Building Council's LEED© certification process.

### Exhibits and Signage

The visitor center is the primary outreach for TBNMS and has many exhibits including artifacts, models, and interactive media.

A new feature of the GLMHC campus is the Great Lakes Maritime Heritage Trail. This waterfront park adjacent to the NOAA building has been developed through a grant from the Michigan Department of Transportation put forward with the


*A NOAA archaeologist documents the windlass and bow of the schooner FT Barney at the bottom of Lake Huron (Source: ONMS)*

*TBNMS Community boat building facility and workshop (Source: TBNMS)*

City of Alpena, TBNMS, and local developers Alpena Marc LLC. The park gives the public access to the north bank of the Thunder Bay River for the first time since the mid 1800s. The Trail includes a boardwalk, dockage for tall ships and research vessels, 20 historic markers, a foot bridge to Rotary Island Park, and plenty of places to sit, picnic, play, and relax.

The trail concept is being expanded to include the shoreline of Presque Isle, Alpena and Alcona counties. The sanctuary is currently developing a long term exhibits and signage plan for the trail, with three distinctive, substantial exhibits, or "Trail Gateways," to be located along the Great Lakes Maritime Heritage Trail, one in each county. Utilizing existing facilities to house both cutting-edge and traditional exhibit components, gateway sites will have the capacity to accommodate and engage large numbers of visitors and offer the first in a series of memorable non-motorized recreational experiences. Smaller scale displays, featuring indoor interpretive panels and other media, will also be incorporated into existing maritime- and transportation-related museums and historic sites to enhance existing displays and capitalize on a locale's unique assets, resources, and expertise. Outdoor sheltered learning stations allow for an intensive visitor experience in areas without existing buildings, with a focus on hands-on experiences that help visitors understand the work connected to shipbuilding, shipping and transportation on the lakes. Interactive touch-screen kiosks will serve as interpretive and informational points along existing non-motorized Michigan Department of Transportation supported trails and at marinas for users approaching the trail from the water. Full-color interpretive panels are ideal for presenting a series of interpretive "stops" along segments of the non-motorized trails. Digital and printed components, both innovative and traditional, will further link and reinforce the interpretive framework of the trail.

## Vessels and Research

Research and exploration provide crucial information to ensure future generations will continue to experience the mystique of Thunder Bay's underwater treasures. The sanctuary is undertaking a complete inventory of Thunder Bay's shipwrecks. In cooperation with the Institute for Exploration and other partners, the sanctuary scientists have conducted a side scan sonar survey of the deepwater shipwrecks, followed by an investigation by remotely-operated vehicles of the discovered and known wrecks. Other field projects have brought scholars and students from various institutions to Thunder Bay to conduct research projects such as video documentation and site mapping of different wrecks. Other research missions include research diving (both scuba and Tech) in the sanctuary, along with a mooring buoy program.

TBNMS often works closely with the NOAA Great Lakes Environmental Research Laboratory (GLERL) in Ann Arbor, MI, one of seven federal research laboratories within the Oceanic and

Atmospheric Research line office of NOAA. GLERL was formed to provide a focus for NOAA's environmental and ecosystem research in the Great Lakes and coastal marine environments.

While the site currently has no dedicated vessels, a research vessel is desired. The sanctuary contracts with GLERL for the use of the 41-foot *Huron Explorer* and a 25-foot Boston Whaler at present. This agreement has also provided the sanctuary access to other GLERL vessels, including the 82-foot *Laurentian*. In 2010, GLERL will be providing the sanctuary with access the 50-foot research vessel *Storm* to replace the *Huron Explorer*.

## Education and Outreach

It is the sanctuary program's mission to pass the stories of the sanctuary's shipwrecks along to local, regional, and national audiences. Education and outreach programs provide educators, students and the interested public with opportunities for virtual historic time travel into the submerged hulls of Thunder Bay shipwrecks. There are many exciting ways the sanctuary staff and volunteers bring the cultural resources hidden beneath Lake Huron's waves to the public and the classroom.

Thunder Bay's distance learning initiatives allow the sanctuary's education programs to extend across the nation. Educational staff members carry out a variety of programs as part of the sanctuary's three-level approach to distance learning or telepresence connections. Live expeditionary broadcasts from Thunder Bay feature archaeologists and scientists exploring the sanctuary.

# ALTERNATIVES AND OPTIONS

*Great Lakes Maritime Heritage Center in Alpena, MI (Source: TBNMS)*

*Science on a Sphere is a room sized, global display system that uses computers and video projectors to display planetary data onto a six foot diameter sphere, analogous to a giant animated globe. (Source: TBNMS)*

## Thunder Bay National Marine Sanctuary

### Current Facilities

The current facilities for the Thunder Bay NMS, the Great Lakes Maritime Heritage Center (GLMHC), in Alpena, MI, have been extremely successful in promoting and rejuvenating the local community. The ONMS would like to continue the development of this achievement by expanding the existing facilities to include additional office space, a catering kitchen, storage, and exhibit space for the popular NOAA "Science on a Sphere" exhibit.

Through the management plan review process, the sanctuary advisory council recommended that the sanctuary expand to provide protection programs to shipwrecks and other maritime heritage resources in waters off Alcona and Presque Isle counties. If the sanctuary expansion is approved, satellite offices and / or storefronts may be considered in the future to better manage the larger area.

### Summary of Need

Additional space is needed at the TBNMS GLMHC facility to accommodate additional exhibit space for NOAA's "Science on a Sphere" exhibit. Several options have been developed to expand the current building. The existing exhibits at the GLMHC were considered Phase I of the building's exhibits when the center opened in 2008. The ONMS will begin planning Phase II in early 2010.

Other facility needs include a boat building facility and a dive tank and training center on the campus (thought to be accommodated in existing structures adjacent to the ONMS building).

General building improvements needed for the current GLMHC buildings include:

- Office modifications.
- Roof deck repairs to make it more useable for events.
- Break room modifications.
- Catering capability for events at the GLMHC.
- General landscaping improvements around the building.
- Directional signage throughout Alpena and around the GLMHC.
- Security and safety improvements around the campus.

Adjacent to the GLMHC building is the start of the Great Lakes Maritime Heritage Trail, which

includes a boardwalk, dockage for vessels, historic markers, a foot bridge to Rotary Island Park, and recreational areas. This waterfront property along the Thunder Bay River needs the following improvements:

- Additional interpretive exhibits and signs to educate visitors about the NMSS and NOAA.
- A playground (already planned, funding needs to be raised for construction).
- Additional picnic tables and outdoor gathering spaces around the center for outdoor programs.
- Dock improvements such as utilities.
- General landscaping & shelter around the area.
- Public art around the area.
- Mosaics and murals around the site and surrounding buildings.

Other facility needs include a signage and exhibit plan currently in development for the whole of Great Lakes Maritime Heritage Trail. The trail will include using existing facilities to house both cutting-edge and traditional exhibit components and signage.

TBNMS is currently working with the Michigan Department of Energy to make the GLMHC a "Michigan Alternative Energy Demonstration Center". This would include expanded interpretation and education components on the sanctuary's use of alternative energy (geothermal and biodiesel) and the addition on other sources of alternative energy (solar, wind, river).

The boat building facility, which is needed to provide space for the Thunder Bay Community Boat Building Program, would also be accommodated on the GLMHC campus. Two existing unused buildings on the campus should be examined to determine their suitability for such a facility.

The Dive Locker and Training Center facility, being conceptualized by Alpena Community College, the Alpena Combat Readiness Training Center, GLERL and others, would include a state-of-the-art dive tank and training facility for all of NOAA and the region. The introduction of such a training facility would allow NOAA to leverage and attract many partnerships. TBNMS has considered creating a site specific dive locker and there are existing buildings on site that could satisfy this need. The existing on-site infrastructure is impressive, yet needs further analysis to determine if it is useable for such a facility. Existing buildings include an 80-foot-diameter by 15-foot-deep settling tank that could be renovated as a dive training facility, and a 1,600-square-foot block building that could serve as an ONMS dive center.

A research vessel is required in the future and will need proper facilities for support.

## Alternatives

Further analysis and programming exercises should be completed on existing facilities on or

near the TBNMS GLMHC building to study their feasibility for the required needs, including the boat building facility and the dive training center. An engineering and architectural evaluation of these facilities also should occur.

The analysis and programming exercise of the campus buildings for a dive facility will determine the scope, infrastructure needs, and implementation costs associated with creating a diving program and facility at Thunder Bay.

Additionally, continue to implement other building improvements and renovations as funding and grants allow. For the continuation of what has been completed to date on the Great Lakes Maritime Heritage Trail, seek funding with partners to implement the interpretive plan for facilities and signage along the trail.

## Alternatives Matrix

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

# State of Michigan

## Thunder Bay National Marine Sanctuary

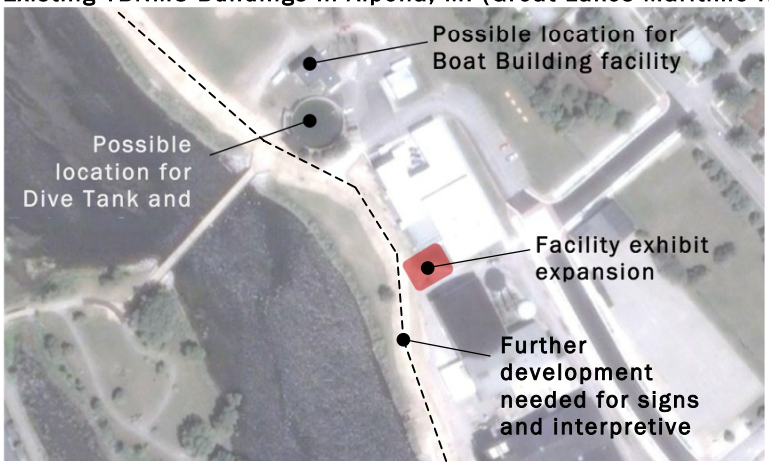
### State of Michigan Overall Needs:

- Complete the master plan for the Great Lakes Maritime Heritage Center to expand the current building, accommodate Science on a Sphere, a boat building workshop, and dive training facility.
- Complete the playground and other site improvements around the campus.
- Implement the plans for the Great Lakes Maritime Heritage Trail.

### Map Key

- ONNMS facility location
- Sanctuary boundary
- Proposed expansion area
- Proposed building expansion area
- Great Lakes Maritime Heritage Trail


Existing TBNMS Buildings in Alpena, MI (Great Lakes Maritime Heritage Center)



# FINDINGS

## Stellwagen Bank National Marine Sanctuary

*A cultural resource within the SBNMS, the Portland's steam release pipe was used to release pressure in the boilers (Source: NOAA/SBNMS, NURC-Conn, and the Science Channel)*

Between Cape Ann and Cape Cod, in the southwest corner of the Gulf of Maine, is Massachusetts Bay. The bay's most prominent submerged feature is the kidney-shaped plateau called Stellwagen Bank, which lies at the bay's eastern edge. Stellwagen Bank is a shallow, primarily sandy feature, curving in a southeast to northwest direction for 19 miles. It is roughly six miles across at its widest point at the southern end. Stellwagen Bank is the centerpiece of the Stellwagen Bank National Marine Sanctuary, which encompasses a total of 638 square nautical miles, or 842 square miles. The sanctuary also includes all of Tillies Bank (situated to the northeast of Stellwagen Bank) and southern portions of Jeffreys Ledge (situated to the north). The western boundary line of the sanctuary is approximately 25 miles east of Boston; the southern boundary is three miles from Provincetown while the northwestern boundary is three miles from Gloucester. From the sanctuary's Scituate-based headquarters, the distance is approximately 11 miles.

### Facilities and Infrastructure

The Stellwagen Bank National Marine Sanctuary headquarters offices are located in Scituate, MA. The facility consists of the main building, a meeting annex, and a boathouse with dock. The main facility is a three-story building, holding staff offices, a small conference room, and the South Shore offices of the Massachusetts Environmental Police and the Massachusetts Coastal Zone Management Office. The meeting annex building is designed to fit 30 people at tables or 75-80 in theater-style seating. The boathouse is presently used for storage, with berthing for the sanctuary's research vessels, MEP patrol boats, and guest research vessels.

The renovation of the Scituate buildings, which formerly served as a U.S. Coast Guard Station, was completed in 2004.

### Exhibits and Signage

The SBNMS currently has no dedicated visitor center, but operates a variety of signs and exhibits at other partner facilities, including:

- Gloucester Maritime Heritage Center
- New England Aquarium
- Cape Cod National Seashore Visitor Center (Provincelands)
- Halibut Point State Park (Spring 2010)
- Scituate Maritime Museum
- Woods Hole Aquarium

## Vessels and Research

A variety of research and monitoring programs are operated at the SBNMS, including seafloor habitat recovery, acoustic recording tags on whales, and large marine mammal databases.

- The SBNMS operates a 50-foot Research Vessel, the *R/V Auk*. The vessel is used for a variety of research projects, as well as emergency response when needed, enforcement, and education and outreach missions.

## Education and Outreach

Sanctuary-supported workshops provide information about local marine resources and research. A remotely operated vehicle (ROV) building workshop for teachers is among the programs offered in the past.

Outreach includes such programs as See a Spout. This short course is intended for boaters interested in whale-watching to learn the five tips for safer boating around whales. The marine art contest for local school children encourages local children to submit art work about the sanctuary or marine life. The sanctuary also provides online educational materials, teacher workshops, and educational meetings at the campus annex.

The SBNMS has developed partnerships through existing established museums with community ties rather than establishing a dedicated ONMS storefront for outreach.

# ALTERNATIVES AND OPTIONS

*An aerial of the Stellwagen Bank NMS campus (Source: SBNMS)*

*The headquarters Administrative Building (Source: SBNMS)*

*The Annex Building (Source: SBNMS)*

## Stellwagen Bank National Marine Sanctuary

### Current Facilities

The SBNMS facilities in Scituate, MA, consist of the main headquarters building, a meeting annex, and a boathouse with dock. A major renovation of the administrative and meeting annex facilities was completed in 2004.

Long term facility plans for the site include continued renovations. Currently, the 3,565-square-foot, two-story boathouse is used for storage, but a renovation for the SBNMS Marine Operations Center (MOC) is being planned to accommodate immediate needs of the sanctuary, including additional offices, lab space, and bunking. The boathouse is built on pilings over the water and includes a 300-foot pier, with two floating docks attached. The docks have the capacity to berth one 50-foot vessel and three smaller boats simultaneously. Additionally, the sanctuary has three moorings adjacent to the pier. The renovations are planned for both the boathouse and pier to better utilize the existing capacity and to accommodate the research vessel.

Other immediate facility needs include additional parking for the renovated boathouse and the meeting annex building, the latter of which is used frequently by both the ONMS and the community. Several options have been examined to accommodate additional parking around the area.

### Summary of Need

The next phase in renovations of the SBNMS facilities is the new MOC to be accommodated in the boathouse. The MOC will be composed of the following components: boathouse, pier and docks, parking area, boat moorings, and an association with the Scituate Marine Park.

The MOC will be designed to accommodate the following:

- A vessel maintenance and repair shop
- Year-round vessel docking / mooring
- Dive locker and storage space
- Wet and dry labs
- Bunking and sleeping quarters for visiting scientists and / or students
- Office and meeting space
- Lighting on the pier around the boathouse
- Boat trailer storage

Other facility needs at the site:

- Additional parking
- There are some concerns with the geothermal system at the site; both main buildings are climate controlled using geothermal technology and some problems have occurred with the system.
- Exterior upgrades are needed to the existing administrative building, including the front porch, roof, and painting of the buildings.
- Upgrades to the Gloucester Maritime Heritage Center exhibit need to be completed.
- A new basic exhibit is needed in the lobby of both the administrative building and the annex for visitors to these buildings.
- Develop a presence in Provincetown or other location through an ONMS exhibit or storefront in the town. Provincetown is considered a "gateway" to the sanctuary.

## Alternatives

Implement the design and construction of the boathouse renovation to accommodate the MOC. Programming for the renovation began in 2009 and is planned to be completed by 2010. Renovations to the boathouse, when completed, will solve many of the site's needs and set the program up for the next five to ten years.

Acquiring parking space to accommodate vehicles and boat trailers may require purchasing or leasing a vacant lot adjacent to the boathouse.

An expanded ONMS presence, with exhibits and signage, should be developed in surrounding areas through partnerships in Provincetown, Boston, Gloucester, Plymouth, or Salem to reach the public. Communication objectives will include responsible stewardship, conservation of biological diversity, water quality protection, maritime heritage preservation and marine mammal protection. New areas and locations for a storefront in Provincetown, Boston, Gloucester, Plymouth, or Salem should be identified and prioritized, along with a range of preliminary alternatives for consideration including physical locations, types of facility and/or exhibit, signage, and technology, along with identifying the need and the degree of partner involvement. A storefront or seasonal visitor center that can reach tourists in a high traffic location should be a consideration.

## Alternatives Matrix

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

# State of Massachusetts

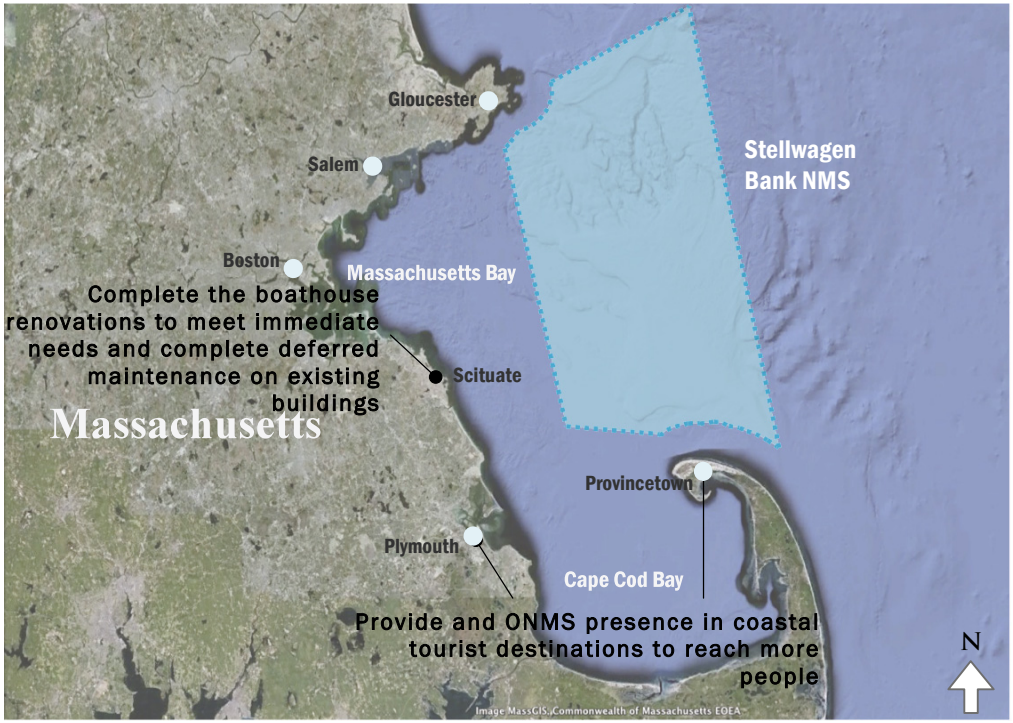
## Stellwagen Bank National Marine Sanctuary

### Overall Needs:

- Implement facility renovations at the boathouse to accommodate the MOC and paint campus buildings in Scituate, MA.
- Replace the exhibits / storefront in Provincetown or other tourist area to reach the public with the sanctuary mission.
- Accommodate additional parking at the current facility.

### Map Key

- ONMS facility location
- ONMS exhibit location / proposed location
- Sanctuary boundary

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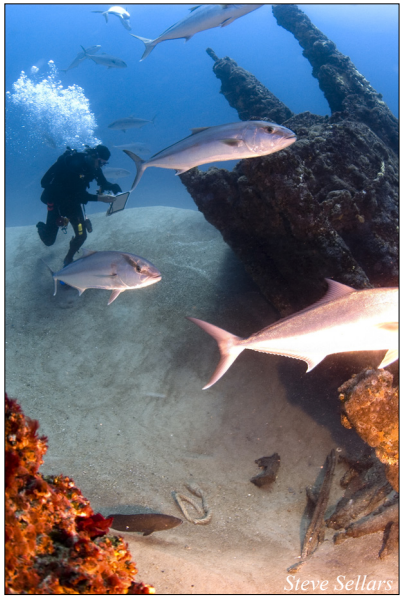
# FINDINGS




*The Minerals Management Service surveys German U-boat U-701 with NOAA divers (Source: ONMS)*

## *Monitor* National Marine Sanctuary

The *Monitor* National Marine Sanctuary (MNMS) is located 16 miles south-southeast of the Cape Hatteras, NC Lighthouse. MNMS protects the wreck of Civil War ironclad USS *Monitor*, which has been called the most famous ship in American history and is best known for its battle with the Confederate ironclad CSS *Virginia* in Hampton Roads, VA, on March 9, 1862.

### Facilities and Infrastructure

The MNMS headquarters office is located on the Mariners' Museum campus in Newport News, VA. The Maritime Archaeology Center facility is leased from the Mariners' Museum and contains office and support space. While the headquarters for the sanctuary are located in Virginia, the sanctuary (the wreck of the USS *Monitor*) is located in North Carolina's waters.

The Mariners' Museum USS *Monitor* Center serves as an important outreach facility for the sanctuary but does not truly serve as a visitor center for the site due to its location in Virginia and limited focus on only maritime history. The sanctuary has identified a strong need for a permanent presence in North Carolina, at the Outer Banks/Cape Hatteras or Beaufort, NC, areas with a link to the Graveyard of the Atlantic in the near future.

### Exhibits and Signage

The primary exhibit for the MNMS is the USS *Monitor* Center at the Mariners' Museum, which opened to the public in March 2007. This $30 million addition to the Mariners' Museum represents one of the nation's premier Civil War attractions. The exhibit features include:

- A high-definition battle theater.
- A full-scale replica of the USS *Monitor.*
- Interactive exhibits and hands-on conservation that offers a first-hand look at the conservation efforts for the turret, steam engine, and other artifacts.
- A mock dock between a wooden sailing frigate and CSS *Virginia*.

In addition, the sanctuary has also installed signs at NOAA's Maritime Archaeology Center. While the Maritime Archaeology Center is primarily an office for the USS *Monitor* sanctuary and Maritime Heritage Program staff, it has visitors each year from local, state and federal partners, and educators participating in workshops offered by the site. The sanctuary is also designing interpretive signage for the North Carolina Aquarium in Manteo, NC, and the Graveyard of the Atlantic Museum in Hatteras, NC. Secrets of the

Deep, located at Nauticus in Norfolk, VA, opened in spring 2007. The interactive exhibit is a replica of a deep diving submersible that visited the wreck site of the USS *Monitor* on numerous occasions. In addition to the exhibit, teachers can get free educational materials on the USS *Monitor* and other NOAA programs at the NOAA Education Resource Center, located at Nauticus.

## Vessels and Research

The sanctuary is important to researchers and archaeological investigation has been taking place ever since its discovery. Since 1977, research at the USS *Monitor* site has been directed toward documenting the wreck in detail and understanding how it has been affected by natural deterioration and human activities. General research goals for the sanctuary include the continued scientific recovery and dissemination of historical and cultural information preserved at the site, the continued scientific study of the USS *Monitor* as an artificial reef, and the careful review and monitoring of privately-sponsored research activities in order to ensure that the site is protected and preserved.

The MNMS currently does not have any vessels and conducts research and monitoring at the site through rented boats or through partnerships. This is costly and provides little or no "presence on the water" or visibility for the ONMS. With an expanded research emphasis in the Graveyard of the Atlantic and the possibility of expansion to a much larger area, the acquisition of dedicated vessel assets in North Carolina is a high priority for the site.

## Education and Exposure

The Mariners' Museum and the Nauticus exhibit are the primary storefronts for the USS *Monitor* and the ONMS in the area. Both museums see thousands of visitors per year and help to spread the ONMS presence and message. The MNMS is currently working with the State of North Carolina to develop ONMS related exhibits at the Graveyard of the Atlantic Museum in Hatteras, NC. Additionally, the MNMS is looking for storefront opportunities along the Outer Banks that could serve as a site visitor center. This will be critically important to expansion efforts. The Outer Banks of North Carolina are visited by more than eight million people per year.

Educational programs include student lesson plans and activities, teacher workshops, guest lectures, posters, brochures and other materials that provide opportunities for the public to learn about the history, discovery, recovery, conservation and wreck site of the USS *Monitor.*

# ALTERNATIVES AND OPTIONS

*Monitor NMS headquarters building in Newport News, VA. (Source: FPC)*

*Monitor exterior replica at the Mariners Museum Monitor Center (Source: MNMS)*

## *Monitor* National Marine Sanctuary

### Current Facilities

The current facilities and presence in Newport News, VA, at the Mariners' Museum is important and a good location and partnership, but the sanctuary is ready to expand with a satellite location on the Outer Banks of North Carolina.

While the current facility is located in Virginia, the actual wreck of the USS *Monitor* is located off the shore of North Carolina. Developing a presence in the popular tourist area of the Outer Banks is a logical next step for the MNMS.

The ONMS is looking to create an increased presence in North Carolina through greater involvement in partnerships, research, education and outreach activities, and through iconic facilities and exhibits. The MNMS will require new office space, storefronts, signage and exhibits, and vessels with support in North Carolina because the site has dramatically increased its activities and presence in North Carolina and will continue to do so to a greater extent over the next ten years.

### Summary of Need

- Develop a presence on the Outer Banks with ONMS offices and a storefront or visitor center that is a destination to tourists and a welcome center for the Graveyard of the Atlantic area.
  - An ONMS facility can be used to get the message out and maintain the identity of the ONMS in the area.
  - Several locations are possible for an ONMS facility (the Manteo area is a central location in the middle of the Outer Banks equidistant between the current building and Hatteras, NC; the site should explore as far south as Wilmington, NC, for a new location).
  - The site should examine partners to bring into a new facility.
- The site would like to acquire a vessel with bunking capability (a 65-foot to 90-foot vessel would be ideal) to expand science and research missions.
  - More than one boat would be the best situation (a second, smaller boat could be used for different purposes, such as patrolling, survey, research, information, and dives).
  - Any new vessels would need dockage and related support facilities.

- Continue to develop signage opportunities in the sanctuary, including directional signage to let people know they are entering a special place.
- Develop electronic outreach opportunities, including Internet2 and telepresence (other ideas include virtual sanctuary tours through GPS and internet video conferencing for outreach and education).
- Expand research opportunities with local universities with possible vessels by providing bunking facilities to accommodate visiting scientists and students.

## Alternatives

The site should develop a preferred strategy for procurement of the facilities required to support the sanctuary that includes a storefront with offices in the Outer Banks area of North Carolina.

A range of preliminary alternatives should be developed that considers physical locations, types of facilities and exhibits, signage, technology, and possible partners. Compare the feasibility of both leasing a facility and constructing a new facility and the pros and cons of each arrangement, along with identifying the need and/or the degree of partner involvement in such a facility.

## Alternatives Matrix

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

# State of Virginia, State of North Carolina

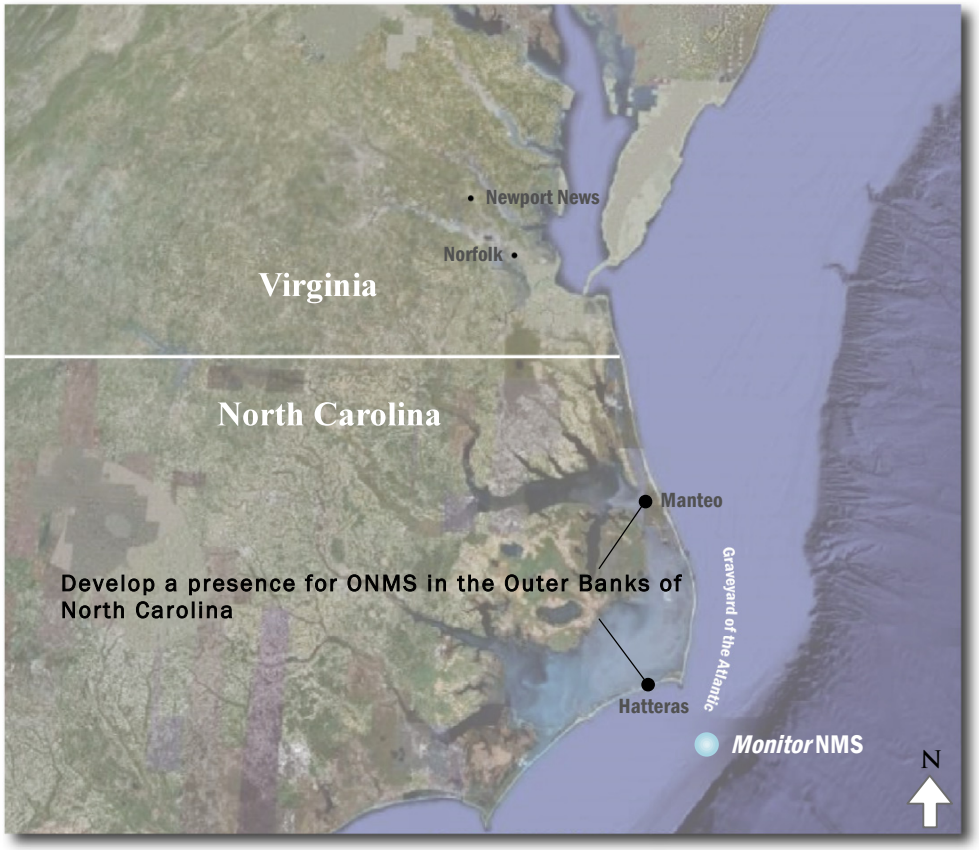
## *Monitor* National Marine Sanctuary

### Overall Needs:

- Developing ONMS visibility along the Outer Banks of North Carolina through a satellite office, signage, exhibits, and programming.
- Acquiring research vessel to further explore the Graveyard of the Atlantic and develop research partnerships.
- Developing a signage plan along the Outer Banks and shoreline.

### Map Key

- USS *Monitor* Site
- ONMS facility location / proposed facility location



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# FINDINGS

## South East Region

The following is a regional summary of facilities, infrastructure, and exhibits. The South East Region includes:

- Gray's Reef NMS (Georgia)
- Flower Garden Banks NMS (Texas)
- Florida Keys NMS (Florida)

The following information was compiled through site visits and interviews, facility and infrastructure questionnaires, websites, and sanctuary management plans. The regional office for the South East Region is located in Key West, FL, at the Dr. Nancy Foster Florida Keys Environmental Complex.

### Regional Priorities

- Explore the potential for expansion and international partnerships, including several locations in the Caribbean.
- Establish office space in the National Marine Fisheries Service facility in St. Petersburg, FL.
- Develop and implement a plan for exhibits, signs, and kiosks to increase public awareness of the Grays Reef NMS in Savannah, GA.
- Complete the design and renovation of the Flower Garden Banks NMS administrative office building located at the National Marine Fisheries campus in Galveston, TX.

### Gray's Reef NMS

- Improve vessel operations facilities and docking.
- Acquire a large shared research vessel that will be a shared regional asset.
- Develop relationships in science, research, and outreach in Charleston, SC.
- Acquire a satellite storefront and/or exhibit location(s) in downtown Savannah, GA.

### Flower Garden Banks NMS

- Improve facilities and implement plans for renovation on NMFS campus headquarters in Galveston, TX.
- Acquire a visitor center or storefront in Galveston.
- Complete construction and implementation of plans for satellite office and vessel operations space at the dock at the A&M campus location.
- Further explore a satellite location in New Orleans, LA, to reach the public and better manage the sanctuary.

## Florida Keys NMS

- Acquire a consolidated facility for the Upper Keys in Key Largo, FL, that houses offices, vessel support, and visitor center spaces.
  - Provide a visitor center or contact point in the Upper Keys as a gateway to the sanctuary.
- Design, fabricate and install signage at dive lockers and docks across the sanctuary.
- Acquire a satellite location in the Middle Keys (Marathon or Pigeon Key) to better manage the sanctuary.
- Repair or replace the sea wall at the Dr. Nancy Foster Florida Keys Environmental Complex.
- Improve operational efficiency by providing training for the building systems at the Dr. Nancy Foster Florida Keys Environmental Complex.
- Design, fabricate and install directional signage to draw tourists to the Florida Keys Eco-Discovery Center.
  - Work with the city of Key West on improving the Harbor Walk Master Plan to include the Florida Keys Eco-Discovery Center.

# FINDINGS

*These orange, yellow, and red colonies make bright colored patches on the sandstone outcroppings of Gray's Reef. (photo: Dean De Philipo / Passage Productions)*

## Gray's Reef National Marine Sanctuary

Gray's Reef National Marine Sanctuary (GRNMS), designated in January 1981, is one of the largest near shore live-bottom reefs in the southeastern United States. The sanctuary is located 17.5 nautical miles off Sapelo Island, GA; within the 17-square-nautical-mile sanctuary, there are both rocky ledges and sandy flat places. The reefs' rock ledges, submerged beneath 60 to 70 feet of water, can be as tall as six to eight feet and are highly complex-they have nooks and crannies and bumps and plenty of places for invertebrates to latch on to and for fish to hide. Together these animals form a dense carpet of living creatures that in places completely hides the rock. That gives the habitat of Gray's Reef its common name-a "live bottom."

### Facilities and Infrastructure

The Gray's Reef administrative offices are on the north end of Skidaway Island near Savannah, GA, on the campus of Skidaway Institute of Oceanography (SKIO). GRNMS currently occupies a 4,000 square foot one-story office building on the campus. The structure was built to the sanctuary's specifications and houses offices, a conference room, computer operations and storage for diving equipment. It is located in a grove of trees set back from the main entrance road to the campus.

### Exhibits and Signage

Gray's Reef has exhibit partnerships with the following:

- The Georgia Aquarium (Atlanta, GA)
- Tybee Island Marine Science Center (Tybee Island, near Savannah, GA)
- The Fernbank Museum of Natural History (Atlanta, GA)
- The University of Georgia's Marine Education Center and Aquarium (Skidaway Island, near Savannah, GA)
- Georgia Southern University (Statesboro GA)
- The South Carolina Aquarium (Charleston, SC)
- Sapelo Island Visitor Center (Sapelo Island, GA)

Each of these facilities hosts an exhibit about Gray's Reef, its environment, the marine life found there and its importance within the ONMS. A visitor center or storefront and signage plan is proposed for Savannah's downtown area, to reach the significant tourist traffic. The sanctuary currently has no interactive kiosks in place.

### Vessels and Research

The GRNMS Management Plan, developed in 1983, outlined strategies for the effective

management of the area's resources. A stated goal of the plan is to promote and coordinate research to enhance scientific understanding of the sanctuary and improve management decision making.

The monitoring program encompasses the following resources and topics of concern determined to be of significant importance to GRNMS during the planning of the designation and subsequent establishment of the management and research studies plans: fish populations, benthic invertebrates, oceanographic conditions, sediment transport, and visitor use.

GRNMS currently operates two vessels for research and education:

- *The 41'er* (36-foot boat that is broken and not in use; it has outlived its useful life and would take approximately $12,000 to fix)
- *Sam Gray* (2005)
- Main research vessel *R4106* (41-foot)

## Education and Outreach

GRNMS sponsors community outreach marine programs, public seminars, presentations and exhibits.

- Education publications include: an illustrated fish guide, educational handbooks useful to teachers interested in a marine curriculum, and a new North Atlantic Right Whale curriculum.
- To support teachers locally and throughout the state and those not able to bring students to the coast, Gray's Reef has developed several different educational programs.
- Through Georgia's distance learning network, GRNMS is able to teach and interact live with as many as seven classes across the state simultaneously.
- Other programs and events include:
  - Student Ocean Council
  - Savannah Country Day Senior Project
  - 1999 Georgia Science and Engineering Fair

# ALTERNATIVES AND OPTIONS

*Headquarters facility for the GRNMS (Source: FPC)*

*Vessel support at the dock at the SKIO Campus (Source: FPC)*

## Gray's Reef National Marine Sanctuary

### Current Facilities

The current Gray's Reef leased facility is located on the campus of the Skidaway Institute of Oceanography and provides no public visibility, is remote from the main population of the area in Savannah, and is difficult to find. While the location makes public outreach and education difficult, the sanctuary enjoys the proximity of the marine science and research activities occurring at Skidaway. Long-term facility goals for the site suggest obtaining a showcase facility to support the mission and attract researchers to the sanctuary.

At the SKIO campus, sanctuary vessels and vessel support are located nearby; improvements to these facilities would further support research and monitoring endeavors.

Because direct access to the reef itself requires open-ocean diving, thus limiting the opportunity for a firsthand encounter with the sanctuary environment, a visitor center or storefront is desired in downtown Savannah (closest population and tourist base) to support the outreach and education missions of the GRNMS.

### Summary of Need

- Long-Term: A showcase ONMS facility is needed that will attract top researchers, accommodate growth, and directly support the staff to meet the education and outreach needs, as well as maintaining the science and research presence in the sanctuary.
- Short-Term: A storefront and signage in downtown Savannah is needed to have an ONMS presence in the area and reach locals and tourists.
- A large research vessel (could be a regional asset) and additional support space for vessels is needed, including:
  - Dive operations spaces including a dive locker and compressor on or near the dock.
  - Storage space.
  - New dock space.
- Research space and support facility needs include:
  - Research spaces such as a wet lab.
  - Bunking facilities for visiting scientists and students.

### Alternatives

Develop a facility strategy that accommodates and supports the various sanctuary missions by

exploring alternatives for a visitor center or storefront in Savannah, GA. Develop a market strategy and range of preliminary alternatives for consideration including physical locations, types of facility and exhibits, signage, and technology needs, along with identifying the need and/or the degree of partner involvement.

Additionally, explore opportunities to improve vessel operations and vessel facilities, and the costs (both initial and operational) associated with each of them, along with determining the benefits that would be gained with the most desirable alternatives.

The recently conducted assessment of the GRNMS administrative offices concluded that modifications to the existing facility would be needed to accommodate sanctuary staff and volunteers and provide for additional storage space. Having completed a renovation of storage space in the administrative building for additional office space, the sanctuary plans to construct a storage building adjacent to the offices.

## Alternatives Matrix

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

# State of Georgia

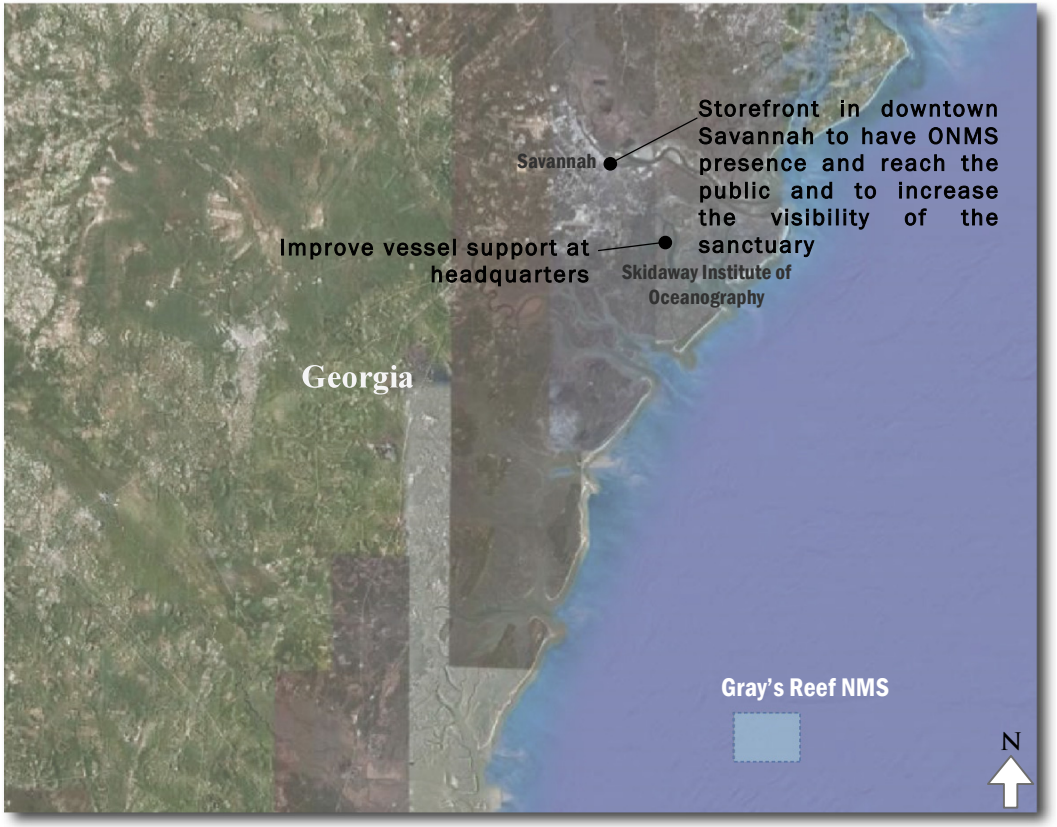
## Gray's Reef National Marine Sanctuary

### State of Georgia Overall Needs:

- A storefront in downtown Savannah to establish an ONMS presence and to encourage interaction with the public.
- Vessels and support for vessels including:
  - Dive operations (dive locker and compressor on or near the dock)
  - Storage
  - Dredge the water surrounding the docks.
  - New dock
- Long term facility plans for the site call for a showcase ONMS facility that will attract showcase researchers, accommodate growth, and directly support the staff to meet the sanctuary mission of education and outreach, as well as maintaining a research presence.

### Map Key

- ONMS facility location / proposed facility location
- Sanctuary boundary



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# FINDINGS

## Flower Garden Banks National Marine Sanctuary

*Two FGBNMS staff members design and build their ROV using PVC pipe and other easily obtained parts. (Source: ONMS)*

Flower Garden Banks National Marine Sanctuary (FGBNMS) lies one hundred miles off the coasts of Texas and Louisiana where three underwater gardens emerge from the depths of the Gulf of Mexico. The sanctuary actually protects three separate areas: East Flower Garden Bank, West Flower Garden Bank and Stetson Bank. These banks are separated from each other by miles of open ocean ranging from 200 to 400 feet deep, and each bank has its own set of boundaries. Located 70 to 115 miles off the coasts of Texas and Louisiana, these underwater communities rise from the depths of the Gulf of Mexico atop underwater mountains called salt domes.

### Facilities and Infrastructure

Current FGBNMS facilities are in a single building located on a former military base (Fort Crockett), built in 1911 and renovated around 2000. The headquarters have been in Galveston approximately two years (formerly located in Bryan, TX). The current campus is shared with the National Marine Fisheries Service (NMFS); FGBNMS occupies one two-story building on the campus. There is no visitor center or storefront currently in Galveston or elsewhere.

### Exhibits and Signage

- Currently there is a sanctuary sign on the Galveston sea wall which doesn't cover the Flower Garden Banks and only includes general information.
  - More signs are needed to inform the public about the Flower Garden Banks and the NMSS.
  - There are several great possible locations along Galveston beaches and sea wall areas that present a good opportunity to reach tourists.
- Because the Flower Garden Banks are approximately 100 miles offshore, there is a need to increase awareness of this remote marine resource that many people are unable to visit.
  - FGBNMS has an important role to promote the Gulf of Mexico as an important ecological area.
- Three interactive touch screen kiosks are being placed at the site in the near future (2010).

### Vessels and Research

A wide range of research activities are conducted in the sanctuary: monitoring reef health, cephalopod, elasmobranch and sea turtle surveys, mass coral spawning, genetics, fish censuses, and deep-water remotely operated vehicle surveys.

The R/V *Manta* (82-foot) is a brand new research vessel for FGBNMS and is designed to adequately support a majority of the sanctuary's anticipated science and monitoring activities. The mission of the R/V *Manta* is to conduct research, monitoring, education, public outreach, enforcement and emergency response-related operations in FGBNMS and the northwestern Gulf of Mexico. The *Manta* will be housed on Pelican Island, home of Texas A&M University – Galveston.

## Education and Outreach

Live programs between classrooms and vessels (telepresence presentations), volunteer programs, and training workshops for teachers are important components of current sanctuary educational activities. News bulletins, brochures, posters, and videos relay research and management activities to the public.

Several FGBNMS education and outreach programs include:

- Corals to Classrooms
- Down Under, Out Yonder - Workshop & SCUBA Field Experience
- ROV-ing the National Marine Sanctuaries

Currently, FGBNMS works with Moody Gardens on exhibits and other programs, and would like to develop more educational programming in partnership with the gardens.

# ALTERNATIVES AND OPTIONS

*FGBNMS headquarters building on the NMFS campus (Source: ONMS)*

*The new dock under construction at the Texas A&M Galveston campus will be the home of the R/V* Manta *(Source: FPC)*

## Flower Garden Banks National Marine Sanctuary

### Current Facilities

The current FGBNMS facility is located in Galveston, TX, on the historic Fort Crockett military base, currently owned by the Department of Commerce for the regional NOAA National Marine Fisheries Service (NMFS) lab. ONMS occupies one two-story building on the campus for its administrative headquarters. The current facility has many pros and cons, but the administrative headquarters should likely be maintained in this location due to the existing positive partnership with fisheries. A store front is desired in downtown Galveston to reach the high numbers of tourists to this area; the current location is not inviting to visitors and tourists because it is fenced, not easily accessible and welcoming, and is located on federal property.

Boat docking for the R/V *Manta* is located on the Texas A&M Galveston campus on Pelican Island. The docking and pier for the vessel has been constructed in partnership with the University.

The FGBNMS currently has no visitor center or storefront on the island; public outreach space is desired to better achieve the ONMS mission.

### Summary of Needs

- The renovation of the first floor of the current building is the site's first priority, to provide much-needed offices, lab space, conference space, dive locker, and storage.
- The current location on the NMFS campus is a good partnership and location, but does not allow for a visitor center or storefront component and is not close to the R/V *Manta* docking site; a consolidated facility should be considered in the future to improve general sanctuary operations.
- A visitor center or storefront is needed that reaches tourists and locals with a maritime heritage connection. Such a facility, which may be possible through a partnership with another organization, could reach and educate the public about the NMSS.
  - The proposed storefront or visitor center does not have to be large; there are several good high traffic locations that are possibilities for a future FGBNMS visitor center, including:
    - The area surrounding the Galveston Visitor Center (near Seawall and 25th Street; has an ocean view).
    - In downtown Galveston near the Strand area, in conjunction with a possible

partnership with the Texas Sea Port Maritime Museum (this might be best option due to the tourist foot traffic already present in the area).

- At Menard Park near the new community and recreational center.

- As the sanctuary continues to expand and grow, a satellite office rises in importance in the near future. A satellite office in New Orleans (or elsewhere in Louisiana) has been discussed as a good population center and tourist location with proximity to the sanctuary.

## Alternatives

### Short Term:

Complete renovations on first floor of current building to accommodate facility needs such as:

- Wet lab
- Storage
- Office
- Reception
- Conference Room
- Dive Locker

Additionally, a facility strategy should be developed that accommodates and supports the sanctuary mission by exploring alternatives for a visitor center or storefront in downtown Galveston. A range of preliminary alternatives should be developed for consideration by the sanctuary that includes possible physical locations, size, types of exhibits, signage, and technology, along with identifying the need and/or the degree of partner involvement in the proposed facility.

### Long Term:

The long term alternative includes exploring the possibility of a co-located ONMS facility on or near the University of Texas Medical Branch campus, or other locations, and comparing alternatives for their feasibility.

## Alternatives Matrix

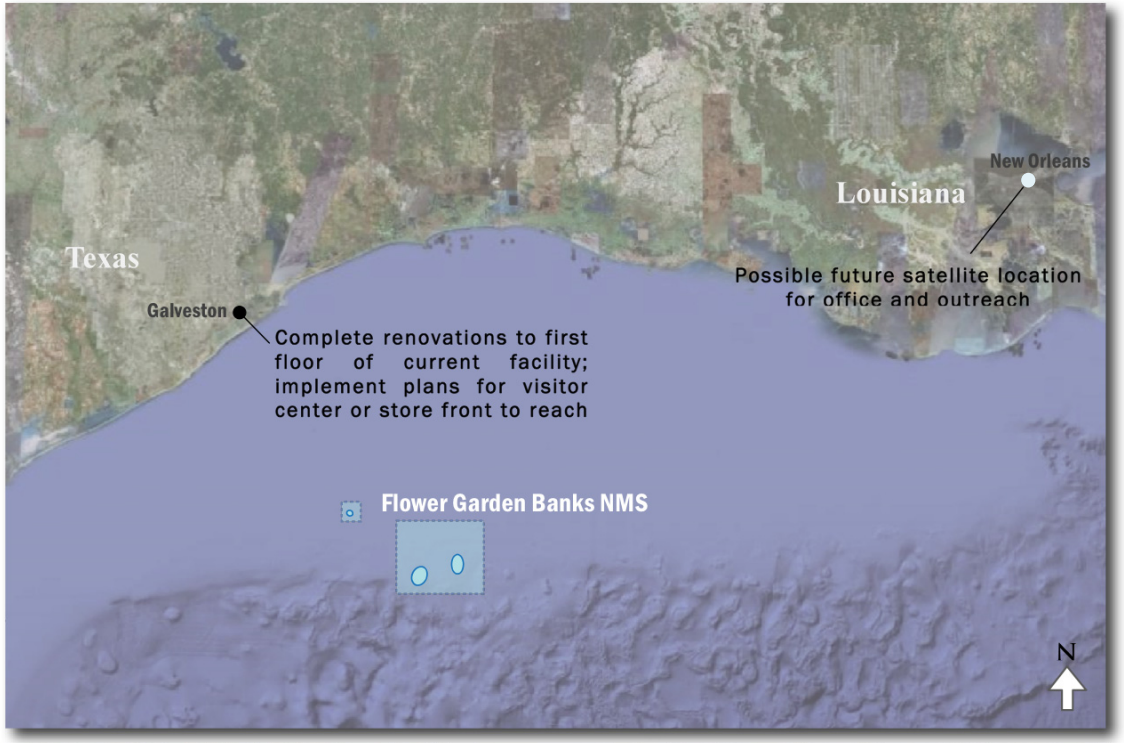
| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

# State of Texas

## Flower Garden Banks National Marine Sanctuary

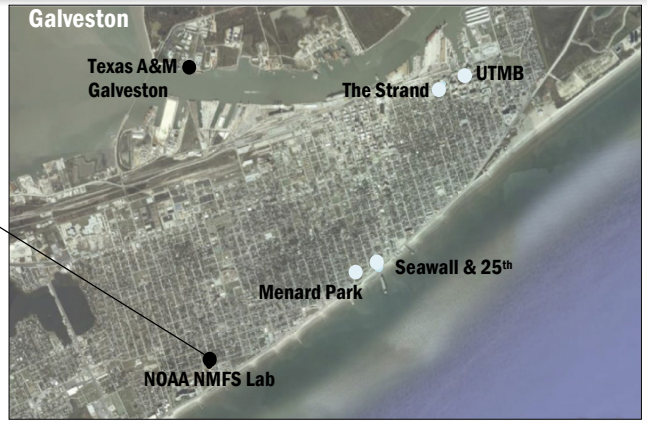
### State of Texas Overall Needs:

- The renovation of the first floor of the current building is a first priority to provide much needed support spaces.
- The current location on NMFS campus is a good partnership and location but does not allow for a visitor or storefront component and is not close to the R/V *Manta;* a consolidated facility should be considered in the future.
- As the sanctuary continues to grow, a satellite office rises in importance. A satellite office in New Orleans, LA, has been discussed as a good population and tourist location with proximity to the sanctuary.




### Map Key

- ONMS Facility Location
- ONMS Proposed Facility Location
- Sanctuary boundary

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# FINDINGS

## Florida Keys National Marine Sanctuary

*Middle school students listen to Florida Keys NMS staff teach about the coral reef on a Coral Reef Classroom field trip. (Source: ONMS)*

The most extensive living coral reef in the United States is adjacent to the 126 mile island chain of the Florida Keys. The Keys are located on the southern tip of the Florida peninsula, beginning just south of Key Biscayne and ending just 90 miles north of Cuba. These coral reefs are intimately linked to a marine ecosystem that supports one of the most unique and diverse assemblages of plants and animals in North America. The 2,800 square nautical mile Florida Keys National Marine Sanctuary (FKNMS) surrounds the entire archipelago of the Florida Keys and includes the productive waters of Florida Bay, the Gulf of Mexico and the Atlantic Ocean. Cultural resources are also contained within the sanctuary.

### Facilities and Infrastructure

Current facilities include the Dr. Nancy Foster Florida Keys Environmental Complex, consisting of the Florida Keys Eco-Discovery Center, the headquarters administrative building, and a boat maintenance facility.

The Florida Keys Eco-Discovery Center, one of three buildings on the campus, features over 6,000 square feet of interactive exhibits, including a full scale mock up of the Aquarius underwater laboratory, the Mote Marine Laboratory Living Reef exhibit with a 2,500-gallon reef tank, terrestrial and marine habitat exhibits, and a theater.

Although the sanctuary and regional headquarters are located in Key West, satellite offices of the FKNMS include the Upper Keys management center, located in Key Largo, FL. This line office includes an administrative center and boat maintenance shops. A former satellite office for the ONMS was located in the middle keys in Marathon, FL, but is no longer operational. Maintaining some kind of presence in the middle keys is a future goal for the FKNMS.

### Exhibits and Signage

The primary exhibits for the sanctuary are located at the Eco-Discovery Center, although another gateway storefront or visitor center is needed as a gateway for the Upper Keys in Key Largo.

- The ONMS is working on installing signs throughout the City of Key West to inform people about the Eco-Discovery Center (the site is working in partnership with Parks and Wildlife and State of Florida organizations to make this a reality).
  - Additional directional signage will increase awareness of the community and tourists about the Eco-Discovery Center and the NMSS.

The sanctuary is working to increase the number of signs and the development of a comprehensive signage plan:

- Regulatory signs (NOAA funds these boat ramp and dive shop signs; some of these signs are located on private property)
- Educational signs (on roads to educate public about specific ecology)
- Directional signs (all are on state or county property and are heavily regulated)

## Vessels and Research

Research and monitoring are critical to achieving the sanctuary's primary goal of resource protection. The purpose of research and monitoring is to establish a baseline of information on the resource and the various components of the ecosystem, and how they interact. In this way, research and monitoring can ensure the effective implementation of management strategies using the best available scientific information. Currently, much of FKNMS' research is done in the Dry Tortugas.

FKNMS currently employs a fleet of approximately 33 vessels of various types, including research, mooring buoy boats, four patrol boats, and one 21-foot outreach and education boat. The long term goal for vessels is to replace several boats and consolidate the fleet (acquire some boats that are more flexible and could be used for several purposes).

Some of FKNMS' research partnerships include:

- National Undersea Research Center (NURC) with the University North Carolina also needs research facilities and has shared need with the FKNMS for bunking quarters.
- Everglades National Park (boundaries intersect with FKNMS area) had similar need for research facilities.
- The University of Miami does a lot of research in the Keys but facilities are located in Miami.

## Education and Outreach

Education and outreach strategies in the action plan fall into two general categories: community involvement and community program strategies and product development strategies. The Florida Keys Eco-Discovery Center has provided a tool to increase outreach and educational activities by providing the facilities.

The sanctuary also has a volunteer program, with goals including:

- Provide a "hands-on" opportunity for the public to become involved in the protection and preservation of their sanctuary;
- Support public education and awareness efforts on how we all may be better stewards;
- Increase community participation in research and monitoring, education, underwater projects, office and administrative tasks, and in representing the sanctuary at certain events and functions.

# ALTERNATIVES AND RECOMMENDATIONS

*The Dr. Nancy Foster Florida Keys Environmental Complex, headquarters for the FKNMS. (Source: FPC)*


*Upper Keys regional office in Key Largo, FL. (Source: ONMS)*

## Florida Keys National Marine Sanctuary

### Current Facilities

The Florida Keys National Marine Sanctuary (FKNMS) is the largest in the system spanning the 126 mile island chain of the Florida Keys through almost 70 miles west of Key West to a cluster of seven islands called the Dry Tortugas. The sanctuary site is currently managed in two distinct areas, the Upper Keys in Key Largo, FL, and the Lower Keys in Key West, FL. The Upper Keys regional office is in a leased, former plumbing supply warehouse along U.S. Route 1. The Lower Keys office is in the new Dr. Nancy Foster Florida Keys Environmental Complex consisting of a visitor center, an administrative building, and a boat maintenance building. A former office was located in Marathon, FL, centrally located in the middle of the Upper and Lower Keys.

While a successful visitor center has been recently opened in Key West in the Lower Keys, a gateway visitor center is needed in the Upper Keys to serve as a point of orientation and a starting point for visitors and tourists to learn more about the FKNMS at one location, therefore encouraging people to further explore the Keys and the sanctuary (including the Florida Keys Eco-Discovery Center). This gateway center could also serve as a co-located administrative and operations headquarters for the Upper Keys. The current Key Largo facility is too small to sustain long term growth, lacks large meeting spaces, is separated from boat operations, and needs communications and IT upgrades.

Additionally, although the Marathon office is no longer operational, it is important for the NMSS to have some kind of presence here to serve as a link between the Upper and Lower Keys for management purposes. Such a satellite office, with conference space, would also be strategic in supporting the local community by providing much needed meeting spaces and a venue / storefront to distribute information about the NMSS.

Other locations include Bahia Honda State Park in a partnership for dockage of vessels and the Dry Tortugas (National Park Service).

### Summary of Needs

- Primary sanctuary research is conducted at the Dry Tortugas islands; there is a need for some kind of satellite location with bunking facilities to allow researchers to stay overnight and extended periods.

## Key Largo, FL

A co-located facility is needed that combines administrative space, vessel support, and a visitor center, that has easy or close access to the water and vessel docking (currently 20 miles roundtrip to marina and five miles to boat docks) and provides visibility of the ONMS to tourists. Such a facility would reduce travel time between facility and boat operations. Other site needs include:

- An improved signage plan at dive shops and docks for regulatory information.
- Increased outreach and education programming with updated facilities.
- Increased maritime heritage exhibits in the Florida Keys through additional storefronts and visitor centers at partner facilities.

## Key West, FL

- The sea wall adjacent to the Key West Dr. Nancy Foster Florida Keys Environmental Complex is in dire need of repairs and will begin to present both a safety and security threat for the FKNMS.
- Increased operational efficiency at the Dr. Nancy Foster Florida Keys Environmental Complex buildings, including HVAC systems, staff training on systems, and the addition of solar panels to the Florida Keys Eco-Discovery Center.
  - A comprehensive preventive maintenance and life-cycle management program of the complex is recommended.
  - The site would like to encourage more energy efficiency with solar panels and a geothermal system to further reduce costs.
  - There is a need to provide personnel training on building systems to maintenance staff.
- The site would like to acquire a larger research vessel (similar to the R/V *Manta* in FGBNMS) to expand research and science in the sanctuary and improve management of the resource.
- A research facility or presence on the Dry Tortugas is needed to further develop science in the sanctuary.
- Signage needs include:
  - Directional signs to the Florida Keys Eco-Discovery Center; due to ongoing construction in the area, the center is hard to find; providing directional signage to let visitors and cruise ships know that the center is there would increase visitor traffic.
- Other wish list items for the sanctuary include:
  - A surge protection system to protect technology is needed for emergency situations such as hurricanes.

*The deteriorating sea wall adjacent to the Nancy Foster Center in Key West poses a safety hazard. (Source: FPC)*

- Increased staffing is needed to operate seven days a week at the Florida Keys Eco-Discovery Center.

## Marathon, FL

As of September 2008 the Marathon satellite office was closed. Maintaining a presence in the middle of the keys is a priority; Marathon is the midpoint between Key West and Key Largo and an operations need for better managing the system.

- A conference space for the Keys should be accommodated as a central meeting space for the Upper and Lower Keys and as an important community and partnering resource.
  - Proper technology such as wireless, teleconferencing, and projection capability should be provided in such a space.
- Additionally, a storefront exhibit with space for maritime heritage materials will help the site to have a dialog with the public about these resources.

## Alternatives

Develop a presence or facility, either NOAA dedicated or through a partnership, for a co-located visitor center and administrative facility in Key Largo that has nearby water access, effectively supporting the ONMS mission. The preferred location would be visible (along Highway 1, near Sharkies, or NURC), have access to boat operations, and provide outreach and education space. Determine the need and / or degree of partner involvement in such a facility.

In Marathon, examine possible partnerships to jointly occupy a facility that supports the outreach mission with a conference facility and offices. Possible partnerships include several local non-profits, including Crane Point, the Henry Flagler Center, Heritage Trails, and Pigeon Key.

While the Dr. Nancy Foster Florida Keys Environmental Complex is relatively new and has only been operational for several years, a few improvements should be made as soon as possible, including repairing the deteriorating sea wall adjacent to the facility and further improving operational efficiencies and energy savings. A new energy converting roof for the Florida Keys Eco-Discovery Center is planned as part of this initiative to improve general energy savings at the complex.

# Alternatives Matrix

## Key West

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

## Marathon

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

## Key Largo

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

# State of Florida

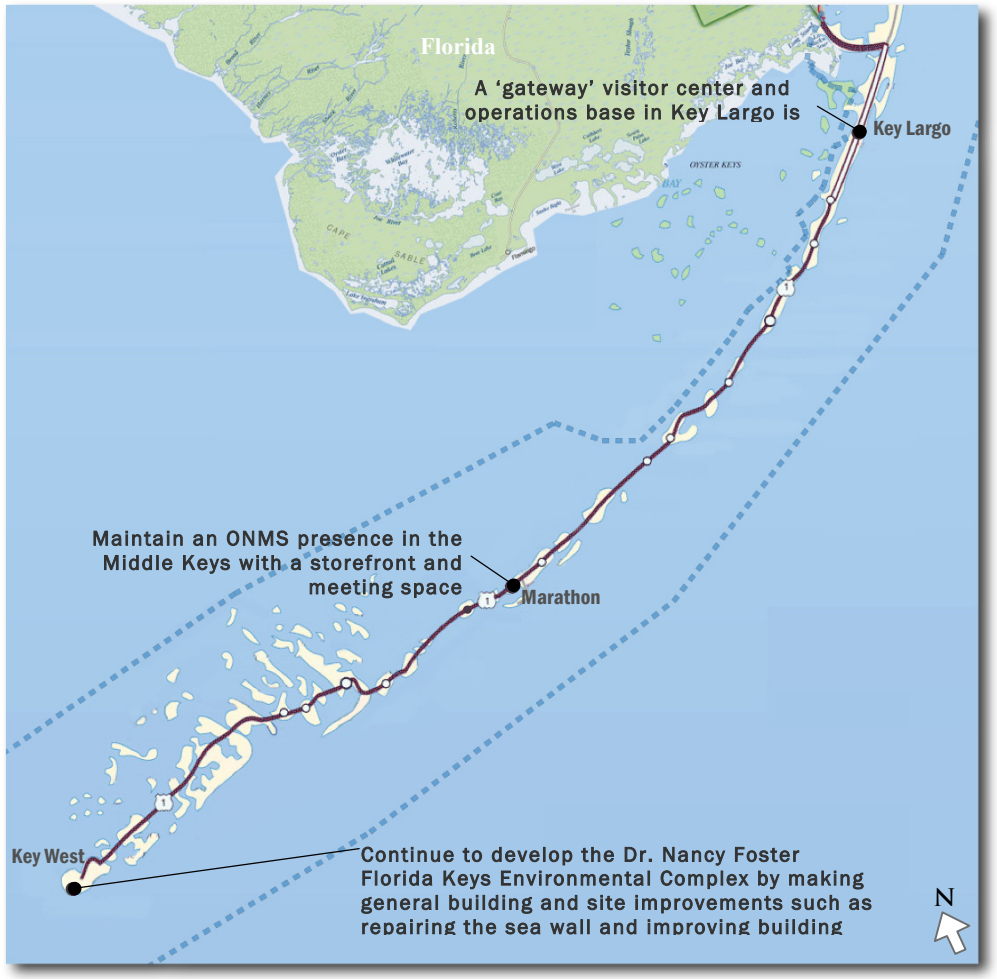
## Florida Keys National Marine Sanctuary

### State of Florida Overall Needs:

- Primary research is conducted in the Dry Tortugas; there is a need for a satellite location with bunking facilities to allow researchers to stay overnight and extended periods.
- A facilities plan is needed for the Upper Keys in Key Largo, FL, to allow for less travel time to the docks and accommodate a much needed gateway visitor center.
- Maintain and ONMS presence in Marathon, FL, through a storefront and shared meeting spaces to provide a centralized base for the sanctuary and allow for community interaction.
- Repair the sea wall adjacent to the Dr. Nancy Foster Florida Keys Environmental Complex in Key West, FL, which is both a safety and security issue for the sanctuary.
- Increase operational efficiency at Dr. Nancy Foster Florida Keys Environmental Complex buildings by providing training on the systems to staff and installing solar panels.

### Map Key

- ONMS Facility Location / Proposed facility location
- Sanctuary boundary



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# FINDINGS

## West Coast Region

The following presents a regional summary of existing conditions including facilities and infrastructure, exhibits and signage, vessels and research, and education and outreach. The West Coast Region includes:

- Channel Islands NMS (California)
- Monterey Bay NMS (California)
- Gulf of the Farallones NMS (California)
- Cordell Bank NMS (California)
- Olympic Coast NMS (Washington)

The following information was compiled through site visits and interviews, facility and infrastructure questionnaires, websites, and sanctuary management plans.

### Regional Priorities

Regional priorities for facility and exhibit improvements include:

- Construct the Monterey Bay NMS Exploration Center in Santa Cruz to serve as the northern gateway to the Monterey Bay NMS.
- Acquire and deploy a new research vessel to replace the aging vessel in the Olympic Coast NMS.
- Acquire a shared vessel for Gulf of the Farallones NMS and Cordell Bank NMS to provide frequent and reliable access for research and monitoring activities.
- Complete the renovation of the Gulf of the Farallones NMS' Crissy Field campus (five buildings).
- Complete the expansion of Cordell Bank NMS' offices within the Red Barn and build a new storage facility at the Point Reyes National Seashore complex.
- Complete construction of the Ocean Science Education / Outreach Center for Teaching Ocean Sciences (OCTOS) Building in partnership with University of California Santa Barbara, to provide administrative office space for the Channel Islands NMS, and a K-12 learning center to be operated jointly by UCSB and the site.
- Acquire expanded administrative office space for the Monterey Bay NMS.
- Acquire an expanded location for the Monterey Bay NMS headquarters with more mission-appropriate spaces (a partnered facility with the U.S. Coast Guard Station Monterey is the preferred location).
- Acquire proper vessel support, dive locker, storage, and docking facilities for the shared West Coast R/V *Fulmar*.
- Install video teleconferencing capability at all West Coast sanctuaries, allowing for improved communications among the sites.

# FINDINGS

## Channel Islands National Marine Sanctuary

In 1980, a 1,252-square-nautical-mile portion of the Santa Barbara Channel was given a special protected status with the designation of the Channel Islands National Marine Sanctuary (CINMS). The sanctuary is an area of national significance because of its exceptional natural beauty and resources. It encompasses the waters that surround Anacapa, Santa Cruz, Santa Rosa, San Miguel and Santa Barbara Islands, extending from mean high tide to six nautical miles offshore around each of the five islands. The sanctuary's primary goal is the protection of the natural and cultural resources contained within its boundaries.

### Facilities and Infrastructure

Main headquarters office is located on the first floor of a historic building in Santa Barbara Harbor. This site has a small but steady stream of visitors drawn to the marina, restaurant and Museum. The Sanctuary's vessel is moored at this marina. Several satellite offices include:

- Small office on State Street in Santa Barbara (with only a few staff).
- Southern office located in Channel Island Harbor for several staff members (no store front, only programming).

A new location for headquarters (administrative and public outreach space) is planned at the UCSB in a facility called the Ocean Science Education / OCTOS Building.

Even after the new building is completed, maintaining a presence in Santa Barbara's harbor is ideal for public exposure, volunteer access, and proximity to the dock.

### Exhibits and Signage

The CINMS has done a great job in leveraging multiple partnerships for exhibits, signs, and visitor center space:

- CINMS and the Santa Barbara Maritime Museum have worked together in the development of interactive shipwreck exhibits in the museum.
- The UCSB OSEB/OCTOS building will be the primary educational center and administrative headquarters for Channel Islands NMS when it is completed.
- A partnership between the ONMS and the Santa Barbara Visitor Center has allowed CINMS to place signs and a research kiosk in the loft location overlooking the harbor.
- Warner Education Center (ONMS exhibit and educational materials).
- ONMS kiosk at the California Welcome Center in Oxnard.

- Sign at the Ana Capa Visitor's Center (will be updated soon).
- Cabrillo High School Aquarium on Lompoc.
- Weather kiosks in Santa Barbara and Oxnard.
- Sign at the Channel Islands Visitors Center in Ventura.

CINMS currently has six interactive kiosks in place at various locations, with plans for one additional kiosk in 2010.

## Vessels and Research

*Northern Elephant Seal in the MBNMS (Source: ONMS)*

CINMS research efforts focus on evaluating ecosystem health, collecting data on living marine resources, assessing the impact of human activities, implementing effective resource management strategies, and increasing understanding of the importance of the sanctuary.

- The sanctuary participates in research projects by combining efforts with organizations such as the University of California Santa Barbara, US Geological Survey, NOAA Coastal Ocean Program, NOAA National Marine Fisheries Service, the National Park Service, the Department of Fish and Game, the Reef Environmental Education Foundation, the Plfeger Institute of Environmental Research, and the Collaborative Marine Research Program.
- CINMS currently maintains a fleet of four vehicles and two vessels. Additionally, the sanctuary uses contract aircraft on an as-needed basis.
- Research vessels include the R/V *Shearwater* (62-foot), the R/V *Xantu,* and the *Seawolf* aircraft.

## Education and Outreach

The goal of the CINMS education and outreach programs is to promote understanding, support and participation in the protection and conservation of marine resources.

The sanctuary provides a variety of outreach and educational programs for teachers, students, resource users, and the general public.

The partnership with the Boating Instruction and Safety Center (BISC) that is being constructed at the Channel Island Harbor will allow access to classrooms and auditoriums which will encourage expanded outreach and education opportunities in the area for CINMS.

# ALTERNATIVES AND OPTIONS

## Channel Islands National Marine Sanctuary

### Current Facilities

Currently, the main headquarters office is located in leased office space Santa Barbara Harbor, near a restaurant and the Santa Barbara visitor center. The southern satellite office is located in the Channel Islands Harbor in Oxnard. Additional CINMS staff members are located in an office building in downtown Santa Barbara on State Street.

This facility with extremely tight spaces and overcrowding is too small for existing staff. It is not visible to the public due to a location in an alley despite significant numbers of visitors to the general area. The new location for CINMS headquarters is planned at the University of California Santa Barbara (UCSB) in a facility named the Ocean Science Education (OSEB / Outreach Center for Teaching Ocean Sciences (OCTOS) Building. The building is planned to contain office and outreach spaces.

### Summary of Need

- Building infrastructure on the Channel Islands for telepresence and Internet2 capability is a priority to allow for educational programs and to connect the public with the sanctuary.
- Completing construction on the OSEB / OCTOS building is the first priority and will solve many of the specific facility needs by providing expanded office and education/outreach spaces.
- All vessels and vessel support should be accommodated in the Santa Barbara Harbor; this is an ongoing process in partnership with the City of Santa Barbara. The proper lease agreement is currently being negotiated with the city.
- Providing an additional research vessel that better meets the specific needs of the sanctuary.
- Teleconferencing is needed at all West Coast regional sites.

### Alternatives

In fiscal year 2005, Congress awarded $4 million to the OSEB building project and in fiscal year 2006 awarded an additional $3 million. These funds are being applied toward the design and construction of the CINMS office space and OCTOS. UCSB and the Marine Science Institute are raising private funds to match the federal funding. The ONMS will not own the new facility,

*A new office space was recently constructed in the Channel Islands Harbor in Oxnard and will house several staff members. (Source: FPC)*

*Current Sanctuary office space is too small to accommodate existing staff and does not provide any capability for expansion (Source: FPC)*

but will enter into a long-term lease with UCSB. The lease was finalized in the summer of 2009.

Prior to the completion of construction, CINMS will develop a plan for the reallocation of staff and resources. This will likely involve the programming to determine function, along with redesign of space at the current Santa Barbara Harbor office (some of which may be kept as part of CINMS facilities) and decisions about the placement of individual staff, departments, equipment and other assets.

*The architectural rendering of the OCTOS Building represents the vision of the facility (Source: CINMS)*

## Alternatives Matrix

| | No Action/ Continue As Is | Renovate In-place (Santa Barbara Harbor) | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility (OCTOS Building) | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| **Availability** | | ■ | | | ■ | |
| **Community Outreach** | | ■ | | | ■ | |
| **Resource Protection** | | ■ | ■ | | | |
| **Capacity** | | ■ | | | ■ | |
| **Cost and Efficiency** | | | | | | |

# FINDINGS

## Monterey Bay National Marine Sanctuary

The Monterey Bay National Marine Sanctuary (MBNMS) is a federally protected marine area offshore of California's central coast. Stretching from Marin County to Cambria, MBNMS abuts a shoreline length of 276 miles and contains 5,322 square miles of ocean, extending an average distance of 30 miles from shore. At its deepest point, the MBNMS reaches a depth of 10,663 feet. It is our nation's eleventh marine sanctuary and the largest (larger than Yosemite or Yellowstone National Parks). Supporting one of the world's most diverse marine ecosystems, it is home to numerous mammals, seabirds, fishes, invertebrates and plants in a remarkably productive coastal environment.

### Facilities and Infrastructure

Sanctuary headquarters are located in Monterey, CA, in leased office space. A dedicated visitor center for MBNMS has been planned in Santa Cruz, CA, on the northern edge of the sanctuary.

- The regional office is located in Heritage Harbor in Monterey, CA.
- A satellite office and a small 1,300 square foot visitor center, the Coastal Discovery Center, are located in San Simeon, CA, near the Hearst Castle State Park in partnership with the park.
- A small office is located in Santa Cruz, CA, for a few staff members.

### Exhibits and Signage

Existing signs and exhibits include the Pigeon Point Lighthouse, which has a small exhibit focused on maritime heritage, the Maritime Museum in Monterey, which sometimes has exhibits related to MBNMS, and occasionally the Monterey Aquarium. Educational interpretive signs are located in many areas along the coast, including tide pools, beaches and wharfs.

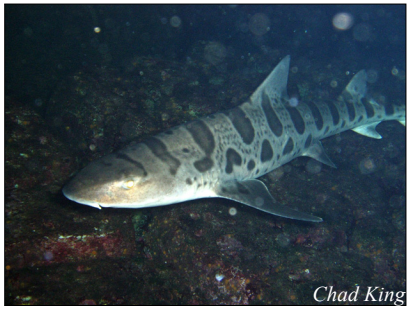
Several significant exhibit and sign opportunities are under development for MBNMS, and opportunities that might be explored include Cannery Row in Monterey or the Boardwalk in Santa Cruz.

The ONMS Exploration Center planned in Santa Cruz will serve as the gateway to MBNMS. The future visitor center will serve the entire Central California region and beyond, and will foster stewardship of the MBNMS by connecting people and educating them about the water, geology, ecosystem, and the extraordinary diversity of its waters.

The Monterey Bay Sanctuary Scenic Trail is a recreation and interpretive pathway that links

*Participants in GFNMS high school monitoring program (Source: GFNMS)*

existing and new trail segments into a continuous coastal trail around Monterey Bay. It is a coastal path for walkers, joggers, bikers, families, locals, and visitors.



*Leopard Shark (Source: ONMS)*

## Vessels and Research

Research goals for the sanctuary include understanding changes in the sanctuary ecosystem through the Sanctuary Integrated Monitoring Network (SIMoN), facilitating collaboration among regional research groups, addressing research issues related to resource management, and interpreting research information for decision makers and the public.

The MBNMS currently utilizes the new 67-foot R/V *Fulmar*. The vessel is home ported at the Monterey Harbor, and also serves the Gulf of the Farallones and the Cordell Bank National Marine Sanctuaries.

Lab facilities are needed to better understand and manage the sanctuary (Granite Canyon lab is a possible location).

## Education and Outreach

Current issues include a lack of exposure to the public because the headquarters office is not a visitor center or storefront for MBNMS. The primary visitor center for the sanctuary is being planned in Santa Cruz. Storefront possibilities in Monterey are possible through partnerships and should be further explored.

Events and programming to reach the public include:

- Sanctuary Currents Symposium
- Snapshot Day
- First Flush
- Coastal Cleanup Day
- Internships and Volunteer Programs
- TeamOCEAN Kayaker Program
- BeachCOMBERS
- MERITO (Multicultural Education for Resource Issues Threatening Oceans)
- Diver Resources and Partnerships
- Bay Watershed Education and Training Program (B-WET)

Additional meeting and gathering space would be needed to expand these programs.

# ALTERNATIVES AND OPTIONS

## Monterey Bay National Marine Sanctuary

### Current Facilities

The current sanctuary headquarters are becoming too small to accommodate growth and programs. New or expanded office and meeting space is needed at MBNMS to further the growth of the site.

The Coastal Discovery Center located in San Simeon, CA, highlights the marine ecosystems of Monterey Bay. Updated and improved exhibits are desired for the visitor center to improve the visitor experience and refresh the center.

The newest ONMS visitor center, the Exploration Center, is being planned in Santa Cruz, CA, through a public-private partnership to design and build the facility as the gateway to Monterey Bay. The concept for the Exploration Center includes:

- Involving and educating visitors about the sanctuary's unique and fascinating coastal and marine natural resources.
- Instilling in visitors a sense of personal stewardship with regard to the sanctuary and an understanding of how to help protect it.
- Provide orientation for visitors as they enter the sanctuary, so they will use and enjoy it in a responsible and sensitive manner.
- Construct an environmentally sensitive building that will demonstrate the advantages of sustainability.

*This architectural rendering of the planned visitor center in Santa Cruz, CA, presents the vision for the facility. (Source: MBNMS)*

### Summary of Need

- The planned ONMS Exploration Center in Santa Cruz is the first priority for MBNMS; construction is planned to begin in 2010.
- There is a need for new headquarters administrative space in Monterey, CA, before the current lease expires.

*MBNMS headquarters building, Monterey, CA (Source: ONMS)*


*The Coastal Discovery Center in San Simeon is currently the primary visitor center for MBNMS (Source: FPC)*

*Vessel support and dive locker at MBNMS (Source: FPC)*

- New or expanded administrative space for the regional offices in Monterey, CA, to better serve the West Coast Region.
- A marine operations facility on the pier (possible partnership with the Coast Guard).
- Improved vessel support and research spaces, including:
  - Lab space (wet and dry)
  - Storage for equipment
  - Proper dive locker facilities
- Conferencing and meeting space
- Technology upgrades for outreach and research that provide the ability to connect the sanctuary sites.
- Provide storefront and exhibit space in Monterey in an area with high tourist traffic, such as Cannery Row.
- Increase operational efficiency of the site by providing needed facilities.

## Alternatives

### Short Term:

The short term plan should extend leases at the current facilities until the new facilities are completed (or a new space is acquired).

### Long Term:

The ONMS should compare the feasibility of several options for expanding the MBNMS headquarters office and develop a preferred strategy for procurement of the facilities required to support the sanctuary.

The preferred option at the time of this master plan assumes that the partnership with the Coast Guard and the facility location adjacent to the current docking arrangement is the preferred option. Recognizing the benefit of partnerships, NOAA and the USCG would like to explore joint-use opportunities at Station Monterey to benefit both organizations, reduce costs, and responsibly reuse federal resources.

*Unaccompanied Personnel Housing building on the USCG Station Monterey; potential future location for the headquarters. (Source: Fraser & Fogle Architects)*

The Draft Planning Proposal completed in May 2009 recommends expanding the administrative building on the campus for ONMS use. This option increases the efficient use of Station Monterey by converting the existing Administration Building for the MBNMS and consolidates Coast Guard Administration and Unaccompanied

Personnel Housing / Watchstander facilities in the existing Unaccompanied Personnel Housing.

## Alternatives Matrix

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| **Availability** | | | | | | |
| **Community Outreach** | | | | | | |
| **Resource Protection** | | | | | | |
| **Capacity** | | | | | | |
| **Cost and Efficiency** | | | | | | |

# FINDINGS

## Gulf of the Farallones National Marine Sanctuary


*A sea turtle in the GFNMS (Source: FFNMS)*

The Gulf of the Farallones National Marine Sanctuary (GFNMS) protects an area of 948 square nautical miles (1,255 square miles) off the northern and central California coast. Located just a few miles from San Francisco, the waters within the GFNMS are part of a nationally significant marine ecosystem. Encompassing a diversity of highly productive marine habitats, the sanctuary supports an abundance of species.

### Facilities and Infrastructure

Headquarters offices of the GFNMS are located at the Presidio in San Francisco, called Crissy Field.

A satellite office is located in Half Moon Bay, CA, south of San Francisco.

### Exhibits and Signage

The Sanctuary Visitor Center provides unique and engaging programs that allow students to see their connection to ocean habitats and wildlife (located at the Presidio). Additional visitor center and storefront space is desired in Half Moon Bay to reach more people and have additional ONMS presence in the area.

Current signs include locations at several beaches, the Fitzgerald Marine Reserve, and the City of Pacifica. The sanctuary currently operates two interactive kiosks and plans to place one additional kiosk in 2010.

### Vessels and Research

The Gulf of the Farallones is a complex region with high biological diversity; nationally significant wildlife breeding and foraging areas; significant commercial and recreational fishing; estuarine habitats; numerous federally, state and locally protected marine and estuarine waters; watershed influences and impacts from eight million San Francisco Bay Area residents.

The GFNMS currently utilizes the new 67-foot R/V *Fulmar.* The vessel is home ported at the Monterey Harbor in Monterey, CA, and also serves the MBNMS and the CBNMS.

### Education and Outreach

The GFNMS, often in partnership with the non-profit group Farallones Marine Sanctuary Association, supports several exciting and innovative education programs throughout the San Francisco Bay Area.

- Programs include:
  - Crab Cab
  - Webs Under Waves
  - SharkMobile
  - Science at Sea

- High School Monitoring
- Sanctuary Explorers Summer Camp

- Teacher Resources include:
  - High School Teacher Professional Development Workshops
  - Marine Education Resources
  - Slide Presentations
  - Fact Sheets
  - Posters

# ALTERNATIVES AND OPTIONS

*The Crissy Field complex at the Presidio, home of the GFNMS in San Francisco (Source: FPC)*

## Gulf of the Farallones National Marine Sanctuary

### Current Facilities

Headquarters offices of the GFNMS are located at the Presidio in San Francisco, called Crissy Field. A master plan was completed in 2009 for the campus, calling for the site to remain in the current beachfront location in San Francisco. The sanctuary occupies a former U.S. Coast Guard Station and the master plan calls for a refurbishment of the existing buildings to accommodate office needs, visitor and education spaces, and other new spaces.

A satellite office for GFNMS is located in a leased office center in Half Moon Bay, CA, south of San Francisco. A possible future expansion of the sanctuary may require additional satellite offices to better manage a larger territory.

### Summary of Need

### Crissy Field

- Continue to implement master plan recommendations and strategies at the Crissy Field campus.

### Half Moon Bay

- Maintain a presence in Half Moon Bay and keep the community involvement already present at this location.
  - The primary goal at this satellite office is for a visitor center / store front and additional office space to better reach the local community and tourists.
- A shared research vessel is needed for GFNMS and CBNMS. The primary docking would be in San Francisco; appropriate support spaces would be required.

### Alternatives

The facilities at Crissy Field have previously been analyzed to provide effective utilization and plans for future use of the buildings to better support the mission of the sanctuary. The master plan, completed in 2009, should be implemented as funding is available.

There are several alternatives possible for a visitor center or storefront and expanded administrative space for the Half Moon Bay satellite office:

- Main Street; El Grenada
- Pillar Point Harbor (vacant restaurant space in the mall)

- Outdoor seating area provides opportunities for outdoor classroom and lab space for educational programs.
- This is the prominent and preferred location because it provides access to the water, lots of foot traffic, there is an existing partnership with the harbor master.
- This site has access to adequate parking in the adjacent parking lots.

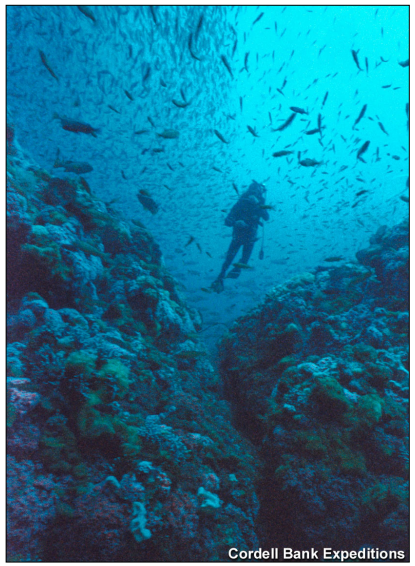
- The Pillar Point Harbor Oceana Mall: With 22 storefronts, the Oceana Mall provides retail space in a mall setting. The mall has not been well received in the community, and is still mostly vacant, so this location may not be the best location to reach the maximum number of people.
- The vacant restaurant (formerly a Chart House restaurant, the location is off the highway on the way to Devil's Slide), is another possible location for a shared visitor center with a partner.
  - The 10,000 square feet of available space is too large for an ONMS dedicated facility, but partnering with other environmental organizations is a possibility at this location.
  - The building has good highway location, stellar ocean views, and is located near the water.
  - Foot paths are available to access beach for educational programs.

The feasibility of these options, along with others not known at the time of this document, should be further explored and a strategy developed for procurement of the facilities required to support the Half Moon Bay satellite office activities and programming. Identify the need and/or the degree of partner involvement in such a facility, along with a range of preliminary alternatives for consideration including physical locations, types of facility/exhibit, signage, and technology. Opportunities for partners in such a facility should be examined and compared.

## Alternatives Matrix

| | No Action/ Continue As Is | Renovate In-place (Crissy Field) | Lease Additional or New Space (HMB) | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

# FINDINGS




*Diver among pinnacles and a large school of fish (Source: ONMS/Cordell Bank Expeditions)*

## Cordell Bank National Marine Sanctuary

The Cordell Bank National Marine Sanctuary (CBNMS) was established in 1989 to protect and preserve the extraordinary ecosystem, including marine birds, mammals, and other natural resources of Cordell Bank and its surrounding waters. CBNMS protects an area of 397 square nautical miles (526 square miles) off the northern California coast. The sanctuary encompasses brilliant and diverse marine life, above and below the water. Cordell Bank is located on the continental shelf, about 43 nautical miles (nm) northwest of the Golden Gate Bridge and 18 nm west of the Point Reyes lighthouse.

### Facilities and Infrastructure

Headquarters offices for CBNMS are located in the Red Barn facility in the Point Reyes National Seashore (part of the NPS).

### Exhibits and Signage

The sanctuary has the following exhibits:

- Point Reyes National Seashore Bear Valley Visitor Center with interpretation, exhibits, and educational signs.
  - There are 300,000 - 400,000 visitors per year to the Point Reyes Bear Valley Visitor Center.
- The Oakland Museum of California has a major ONMS exhibit in the Natural Science Wing and educational programs.
- The Sonoma County Regional Parks has several ONMS signs in key coastal locations.
- The Bodega Bay Marine Lab has signs and aquaria on the NMSS.
- The GFNMS Visitor Center at Crissy Field features information on CBNMS.

The CBNMS has various signs in locations such as the Bodega Bay Marine Labs, the Spud Point Marina, and at several locations along the Point Reyes National Seashore and lighthouse. The sanctuary currently has one interactive kiosk in place at the Spud Point Marina. Possible signage opportunities along the coast (especially throughout the northern expansion area) include:

- Historic Point Reyes Lighthouse
- Fort Ross State Historic Park
- Sonoma Coast State Beach
- Salt Point State Park
- Sea Ranch

## Vessels and Research

The CBNMS currently utilizes the new 67-foot R/V *Fulmar.* The vessel is home ported at the Monterey Harbor in the MBNMS, and also serves the GFNMS and MBNMS.

- When the vessel works at Cordell Bank, it is ported at Spud Point Marina.
- Research opportunities at the sanctuary are currently limited due to lack of vessel usage; the site only has limited access to the vessel.

## Education and Outreach

The sanctuary works to get ocean literacy-based programs into schools by working with the ONMS and local partners. Through exhibits, radio programs, teacher workshops and programs, field seminars, and occasional lectures and films, the sanctuary staff hopes to reach as many people as possible to emphasize the importance of a healthy ocean.

New opportunities for outreach and education may be leveraged through partnerships such as the Fort Ross National Park.

# ALTERNATIVES AND OPTIONS

*The Red Barn building at Point Reyes National Seashore (Source: FPC)*

## Cordell Bank National Marine Sanctuary

### Current Facilities

The current Red Barn facility is located within the Point Reyes National Seashore facility through a partnership with the park. The current headquarters space is growing too small to support a growing sanctuary program. The facility is currently in the design development stage of a renovation to expand the offices to include additional office, storage, and meeting spaces.

The storefront for the CBNMS is in partnership with the park and is located in the park's Bear Valley Visitor Center. There is currently an entire corner of the center dedicated to ONMS exhibits.

A possible future expansion of the sanctuary may require additional satellite offices to the north of the sanctuary to better manage the larger territory.

### Summary of Need

- Acquiring an *R/V Fulmar*-class vessel to support management activities in Cordell Bank and Gulf of the Farallones, along with vessel support facilities and the funding to run and maintain them is a first priority, whether or not sanctuary expansion occurs.
- The renovation project to develop the vacant remainder of the Red Barn to accommodate additional offices and storage is underway; completing this project will solve many of the space needs at the headquarters level.
- A presence in Bodega Bay is a priority (at the Bodega Bay Marine Lab or Spud Point). A presence or facility here could solve office needs for the possible expansion, research needs, and outreach needs.
  - This partnership represents both an ONMS presence and a research and science tie to the northern end of the sanctuary.
- The site would like to expand research opportunities and facilities.
- Meeting space with teleconferencing capability is needed at the Point Reyes Red Barn facility.
- The site's priorities would be profoundly affected by a boundary expansion. If the site boundary expansion is approved, a visitor center or storefront moves up in priority.

Field equipment is currently stored in three different locations because there is no on-site storage. Currently, CBNMS is in the design phase

of developing additional office and storage space at the Red Barn.

## Alternatives

The preferred alternative is to implement the proposed expansion and renovation of the Red Barn building. Groundbreaking for the office addition and on-site storage is scheduled for fall of 2009.

The potential of a partnership for office and research space at the Bodega Bay Marine Lab with the University of California-Davis for both CBNMS and GFNMS should be further explored and developed. This opportunity should be properly examined and planned in advance of funding as Bodega Bay will be a hub of operations for both GFNMS and CBNMS if the expansion occurs. It is also a good partnership to leverage for research needs even if sanctuary expansion is delayed.

Acquiring a shared vessel between GFNMS and CBNMS is also a top priority to expand research and monitoring of the two sanctuaries. This will greatly improve operations at all three sanctuaries currently sharing the R/V *Fulmar.*

## Alternatives Matrix

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility (Bodega Bay Marine Lab) | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

# State of California

**Cordell Bank National Marine Sanctuary**

**Gulf of the Farallones National Marine Sanctuary**

**Monterey Bay National Marine Sanctuary**

**Channel Islands National Marine Sanctuary**

## State of California Overall Needs:

- Improve communications between sites. There is no established mechanism to bring together the superintendents or staff to actively discuss issues that may affect multiple sites.
- Vessel and research support facilities needed for ONMS mission (including research labs, storage, and dive support).
- Additional space needed for program growth potential, including office and meeting space.

### Map Key

- Gulf of the Farallones proposed expansion area
- Cordell Bank proposed expansion area
- ONMS Facility Location

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# FINDINGS


*Human presence on the Olympic Coast predates historical record and attests to the subtle understandings of the marine environment. (Source: Olympic Coast NMS)*

## Olympic Coast National Marine Sanctuary

The Olympic Coast National Marine Sanctuary (OCNMS) covers 3,310 square miles off Washington State's Olympic Peninsula, extending 135 miles along the coast from about Cape Flattery to the mouth of the Copalis River. The seaward boundary of the sanctuary varies from about 25 to 40 miles offshore. This includes most of the continental shelf, as well as parts of three important submarine canyons: the Nitinat Canyon, the Quinault Canyon and the Juan de Fuca Canyon.

### Facilities and Infrastructure

The headquarters are located in Port Angeles, a city on the north coast of the peninsula, in a commercial building known as The Landing. The building is located near to the ferry to Victoria, British Columbia.

### Exhibits and Signage

- The Olympic Coast Discovery Center at The Landing mall is the primary visitor center and ONMS exhibit.
- Since the sanctuary was staffed in 1994, the education coordinator and manager have consulted with potential partner agencies and explored opportunities for collaboration on interpretive facilities.
- Several signage projects have been developed cooperatively with the Makah Tribe.
- A signage plan has been developed for the sanctuary (completed in 1999).
  - The plan is a great opportunity but PAC funds have been limited to actually implement it.
- There are opportunities to place additional ONMS signs at Ocean Shores and Grays Harbor.
- There is a sign at the Cape Flattery trail head.
- There is another opportunity for ONMS signs at the Beach Six turnout.
- The Lake Ozette Trail head is an opportunity that currently has some funding for signs about resource protection.

### Vessels and Research

The OCNMS conducts research for three important reasons: to explore and know what's there, to detect trends, improvements, or declines in important resources or changes that are part of larger global processes, and to give the scientific basis for making important conservation decisions.

- The OCNMS supports research with the use of its 36-foot aluminum research vessel, the *R/V*

*Tatoosh*. The vessel is more than 15 years old and past expected service life.

## Education and Outreach

Many education and outreach opportunities have risen through a partnership with the Feiro Marine Life Center in Port Angeles. The OCNMS is able to bring school groups in for workshops, but there is a need for a bigger classroom facility along with teaching and demonstration space.

Outreach and education programs run by the OCNMS include:

- Ocean Science Professional Development Workshop
- Teacher resources
- Annual Pacific Seabird Group
- Beachcombers Fun Fair
- Annual Port Angeles Sea Kayak Symposium
- Quileute Days
- Annual Makah Days Celebration
- West Coast Sea Kayak Symposium
- Dungeness Crab and Seafood Festival
- Numerous educational conferences and symposiums

# ALTERNATIVES AND OPTIONS


*The Landing mall, home to the OCNMS headquarters (Source: OCNMS)*

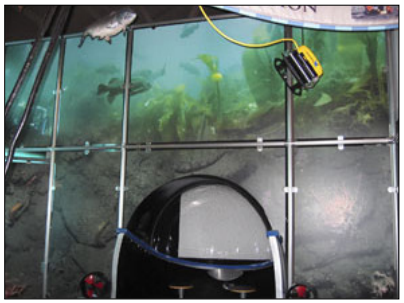

*Exhibit in the Discovery Center (Source: OCNMS)*

## Olympic Coast National Marine Sanctuary

### Current Facilities

Current OCNMS facilities are located in Port Angeles, WA, and consist of the leased administrative headquarters in a commercial building known as The Landing mall. Also located in this building, separate of the administrative space, is the Discovery Center, containing interactive exhibits and programming to encourage visitors and tourists to learn more about the sanctuary. The current location has insufficient storage space; a rented storage warehouse is located about ten minutes away from the headquarters location.

However, the long term goal for the site is a collocated facility with vessel support and storage, laboratory, administrative, and visitor center functions located in a consolidated facility.

### Summary of Need

- Create a presence and visibility for ONMS in the southern end of the OCNMS with a satellite office and store front. Such a presence would create more visibility along the Washington shoreline through a satellite office, signage, and programming. Possible locations include Ocean Shores and Kalaloch.
- New exhibits or larger space for exhibits at Discovery Center in Port Angeles is desired.
- There is a commitment to reviving plans for a joint visitor center in Kalaloch through a partnership with the National Park Service. This option should be further examined for its feasibility.
- A new vessel is needed to replace the aging current vessel to serve and meet multiple missions of OCNMS (current vessel, *R/V Tatoosh,* is well past its expected service life).
  - A maintenance shop to support the vessel would be needed.
- The site needs wet lab space with storage to support research and monitoring activities.
- A co-located facility with dock, storage, and administrative space in one campus is a long term goal for the site.

### Alternatives

**Short Term:**

Consider extending the lease on current space to include additional exhibit space and meeting / classroom space. The site should continue to leverage partnerships for other facility needs.

**Long Term:**

The preferred alternative is for a federally constructed and owned building in a visible location on the Port Angeles waterfront, which would meet all of the headquarters space requirements. A preferred strategy for procurement of the consolidated facilities required to support the sanctuary that includes vessel support, laboratory, visitor center, and headquarters administrative space in Port Angeles, WA, should be developed. At the time of this study, the preferred alternative is assumed to be the new construction of a NOAA owned facility.

Development of this project should include a range of preliminary alternatives for consideration which covers possible physical locations, types of facilities and exhibits that are required, signage, technology, and other needs. The feasibility of both leasing a facility and constructing a new facility and the pros and cons of each arrangement should be explored, along with identifying the need and/or the degree of partner involvement in such a facility.

The opportunity for a shared visitor center or store front in Kalaloch should continue to be discussed with the NPS; the project should be moved forward again as soon possible and the partnership reconstituted.

## Alternatives Matrix

| | No Action/ Continue As Is | Renovate In-place | Lease Additional or New Space | Purchase and Re-purpose an Existing Facility on a New Site | Construct a New Facility | Demolish an Existing Owned Building and/or Dispose of a Site |
|---|---|---|---|---|---|---|
| Availability | | | | | | |
| Community Outreach | | | | | | |
| Resource Protection | | | | | | |
| Capacity | | | | | | |
| Cost and Efficiency | | | | | | |

# State of Washington

## Olympic Coast National Marine Sanctuary

### State of Washington Overall Needs:

- Provide ONMS visibility along the southern coast line through satellite offices, signage, exhibits, and programming.
- An appropriate vessel is needed to support research and monitoring missions (the current R/V *Tatoosh* is past its service life).
- New and expanded exhibits at the Discovery Center in Port Angeles are needed.
- Expand relationships with local Indian tribes.

### Map Key

● ONMS facility location / proposed facility location

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# FINDINGS

## Pacific Islands Region

*Hawaiian green sea turtle in the HIHWNMS (Source: ONMS)*

The following presents a regional summary of existing conditions including facilities and infrastructure, exhibits and signage, vessels and research, and education and outreach. The Pacific Islands Region includes:

- Hawaiian Islands Humpback Whale NMS (Hawai‘i)
- Fagatele Bay NMS (American Samoa)
- Papahānaumokuākea Marine National Monument (Hawai‘i)

The following information was compiled using the Facilities Master Plan for the Pacific Islands Region (completed in 2009), the Papahānaumokuākea Marine National Monument Requirements Document, along with site websites. The regional headquarters for the Pacific Islands Region is located in the Hawai‘i Kai, Honolulu office.

### Regional Priorities

Regional priorities for the Pacific Islands Region primarily include implementing the requirements identified in the master plan. Regional priorities for the Pacific Islands Region primarily include implementing the requirements identified in the regional master plan, completed in 2009.

Regional priorities include:

- Complete renovations of the Hawaiian Island Humpback Whale NMS facilities in Kīhei, Maui, including the renovation of two existing buildings to create a visitor center and administrative office space, and the creation of an outdoor courtyard containing exhibits and connected to interpretive trails leading to an ancient fish pond and a dune restoration project.
- Complete a partnership project with the American Samoa Department of Commerce to renovate office space and provide exhibits for the Territorial Discovery Center.
- Complete development of new exhibits for the Lāhaina Visitor Center.
- Acquire facility space on Kaua‘i to accommodate a Pacific Islands Region office expansion.

# FINDINGS

## Hawaiian Islands Humpback Whale National Marine Sanctuary

The Hawaiian Islands Humpback Whale National Marine Sanctuary was created by Congress in 1992 to protect humpback whales and their habitat in Hawai‘i. The sanctuary, which lies within the shallow (less than 600 feet), warm waters surrounding the main Hawaiian Islands, constitutes one of the world's most important humpback whale habitats.

The sanctuary is located from the shoreline to the 100-fathom isobath (600 foot depth) in the four island area of Maui; Penguin Bank; and off the north shore of Kaua‘i, the north and south shores of O‘ahu, and the north Kona and Kohala coasts of the Big Island.

### Facilities and Infrastructure

The headquarters office for the HIHWNMS is located in Kīhei, Hawai‘i, on the Island of Maui on property owned by NOAA. It includes a visitor center, office building, and a new multipurpose education building. The facility provides for numerous outreach and education programs, and is the base for research and rescue activities for the sanctuary. This unique location is fronted by a historical Hawaiian fishpond and provides for easy access of the shoreline for educational activities. The sanctuary has several satellite offices that span the Hawaiian Islands.

The Honolulu office of the humpback whale sanctuary is co-located with the headquarters office of the PMNM and houses many of the administrative staff including the Sanctuary Superintendent. The office serves as the base of operations for the Sanctuary Ocean Count project and also serves as a venue for scheduled volunteer training, workshops, and meetings.

The sanctuary office in Līhu‘e, Kaua‘i, is a small office in a commercial office complex that serves as the base of operations for sanctuary programs on the Island of Kaua‘i. The office also serves as a venue for scheduled volunteer training, workshops, and meetings in the area.

The sanctuary office in Kona is a small office located at the Natural Energy Lab Hawai‘i Authority that serves as the base of operations for sanctuary programs on the Big Island, including outreach and resource protection programs.

The state sanctuary office is located within the State of Hawai‘i Department of Land and Natural Resources, Division of Aquatic Resources office in Honolulu. This office is primarily administrative.


*Views of Kane`ohe Bay from Coconut Island on the Island of O`ahu (Source: ONMS)*

## Exhibits and Signage

The sanctuary currently has four interactive kiosks. A visitor center with exhibits is located in Kīhei at the Sanctuary headquarters campus.

## Vessels and Research

The sanctuary conducts and supports humpback whale research that aims to increase scientific knowledge about the North Pacific humpback whale population and its habitat. Research efforts include photo identification, population, birth and mortality rates, and whale behavior.

The majority of humpback whale research and response is done out of Maui where the sanctuary uses Maʻalaea Harbor as the base for the small boats. Currently, the sanctuary is able to use available slip space, but a permanent slip space is required to insure a long-term presence in the small harbor. The sanctuary should continue to pursue an arrangement with the U.S. Coast Guard to utilize one side of its new pier and to share any future expansion of its station for possible space for boat maintenance and storage areas.

The primary vessel for the sanctuary is the *Seacat*. This 22-foot catamaran, which is powered by two 75 horsepower outboard engines and can accommodate up to six passengers, was built in Hawai'i. The *Seacat* is used to supplement humpback whale research activities and plays an important role in emergency responses to entangled whales and other sick or injured marine mammals. The *Seacat* is jointly managed by the State of Hawaiʻi's Department of Land and Natural Resources.

The sanctuary currently shares the *Hihimanu*, an 11-meter vessel, with the PMNM. The vessel is trailered on Ford Island at the site of the NOAA Pacific Region Center when it is in Oʻahu or is based out of Maʻalaea Harbor when it used in Maui during the humpback whale season.

## Education and Outreach

Outreach and education programs and projects are conducted to foster awareness of sanctuary resources and to promote ocean stewardship among Hawaiʻi's residents and visitors. Information about humpback whales and their habitat in Hawaiʻi is made available to the public through educator and student workshops, community lectures, shore-based whale watches, volunteer and naturalist training sessions, and sanctuary publications. On Maui, the Sanctuary Education Center in Kīhei is a beach-front facility with year-round exhibits and programs.

# ALTERNATIVES AND OPTIONS

## Hawaiian Islands Humpback Whale National Marine Sanctuary

### Current Facilities

- The headquarters office for the site is located in Kīhei, Hawai‘i, on the Island of Maui on property owned by NOAA. It includes a visitor center, office building, and a new multipurpose education building.
- The Honolulu office of the ONMS in the Hawai‘i Kai Town Center houses many of the sanctuary administrative staff including the sanctuary superintendent and PMNM staff.
- The sanctuary office in Līhu‘e, Kaua‘i, is a small office in a commercial office complex that serves as the base of operations for sanctuary programs on Kaua‘i.
- The sanctuary office in Kona, is a small office located at the Natural Energy Lab Hawai‘i Authority.
- The state sanctuary office is located within the State of Hawai‘i Department of Land and Natural Resources, Division of Aquatic Resources office in Honolulu.

### Summary of Need

#### Kona

- Additional administrative space is needed to house staff and partners.
- A small visitor center or storefront to engage visitors and the local population, because the current location lacks visibility.
- Facilities to dock a small boat that provide easy access to sanctuary waters.

#### Kīhei

- Renovated and updated office space.
- Development of a modern, state-of-the-art visitor center.
- Development of a formal courtyard plus architectural features that integrate the buildings and site into a campus.
- More opportunity to share the cultural and historical aspects of the site.
- A permanent slip space at Ma‘alaea Harbor as the base for the small boats.

#### Hawai‘i Kai

- Office space for additional staff and contractors.
- Additional storage space.

*HIHWNMS facilities at Kīhei, Hawai‘i Kai in Honolulu (Source: FPC and Ferrero Choi & Assoc.)*

- More community outreach in the form of exhibits and / or kiosks.

## Līhuʻe, Kauaʻi

- A joint HIHWNMS-PMNM facility, centered on a marine focused visitor center is desired.
- Support facilities for field operations are needed, including vessels and support facilities.

## Lāhaina, Maui

Lāhaina is the top tourist destination on Maui, but is situated 25 miles from the existing HIHWNMS headquarters in Kīhei. This location provides excellent opportunities for outreach to visitors about both the HIHWNMS and the PMNM. The Lāhaina Visitor Orientation Facility is being planned in the Old Courthouse in Lāhaina. Goals of the visitor center from the Concept Plan include:

- Provide a visitor information hub to increase the visibility of the multiple locations and opportunities in Lāhaina to learn about local history, culture, community events and resources.
- Provide an accurate and balanced introductory review of Lāhaina history with emphasis on Hawaiian culture, expanding beyond the current narrow focus on the whaling era.
- Preserve and showcase the Old Lāhaina Courthouse with its historical context.
- Increase awareness and support for the goals of the entities involved in the management policies focusing on protecting and/or restoring the cultural and the natural resources of Lāhaina, Maui, and the Hawaiʻi islands archipelago with all of its terrestrial and marine environments.
- Create additional educational opportunities available to children and other residents of the area.
- Increase community pride through enhanced visibility of the unique local cultural and natural resources and through participatory experiences.

## New Concepts

The following new building concepts were conceived in the Pacific Islands Regional Master Plan. These concepts are not fully developed and are a vision for the future of facilities in the HIHWNMS and the Pacific Islands Region.

### Marine Mammal Research Center

A marine mammal research and training center is needed to increase and build research capacity to learn more about the behavior and care of local marine mammals.

### Hawaiʻi Eco-Discovery Center

A new visitor center would provide a central gateway for visitors to learn about all of Hawaiʻi's marine resources. The center should be located

in a popular tourist area such as Waikiki in order to reach the largest number of people.

### Children's Marine Discovery Center

Hawai'i lacks a place that is designed specifically for children to learn about the marine environment. This facility should be in place for children of all ages to further investigate marine resources in a safe and child-centric manner.

### Cultural Exchange Center

As ONMS continues to build relationships and work throughout the Pacific, there is a need for a facility that provides a venue for sharing the cultures of Hawai'i, Polynesia, and Oceania, as well as traditional understanding of how to manage natural resources.

### North Shore, O'ahu Presence

A new visitor center on O'ahu's North Shore, which is adjacent to the sanctuary, would provide opportunities to reach out to the high number of tourists and residents who visit the area year-round.

A presence on O'ahu's North Shore could also provide a needed base of operations for resource protection, law enforcement, volunteer, and education programs.

### Moloka'i Leadership Institute

There is a need to provide a leadership training academy for resource conservation practitioners and to examine the close connection of native peoples with the natural environment. The objective of this facility would be to serve as a forum for participants to acquire knowledge, skills, and tools necessary to develop leadership skills that foster successful partnership and collaborative efforts.

## Alternatives

### Kona

Develop a new facility to effectively support the ONMS mission with partners. Current partnership with the Department of Land and Natural Resources could be expanded.

### Kīhei

Take advantage of the recently completed multipurpose building to provide swing space needed to restore the iconic main building, incorporating a new visitor center that overlooks the sanctuary waters. Renovate or replace the existing visitor center (masonry building) for administrative offices, and unify the space between the buildings into outdoor gathering space. Move the visitor center to the current office building's lower floor to enhance the visitor experience and unify the campus.

The sanctuary should continue to pursue an arrangement with the U.S. Coast Guard to utilize one side of its new pier and to share any future expansion of its station for possible space for boat maintenance and storage areas.

## Hawai‘i Kai

**Short Term**: An additional office space is being built-out to accommodate seventeen more people. Secure dry storage should be leased nearby.

**Long Term:** This office provides a convenient and necessary location for access by the public, for coordinating with other agencies and organizations, and for providing easy access to resources. It is also located adjacent to the sanctuary waters. For these reasons, the sanctuary should maintain its presence in Hawai‘i Kai community, even after the NOAA Pacific Region Center is operational.

## Līhu‘e

Develop a facility strategy that accommodates and supports the various sanctuary and monument activities on Kaua‘i. Identify specific capital improvements, leased or owned, including vessel support facilities that are required to implement the strategy.

**Short Term**: Develop presence at partner locations to extend the ONMS outreach on the island.

**Long Term:** Implement the recommendations of the facility strategy for a joint HIHWNMS-PMNM visitor center on the island.

## Alternatives Matrix

Alternatives matrix for the Pacific Islands Region have been taken from the Pacific Islands Regional Master Plan.

### Kona

| | A. Maintain the Status Quo | B. Expand the current location | C. Relocate to another more convenient facility |
|---|---|---|---|
| Meets the shared needs of the sanctuary and monument | | | |
| Meets the shared needs of the co-manager, and/or co-trustee | | | |
| Proximity to sanctuary offshore boundaries | | | |
| Easily accessible by the community | | | |
| Functionally accessible for operations | | | |

### Kīhei

| | A. Maintain the Status Quo | B. Move to a new location (larger but farther away) | C. Make needed improvements to the current campus |
|---|---|---|---|
| Meets the shared needs of the sanctuary and monument | | | |
| Meets the shared needs of the co-manager, and/or co-trustee | | | |
| Proximity to sanctuary offshore boundaries | | | |
| Easily accessible by the community | | | |
| Functionally accessible for operations | | | |

## Hawai‘i Kai

| | A. Maintain the Status Quo | B. Move to a new location (larger but farther away) | C. Expand into nearby short term lease space |
|---|---|---|---|
| Meets the shared needs of the sanctuary and monument | | | |
| Meets the shared needs of the co-manager, and/or co-trustee | | | |
| Proximity to sanctuary offshore boundaries | | | |
| Easily accessible by the community | | | |
| Functionally accessible for operations | | | |

## Līhu‘e

| | A. Maintain the Status Quo | B. Move to a new location | C. Develop a facility strategy that best fits the sanctuary's needs on Kaua'i |
|---|---|---|---|
| Meets the shared needs of the sanctuary and monument | | | |
| Meets the shared needs of the co-manager, and/or co-trustee | | | |
| Proximity to sanctuary offshore boundaries | | | |
| Easily accessible by the community | | | |
| Functionally accessible for operations | | | |

# FINDINGS

## Papahānaumokuākea Marine National Monument

The Papahānaumokuākea Marine National Monument, also called the Northwestern Hawaiian Islands, is the single largest conservation area under the U.S. flag, and one of the largest marine conservation areas in the world. It encompasses 139,797 square miles of the Pacific Ocean (105,564 square nautical miles) - an area larger than all the country's national parks combined. The extensive coral reefs found in Papahānaumokuākea - truly the rainforests of the sea - are home to over 7,000 marine species, one quarter of which are found only in the Hawaiian Archipelago. Many of the islands and shallow water environments are important habitats for rare species such as the threatened green sea turtle and the endangered Hawaiian monk seal.

Papahānaumokuākea is also of great cultural importance to Native Hawaiians with significant cultural sites found on the islands of Nihoa and Mokumanamana.

The Papahānaumokuākea Marine National Monument was created by Presidential proclamation on June 15, 2006.

### Facilities and Infrastructure

The Papahānaumokuākea Marine National Monument (PMNM or NWHI) offices are at two locations. The main headquarters office is located in Honolulu, HI, and another office is located in the Mokupāpapa Discovery Center in Hilo, HI.

Headquarters for the monument are located in the Hawai‘i Kai office in Honolulu, which is currently the center for all administrative and management activities in Papahānaumokuākea Marine National Monument, the Hawaiian Islands Humpback Whale NMS, and the Pacific Islands Region. All operations are housed in 13,550 square feet of leased space in a commercial office building on the east side of O‘ahu, overlooking humpback whale sanctuary waters.

The Mokupāpapa Discovery Center raises awareness and support for the PMNM and provides opportunities to learn about the unique ecosystems, geography, and human history of the monument. The facility is a vital part of the community, hosting numerous community meetings each month, and is located in leased space in downtown Hilo.

The Monument has facilities or camps at the following locations within the Monument:

- Kure Atoll

*Hoei Maru ship wreck at Kure Atoll in the Northwestern Hawaiian Islands Marine National Monument (Source: ONMS)*

- Midway Atoll
- Pearl and Hermes Atoll
- Lisianski Island
- Laysan Island
- French Frigate Shoals
- Nihoa Island

## Exhibits and Signage

The Mokupāpapa Discovery Center in Hilo, Hawai‘i, serves as the PMNM‘s primary exhibit location.

## Vessels and Research

Scientific, cultural, and maritime research are important parts of the overall operations of the Monument. The Monument's coral reef research program focuses on basic habitat characterization. Reef surveys have recorded the diversity and abundance of fishes, algae, corals, and other reef invertebrates at numerous locations throughout the archipelago. Historic resources, such as shipwrecks, have also been documented on shallow reefs by Monument and National Marine Sanctuary Pacific Region archaeologists. Research in deeper offshore waters has utilized multi-beam sonar and submersibles to document rarely seen biological resources and topographical features contained within Monument waters. The results of these shallow and deep-water research efforts will aid in the creation of management plans for the largest coral reef system in the United States and the largest marine protected area in the world.

The monument currently shares the *Hihimanu*, an 11-meter vessel, with the HIHWNMS. The vessel is trailered on Ford Island at the site of the NOAA Pacific Region Center when it is in O‘ahu or is based out of Ma‘alaea Harbor when it used in Maui during the humpback whale season.

## Education and Outreach

The remoteness of this vast ocean region presents special challenges for educational opportunities. The Monument's educational initiatives consist of distance learning via the web and other remote access technologies and opening of a PMNM Discovery Center in Hilo, Hawai‘i. Monument staff members also participate in and hold community events, give public presentations, and conduct educational programs with partner agencies involved in managing the NWHI. The Monument's educational effort centers on increasing understanding of ecosystem management, and emphasizes the necessity of protecting this area as possibly the last large-scale predator-dominated coral reef ecosystem on Earth. All educational activities stress the importance of conservation and seek to actively engage the public in management of the Monument.

# ALTERNATIVES AND OPTIONS

## Papahānaumokuākea Marine National Monument

### Current Facilities

The Papahānaumokuākea Marine National Monument has offices in two locations. The main headquarters office is located in Honolulu, HI, and another office is located in the Mokupāpapa Discovery Center in Hilo, HI.

The Hawai'i Kai facility supports the PIR office, the HIHWNMS offices, and the PMNM offices. A medium sized conference room is in the facility and several self-storage lockers are leased at a nearby self-storage facility.

Current staff and programs utilize the Discovery Center space to full capacity. The Mokupāpapa Discovery Center is managed by PMNM and located in the South Hata Building and was constructed as a tenant improvement. In order to grow and serve a broader audience, expansion is needed.

### Summary of Need

To grow and serve a broader audience, additional facilities are necessary for:

- Exhibit space.
- A larger wet lab for educational programs.
- Meeting space for more effective workshops and partner programs.
- Access to the ocean and docking facilities for a vessel to serve more ocean-based activities and monitoring.
- Additional office and support space.

Lāhaina in Maui is a top tourist destination and the location provides excellent opportunities for outreach to visitors about both the HIHWNMS and the PMNM. The Lāhaina Visitor Center is currently in developmental stages, with exhibit planning underway featuring both HIHWNMS and the PMNM.

Many of the islands within the Monument have NOAA camps in place, but additional infrastructure and support is needed to further research and monitoring missions. Several of the larger installations are presented below; refer to the Northern Hawaiian Islands Requirements document for more detailed information.

### Līhu'e, Kaua'i

- A joint HIHWNMS-PMNM facility, centered on a marine focused visitor center.
- Support facilities for field operations.

*PMNM Facilities, including the Mokupāpapa Discovery Center and the Hawai'i Kai facility (Source: FCA)*

## Kure Atoll

There are existing masonry buildings on Kure Atoll, but they are old and in bad repair. The staff lives in tents and uses the buildings for storage and offices. New housing should be constructed.

Kure Atoll has a runway, but it is no longer operational. The State of Hawai'i has identified a need for a seaplane or float plane. Other needs include:

- Need to increase the current space for housing and office space.
- Need to triple the current amount of storage space.
- Existing buildings need renovation.

## Midway Atoll (Sand Island)

The long-term objective is to transform Midway from an out-of-date, former military installation into a small, multi - disciplinary campus that accommodates all of the requirements of the Monument. This campus would also serve as the "home base" for much of the research and activities that are occurring elsewhere in the Monument. Midway serves two overlapping functions:

1. It is the permanent land-based hub for the Monument.
2. It serves as temporary staging area for the other Monument locations.

Future planning should accommodate the following types of facilities:

- Research Space
- Office Space
- Technical Infrastructure
- Basic Human Needs
- Visitor Center
- Transportation and Operations

## Honolulu

Honolulu serves as the main logistical support for the facilities associated with the Monument. Two NOAA ships, two University of Hawai'i ships, and several U.S. Coast Guard vessels all operate out of Honolulu. The FWS Hawaiian Islands National Wildlife Refuge operates a 16-person dormitory and a staging warehouse on Honolulu. There are several office and support locations in Honolulu, both existing and planned. This report does not address these facilities.

## Alternatives

The new Pacific Region Center is planned to eventually replace the PMNM facilities at Hawai'i Kai. In the meantime, a renovation is being completed at the Hawai'i Kai Executive Plaza to accommodate facility needs. Future small boat support is planned as part of the Pacific Region Center Marine Science and Storage Facility.

The Mokupāpapa Discovery Center is very successful in its current location, but action is needed to enhance the monument's ability to fulfill the ONMS mission. Partners are a vital part of the visitor center. Enhancing the facility capabilities can further enhance and leverage these partnerships. The current space should be expanded and partners should be used to share space to provide the needed capabilities. There is potential to partner in the development of a new NOAA building at University of Hawai'i at Hilo; however, the University location does not provide tourist and visitor access.

Additionally, there is a need for an HIHWNMS – PMNM joint visitor center presence in Līhu'e, Kaua'i. Implement the recommendations of the facility strategy for a joint HIHWNMS-PMNM visitor center on the island.

## Alternatives Matrix

### Mokupāpapa Discovery Center

| | A. Maintain the Statuus Quo | B. Expand the downtown presence and seek out additional locations to enhance capability |
|---|---|---|
| Meets the shared needs of the sanctuary and monument | | |
| Meets the shared needs of the co-manager, and/or co-trustee | | |
| Proximity to sanctuary offshore boundaries | | |
| Easily accessible by the community | | |
| Accessible for water operations | | |

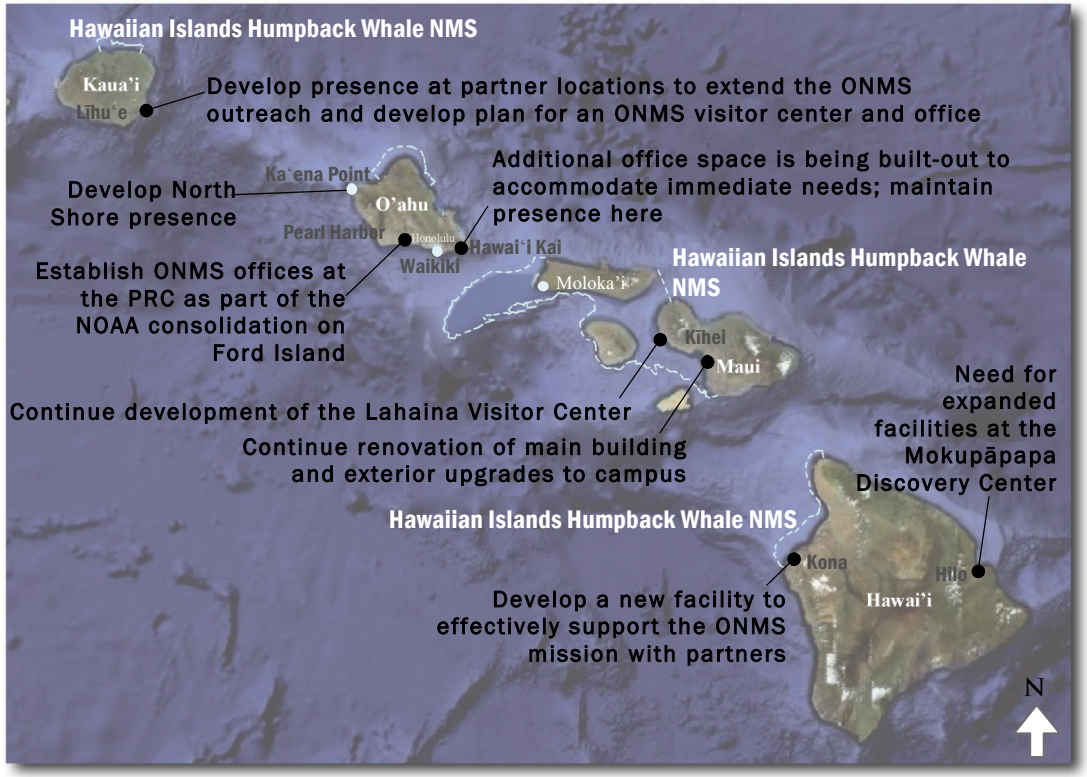
# State of Hawai'i

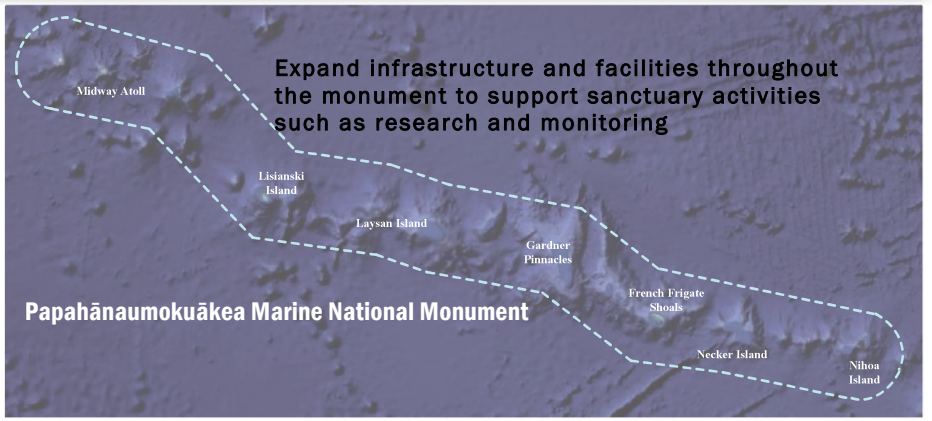
## Hawaiian Islands Humpback Whale National Marine Sanctuary

## Papahānaumokuākea Marine National Monument

### State of Hawai'i Overall Needs:

- The primary need is for additional and expanded visitor centers and outreach venues, including signs, kiosks, and exhibits.
- There is a need for a regional marine mammal research and care center, along with several other new facility concepts.
- Develop a presence on the North Shore of O'ahu.
- Accommodate growth at existing administrative centers.
- Expand facilities at the PMNM Mokupāpapa Discovery Center to accommodate more exhibit and meeting space.
- Implement plans at the Hawai'i Kai building to fit facility needs in the short term until the Pacific Region Center is completed.
- Expand facilities and infrastructure at several field sites within the Monument.
- Develop a presence on Kaua'i for a joint HIHWNMS-PMNM visitor center.




### Map Key

- ONMS facility location
- Proposed new location
- Sanctuary boundary

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# FINDINGS

## Fagatele Bay National Marine Sanctuary

*Fagatele Bay (Source: FBNMS)*

*The Hawaiian monk seal is one of the most critically endangered marine mammals in the United States. (Source: PMNM; Photo: James Watt)*

Fagatele Bay National Marine Sanctuary (FBNMS) nestles in an eroded volcanic crater on the island of Tutuila, American Samoa. The fringing coral reef ecosystem in the bay represents the only true tropical reef in the NMSS. Fagatele Bay provides a home to a wide variety of animals and plants that thrive in the protected waters of the bay. The sanctuary contains many of the species native to this part of the Indo-Pacific biogeographic region. Turtles, whales, sharks and giant clams all find refuge in this protected area.

FBNMS was designated in 1986 in response to a proposal from the American Samoa government to the ONMS.

### Facilities and Infrastructure

Current facilities for the FBNMS are provided by the American Samoa Department of Commerce in Utulei, Pago Pago, consisting of a very small office area and an adjoining shared auditorium with a display highlighting the features of Fagatele Bay. The office is located within the convention center, which provides for additional meeting space and exhibit space that is specifically about FBNMS.

### Exhibit and Signage

The sanctuary features several signs in its headquarters located in the convention center.

### Vessel and Research

Fagatele Bay's most important research project spans more than 20 years. In the late 1970s, millions of Acanthaster planci or crown-of-thorns starfish (alamea), a coral eating animal, ate their way through Tutuila's reefs. More than 90 percent of all the living corals were destroyed. At the time, Fagatele Bay was not a National Marine Sanctuary, but this disaster propelled the decision for the site's designation.

Scientists use this natural disaster as a baseline for their long-term research to monitor the recovery of a coral reef. Because corals grow slowly, the research team chose a multi-year cycle of data collection. Beginning in 1985, and again in 1988, 1995, 1998, 2001, 2004, and 2007, the team amassed information on coral, fishes, invertebrates and marine plants. This database is unique for Samoa and the study is one of the few long-running surveys of its type in the world.

The site operates one 24-foot vessel, the *Kevlar Cat*.

### Education and Outreach

Education and outreach at FBNMS includes:

- Marine Science Summer Camp: Serving approximately 50 ninth grade students each summer, the camp is held on the islands of Tutuila and Manu'a. Each three week session features a strong marine science curriculum, field and laboratory studies, and swimming and snorkling lessons.
- Enviro-Discoveries: Utilizing Department of Education elementary teachers and the local environmental agencies' Education Coordinator, students are encouraged to learn about their marine environment in an atmosphere of fun. Students camp out on the coast for three days exploring, sharing and learning through activities and field trips.
- Village Outreach and Le Tausagi: For the past two years, all the government environmental educators have been working together in a group they call Le Tausagi, which translates as "the morning song of the bird." This group collaborates on much of the environmental outreach now performed in the Territory, maximizing their talents and resources to provide excellent community service. In addition, the education staff cooperates with its Le Tausagi partners in programs such as Earth Day, Arbor Week, and Coastweeks.

# ALTERNATIVES AND OPTIONS

*Current FBNMS facilities are located in the convention center (Source: FCA)*

## Fagatele Bay National Marine Sanctuary

### Current Facilities

Current facilities in Utulei, Pago Pago, consist of a small office and an auditorium that is shared with the convention center. Space is provided by the American Samoa Department of Commerce. Present conditions provide inadequate office, operational, outreach, and storage facilities and impair the FBNMS in fulfilling its mission. The entire facility is in need of a new roof, structural repairs due to termite damage, and functional air conditioning among other things.

### Summary of Need

Specific needs for the FBNMS include:

- Office space for eight staff.
- Enhanced display, outreach, and meeting space; a community meeting room for 100 people is needed.
- Signs, exhibits, and kiosks could be provided to the airport and the national park.
- A visitor center with retail component for education and outreach, which would include ONMS exhibits.

While funding allocated in 2009 will get the projects started with many of the architectural improvements, more funding is needed to provide interior finish-out, furniture, and exhibits.

Exhibit planning includes mid-range static displays with some video, along with limited higher end digital displays and kiosks. In the future, the visitor center component has potential to get larger.

Research needs for the region include wet and dry labs and there are no adequate laboratories in American Samoa to accommodate this; the Territorial Science Center was conceived as a new concept in the regional master plan will meet this need. There is a need in the South Pacific for a marine science laboratory and outreach center. The center would serve to attract scientists to the area and allow ONMS to gather this data.

### Alternatives

The project consists of two distinct but related components: office space for FBNMS staff; and a visitor center with exhibits. Renovate and expand the existing facility to provide effective and functional office and support spaces for a minimum of eight staff. Implement and complete auditorium upgrades at the convention center that includes interior renovations, new sound and

lighting systems, a new roof, structural repairs due to termite damage, and functional air conditioning.

Develop, in partnership with others, a Territorial Science Center to effectively support the ONMS mission.

## Alternatives Matrix

| | A. Maintain the Status Quo | B. Move to a new location | C. Upgrade and enlarge the current office space and make improvements to auditorium |
|---|---|---|---|
| Meets the shared needs of the sanctuary and monument | | | |
| Meets the shared needs of the co-manager, and/or co-trustee | | | |
| Proximity to sanctuary offshore boundaries | | | |
| Easily accessible by the community | | | |
| Functionally accessible for operations | | | |

# American Samoa

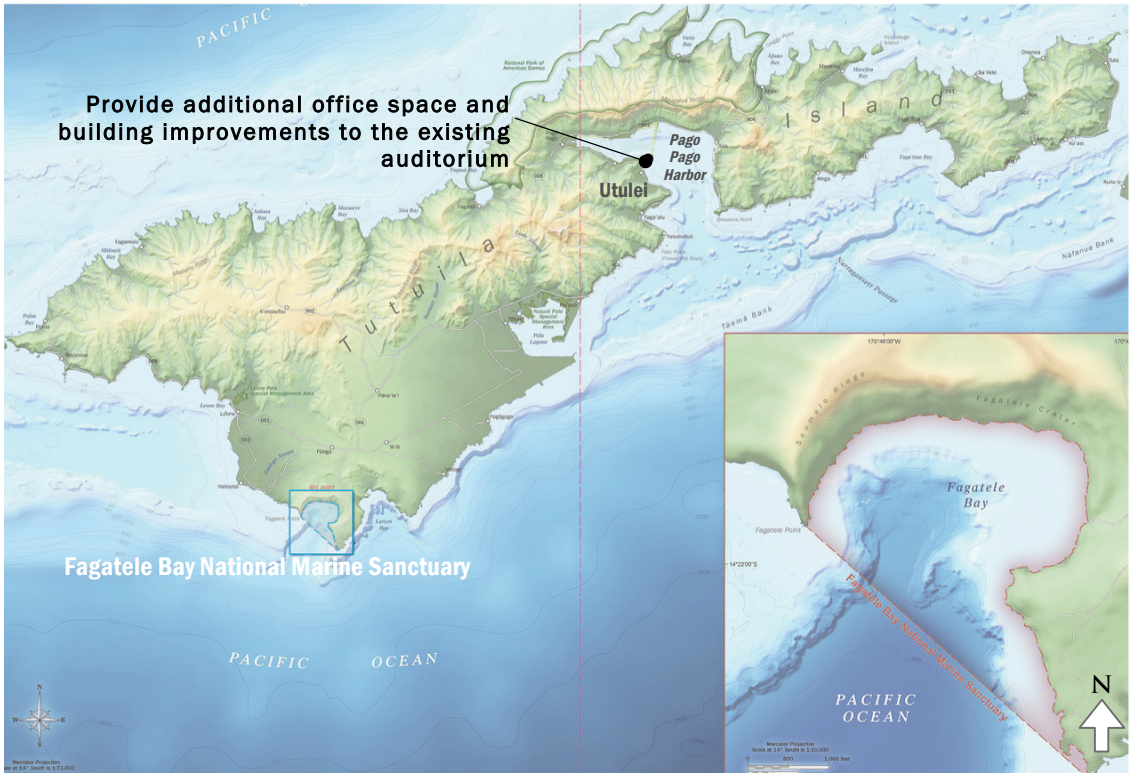
## Fagatele Bay National Marine Sanctuary

**Overall Needs:**

- Additional office and support space is needed at the current location in the conference center in Utulei, Pago Pago.
- Improvements are needed to the existing auditorium at the conference center.
- Lab and research space is needed to accommodate science research missions and to attract researchers to the American Samoa.

**Map Key**

- ONMS facility location
- Sanctuary boundary



# Summary

# SUMMARY


*Marine cultural resources, such as the ship's bell from the USS* Saginaw, *should be preserved for all to enjoy. (Source: ONMS)*

The following section summarizes the issues and options set forth in previous sections for improving facilities within the NMSS. Determining the status of current facilities and exhibits across the system will help to determine priorities for requirements in the coming years and plan the funding needed to support these requirements.

The National Marine Sanctuaries Act (NMSA) is one of the most important pieces of federal legislation for protecting natural and cultural resources in the ocean and Great Lakes. NOAA's ONMS is the primary vehicle for accomplishing this mission and the day-to-day management of these resources, and program facilities are in direct support of many of the mandates of the NMSA. The NMSA is the only legislation that permanently sets aside marine areas for protection and management, and the ONMS supports and protects these areas through public outreach and education, research and monitoring, enforcement, and through partnerships that support local communities.

In the past 15 years, the NMSS has developed from a loose collection of sanctuaries into to a system of four regions encompassing 13 sanctuaries and one marine national monument. To continue to make a difference in marine stewardship, the ONMS will need to grow, develop, and expand existing programs and assets, including the addition of new sites. Along with the growth in the system's size through maturing and possible new sites, the program has greatly increased budget and staff, expanded its community outreach and partnerships, and has begun to address resource management issues with research, monitoring, and enforcement activities. These factors have placed different pressures on how the sanctuaries should be managed and the facilities needed to support them. To respond to these changing needs, the Facilities and Exhibits Master Plan is meant to help guide the program in what is required to support the program's physical assets.

The program has had many success stories in facilities, and these successes have led to the drive and program-wide desire to continue in this mission and continually improve facilities and add new ones. Achievements in buildings at the Florida Keys NMS, Pacific Islands Region, and Thunder Bay NMS have inspired other sanctuaries to attain these model facilities such as visitor centers, research wet and dry labs, and vessel support spaces.

Emerging priorities for the program vary from site to site, but all encompass a general requirement to meet and exceed program goals. Primary facility and exhibit strategies for the program include:

- **Understand and plan for operations and maintenance cost** of facilities and exhibits to ensure that they continue to support the ONMS mission into the future and that funding is not taken from other programs.
- Construct or co-locate new and updated **visitor centers and storefronts** where they are most needed with exciting exhibits, science in the sanctuary, and preservation messages that reach and educate the public.
- **Further develop the sanctuary exhibits, signs and kiosks program** as a national chain of educational interpretive assets that further the visibility and promote education about the ONMS. Interpretive assets should be used to brand the ONMS and make the agency a recognizable force in marine protection.
- Outfit sanctuary sites with **flexible facilities** that not only meet current mission requirements and individual complexity, but also adapt to projected growth and maturity to sustain long term operations without disruptions and high costs.
- Provide **research spaces and capabilities**, to help make the ONMS a leader in marine science, such as video and wet labs and bunking to host guest scientists and to enhance science and monitoring missions.
- Support various sanctuary operational missions by providing adequate **vessel support spaces** such as mooring and piers, maintenance shops, storage, dive lockers, and other support spaces.

The coming years will continue to present new challenges and opportunities for the ONMS, and facilities should help and not hurt future operations. Assets such as buildings, exhibits, signs, kiosks, and vessels are not just physical assets; they serve as the primary tools to deliver the sanctuary message and are where the public comes into contact with ONMS.

Investments made in ONMS count toward helping the organization meet the mandates set forth in the NMSA by physically supporting specific strategic goals. Whether it is promoting a site to construct a state-of-the-art visitor center, or providing funding to support a partnership for a research lab, funding of the program helps not only ONMS, but the community and our environment. Connecting communities to these resources can be accomplished through physical assets and facilitating public access to these incredible marine environments. The system thrives on the support of the community and its many partners. Additional support for operations and maintenance of existing facilities, along with the creation of new facilities to fill the gaps that exist, will allow ONMS to do more to reach the public with the sanctuary mission.

*Channel Islands Naturalist Corps volunteer at 2008 Safe Boating Expo at Channel Islands Harbor educating child (Source: CINMS)*

*Bay Watershed Education and Training (B-WET) students monitoring water quality in the Monterey Bay NMS (Source: ONMS)*

# Appendix: Industry Standards and Best Practices

**Industry Standards and Best Practices**

# INTRODUCTION

The following appendix presents industry standards and best practices regarding facilities, infrastructure, exhibits, signs, and kiosks. Industry standards and best practices are accepted benchmarks and/or guidelines that the ONMS can use to improve facilities and exhibits planning, operations, and maintenance.

## Facilities and Infrastructure

The following sections suggest industry standards and best practices related specifically to facilities and infrastructure.

### Facility and Asset Management

For many organizations, facilities represent some of their most valuable assets, as well as one of their most significant investments. Facilities can reflect the organization's mission, can tie the surrounding community and businesses together, and can be an iconic structure that represents marine conservation to the local community. A detailed facility and asset management program can help the ONMS better operate its facilities and disperse related funding.

Facility and asset management practices, along with adequate operational funding to maintain assets, are critical to leverage them effectively. The ONMS should adopt industry standard asset management practices and implement tools to integrate real estate, project management, facility management and maintenance operations processes into one single system to control operational cost. Without a vigorous plan, the mission of the ONMS can be jeopardized due to unscheduled facility closures, shutdowns, and unplanned expenditures.

In addition, money could be saved in the long run if facilities are properly maintained. Proper operational funding is needed to achieve this outcome. ONMS has not received or allocated funds for operations and maintenance (O&M) to upkeep its facilities to date.

Before detailing an asset management process, the definition of asset management should be understood. A simple definition or formula for any asset management practice is:

$$\text{Asset Management} = \frac{\text{Condition} \mid \text{Capacity} \mid \text{Sustainability}}{\text{Time}}$$

Where:

*Condition* is a forecasting process to assist an organization's budgetary development to operate and maintain facilities and components to its design life.

*Capacity* is a planning process to determine an organization's facility or space requirements over

time. Master planning, facility programming, needs assessment, and space utilization analysis are all exercises that fall under the process to determine capacity.

*Sustainability* is a programming process, and can mean several things when applied to facilities, including the LEED® certification and an understanding of how a flexible facility can sustain an organizational mission over time.

## Condition: Projected Operations and Maintenance Funding Requirements

Operations and maintenance (O&M) funding is imperative to support existing facilities in ONMS; to date, the program has neither received nor allocated funding dedicated to O&M. To help in understanding funding requirements for operations costs associated with building types, the following table presents operating costs[1] (per gross square foot) for functional building profiles most commonly used by ONMS. This includes office and administrative spaces, visitor centers, research functions such as wet labs, warehouse space for equipment storage, and shop space for vessel support and maintenance. Operational cost for owned facilities is defined as costs for the total cost of building operations, including:

- Custodial service,
- Energy,
- Grounds,
- Maintenance & repair,
- Management,
- Pest control,
- Refuse,
- Road clearance,
- Security,
- Telecommunications,
- Water,
- And Sewer.

*Table A.1 Average Operations Cost for Owned Facilities (per square foot)*

| FY2008-2009 Average Building Operation Costs for Owned Facility (includes maintenance and repairs, utilities, and management) | Annual Cost Per GSF* |
|---|---|
| Research | $30.76 |
| Maintenance Shop | $13.78 |
| Office Building, Two Story | $11.02 |
| Visitor Center | $17.10 |
| Warehouse, Storage | $5.54 |

** Based on an average cost for Washington, D.C. Actual cost will depend on the location and other factors.*

However, because O&M costs only apply to owned facilities, leased facilities must be evaluated under a different cost model. With a lease the user generally does not absorb costs associated with maintenance of the facility, which are often retained by the owner of the building. The costs associated with the user include the lease rate and a corresponding portion of the utilities. For rented spaces, operational costs typically include:

- The rate for the lease
- Custodial service

[1] *Figures referenced from the Whitestone Building Operations Cost Reference 2008-2009 2nd Annual Edition*

- Energy,
- Security
- Telecommunications

*Table A.2 Average Operations Cost for Leased Facilities (per square foot)*

| FY2008-2009 Average Building Operation Costs for Leased Facility (includes maintenance and repairs, utilities, and management) | Annual Cost Per GSF* |
|---|---|
| Custodial | $1.66 |
| Energy | $2.88 |
| Security | $0.41 |
| Telecom | $0.49 |

** Based on an average cost for Washington, D.C. Actual cost depends on location and other factors.*

Many factors can drive up operational costs, such as inflation, complexity of the engineering, type of facility, occupancy or function, and region.

While these operational costs are an average, the difference in operational costs should be noted when developing funding needs for sanctuary sites, as many sites are located in coastal areas where the cost of living tends to be higher.

Table A.3 illustrates how the operational cost per square foot and cost index can vary by location across the United States for a typical two story office building. It is clearly visible that operating costs in Honolulu, HI, are much higher than building operational costs in Newport News, VA; this should be taken into account when planning operations funding for ONMS facilities.

*Table A.3 Regional Variation in Operations Cost for an Owned Facility (per square foot)*

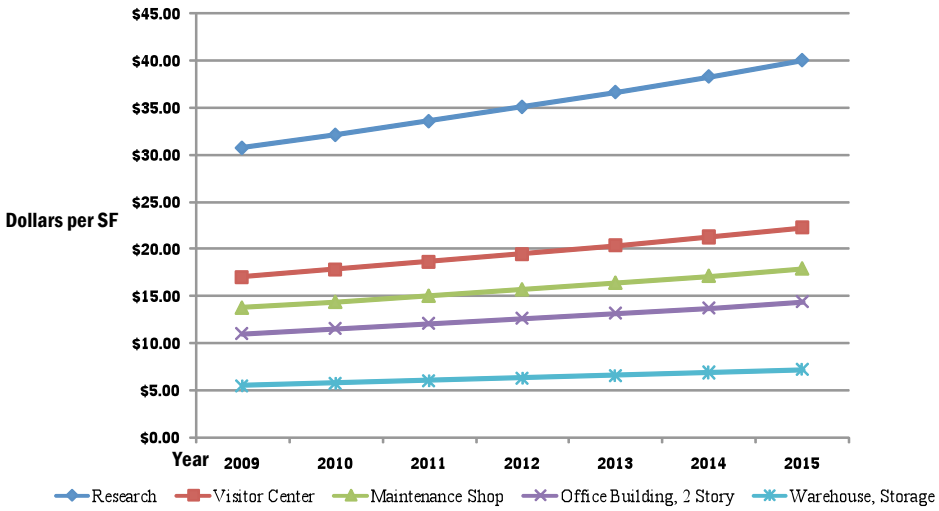
| FY2008-2009 Regional Building Operation Costs | Office Building, 2 Story | |
|---|---|---|
| **Location** | **Dollars per SF** | **Local Operation Cost Index** |
| **Baseline Case: Washington, D.C.** | **$11.02** | **100** |
| Honolulu, HI | $15.24 | 138.3 |
| Hilo, HI | $14.67 | 133.2 |
| Worcester, MA | $11.24 | 102 |
| San Francisco, CA | $11.20 | 101.6 |
| Anchorage, AK | $11.02 | 100 |
| Detroit, MI | $10.33 | 93.7 |
| Milwaukee, WI | $9.86 | 89.5 |
| Fort Lauderdale, FL | $9.81 | 89 |
| Santa Barbara, CA | $9.76 | 88.6 |
| Seattle, WA | $9.60 | 87.1 |
| New Orleans, LA | $9.33 | 84.7 |
| Savannah, GA | $9.17 | 83.3 |
| Shreveport, LA | $9.07 | 82.3 |
| Newport News, VA | $8.88 | 80.6 |
| Charleston, SC | $8.84 | 80.2 |
| **Average** | **$10.56** | **95.9** |

The following section takes a closer look at industry standard operations and maintenance costs for ONMS facilities, and presents recommendations on what the ONMS should be considering when planning funding related to facilities in the future. The cost models presented in this section use the average operational cost based in Washington, D.C.

### Operational Cost per SF by Building Function

This graph projects the increase in building operations cost per square foot for 2009 to 2015 based on the average annual rate of change from 2003 to 2008. The operational cost has been presented by common ONMS building functions, including research, visitor center, maintenance shop, office building, and warehouse.

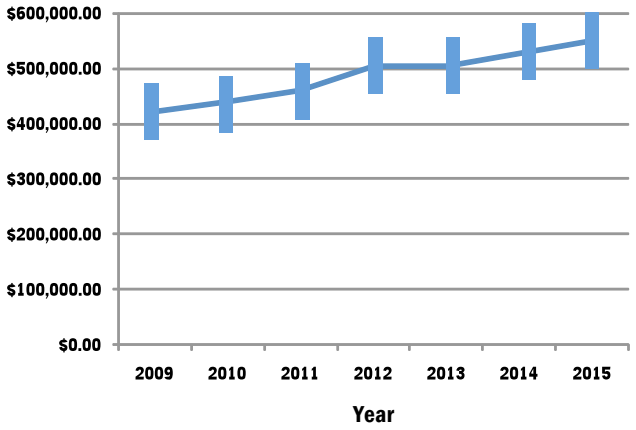
**Graph A.1 Operational Costs per SF by Building Function**




### Annual Operational Cost for a Visitor Center

The following graph uses the operations costs and applies them to a case typical of the ONMS for a visitor center (with administrative space). This type of building has been duplicated several times within the sanctuary system, and more visitor center facilities are planned at other sanctuaries. The graph illustrates the cost for operating a typical 15,000 square foot visitor center building.

**Graph A2 Operational Costs – 15,000 SF Visitor Center**




These costs are for reference only, to give an idea of what funds should be dedicated annually for building operations, and are based on a baseline case located in Washington, D.C., which is used commonly in building cost comparisons. The operational cost will vary in different regions.

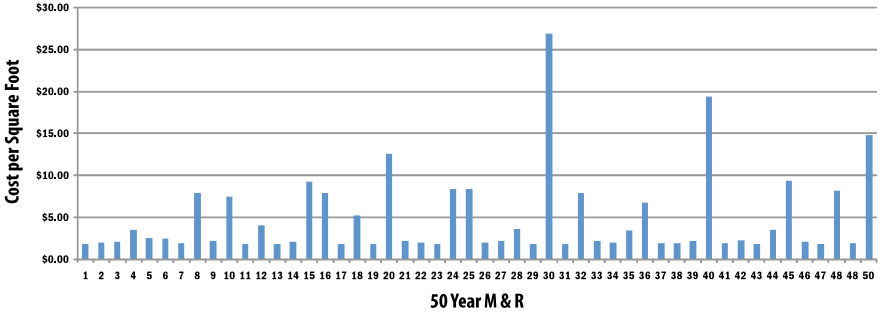
The next section presents the standard cost associated with maintenance and repair tasks typically associated with building types used by the ONMS. These costs are "built-in" to the above reference operational cost baseline cases, but it is important to illustrate the maintenance and repair cost as a separate cost function to show that the cost associated with maintenance and repairs "peaks" every several years over the life of the building. Illustrating these spikes is important so that organizations like ONMS can plan funding for these necessary maintenance requirements over the design life of a building.

Typical building maintenance and repair requirements vary; they could include anything from replacing worn carpet every few years in a highly traveled visitor center hallway, to replacing windows on an older building. Maintaining sanctuary facilities is important, as they are a primary tool to sustain various missions of the program; knowing how O&M costs can affect the life-cycle of a building can help to plan future funding requirements.

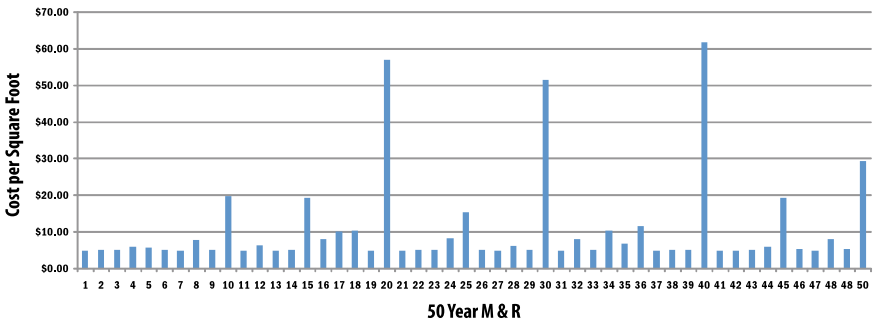
## Maintenance and Repair Costs

The following graphs illustrate Maintenance and Repair (M&R) cost per square foot for the various building functions most commonly used by the ONMS.[2] Building M&R is defined as the collection of activities necessary for keeping a building in good working order. This includes regularly scheduled adjustments, inspections, preventive maintenance tasks, emergency response and service calls for minor repairs, and the periodic major repair or replacement of building components.

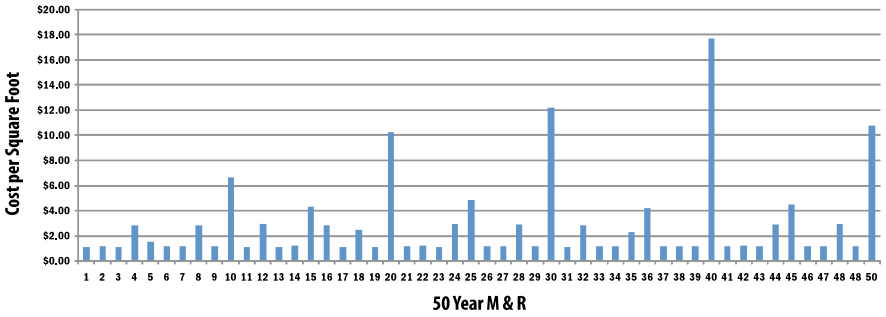
**Graph A.3 Maintenance and Repair Cost – Visitor Center**



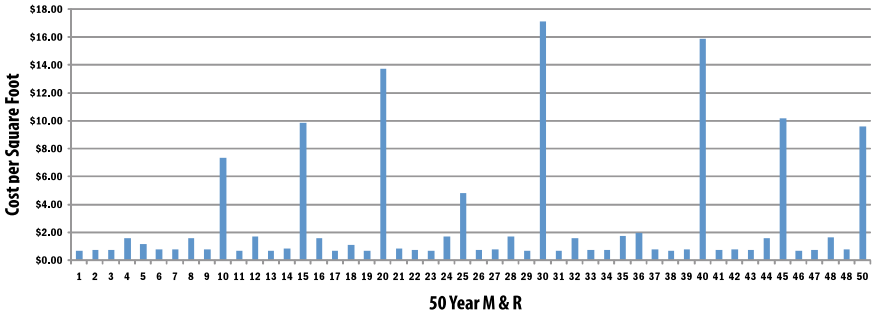

**Graph A.4 Maintenance and Repair Cost – Laboratory**




**Graph A.5 Maintenance and Repair Cost – Maintenance Shop**




**Graph A.6 Maintenance and Repair Cost – Office Building, Two Story**



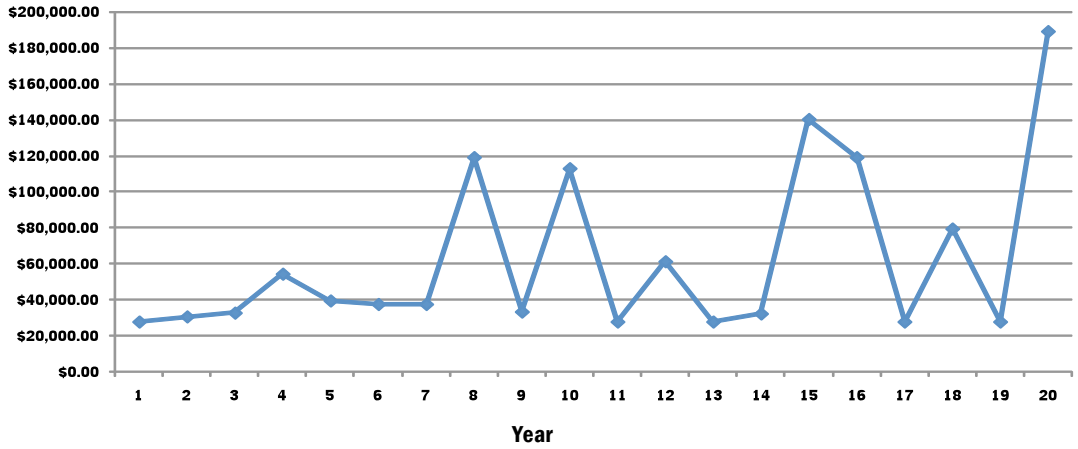

[2] *Cost reference from the Whitestone Building Maintenance and Repair Cost Reference 2008-2009*

Again, it should be noted that these costs greatly increase at eight to ten year increments; this is in response to scheduled tasks that should be completed at these time frames (or is best practice to maintain or repair), for example cleaning and resealing a brick exterior or replacing HVAC units that are at the end of expected service life. Over a 50 year period, the cost for M&R can easily exceed the costs of construction.

It is very difficult to forecast future facilities funding requirements due to many unknown economic factors such as inflation, material costs and availability, labor costs and availability, and technology costs. However, historic cost models can assist facility managers and the ONMS in planning for budget requirements on an annual basis and how these budget requirements may "spike" at predictable intervals over the life of a building.

For another example, the following graph illustrates the annual maintenance and repair cost for the same 15,000 SF ONMS visitor center over a span of 20 years. *Note that this cost only includes the maintenance and repair costs and does not include total building operations cost previously covered.*

**Graph A.7 Maintenance and Repair Cost – 15,000 GSF Visitor Center**




The following page takes the regionally sensitive O&M costs from Table A.3 and applies them to all facilities that are occupied by ONMS and projects these costs over the next five years.

LEGEND
- DOC Owned Facility
- DOC or GSA Leased Facility
- Memorandum of Agreement (MOA), Ops Costs not in SF
- New Construction (Projected Construction Cost Per SF)

The following table takes all buildings owned and leased by the ONMS/NOAA and applies regionally sensitive operations costs to each existing ONMS facility. Operating costs have been projected over the next five years for each building below.

*Table A.4 Projected Operations Cost for ONMS Facilities*

| Sanctuary Site | Facility Name | Address | City | State | Ownership (Lease/DOC owned) | Lease Expiration Date | Total Occupiable Square Feet | 2010 Projected* O&M Cost/SF | 2010 Estimated Total O&M | 2011 Projected* O&M Cost/SF | 2011 Estimated Total O&M | 2012 Projected* O&M Cost/SF | 2012 Estimated Total O&M | 2013 Projected* O&M Cost/SF | 2013 Estimated Total O&M | 2014 Projected* O&M Cost/SF | 2014 Estimated Total O&M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FBNMS | Sanctuary Office | Pago Pago, American Samoa | Pago Pago | AS | | | 5,350 | | $545,360 | | $39,920 | | $42,315 | | $44,854 | | $47,545 |
| MBNMS | Sanctuary Office | 299 Foam Street | Monterey | CA | DOC Leased | 6/30/2009 | 7,168 | $50 | $361,196 | $51 | $362,414 | $51 | $363,704 | $51 | $364,995 | N/A | |
| MBNMS | San Simeon Office & Coastal Discovery Center | 750 Hearst Castle Road | San Simeon | CA | DOC Leased | | 1,380 | | $5,000 | | $5,000 | | $5,000 | | $5,000 | | $5,000 |
| MBNMS | West Coast Regional Office | 99 Pacific St #200 Suite K | Monterey | CA | DOC Leased | 7/31/2009 | 1,093 | $44 | $48,332 | $44 | $48,518 | $45 | $48,715 | $45 | $48,912 | $45 | $49,119 |
| MBNMS | Visitor Center | City of Santa Cruz | Santa Cruz | CA | New Construction | | 10,600 | $1,086 | $11,510,964 | $18 | $195,146 | $19 | $200,976 | $20 | $207,018 | $20 | $213,272 |
| MBNMS | USCG Facility | USCG Stattion Monterey | Monterey | CA | Renovation | | 13,200 | | | | | | | $821 | $10,837,728 | $13 | $170,016 |
| CBNMS | Sanctuary Office | 1 Bear Valley Road | Point Reyes Station | CA | MOA | 8/31/2014 | | | | | | | | | | | |
| GFNMS | Sanctuary Office | 991 Marine Drive - the Presidio | San Francisco | CA | MOA ($45K) | 2029 | | $55,620 | $100,620 | $57,289 | $102,289 | $59,007 | $104,007 | $60,777 | $105,777 | $62,601 | $107,601 |
| GFNMS | Half Moon Bay Office | 625 Miramontes | San Mateo | CA | DOC Leased | | 572 | $24 | $13,722 | $26 | $14,821 | $28 | $16,005 | $30 | $17,286 | $33 | $18,670 |
| CINMS | Ocean Science Education Building (CINMS Building) | UC Santa Barabara | Santa Barbara | CA | New Construction | | 7,215 | | $4,320,999 | | $149,558 | | $153,791 | | $158,024 | | $162,256 |
| CINMS | Santa Barbara Office | 113 Harbor Way | Santa Barbara | CA | GSA Leased | | 1,476 | | $59,773 | | | | | | | | |
| CINMS | Storage Locker | | Santa Barbara | CA | GSA Leased | | | | $2,200 | | $2,200 | | $2,200 | | $2,200 | | $2,200 |
| CINMS | Storage Locker | | Goleta | CA | GSA Leased | | | | $5,300 | | $5,300 | | $5,300 | | $5,300 | | $5,300 |
| CINMS | Santa Barabra Outdoor Visitor Center and Internet | | Santa Barbara | CA | Contribution | | | | $4,300 | | $4,300 | | $4,300 | | $4,300 | | $4,300 |
| CINMS | Sanctuary Southern Office | 3600 S. Harbor Way | Oxnard | CA | GSA Leased | | 1,080 | | $56,378 | | $56,505 | | $56,633 | | $56,760 | | $56,888 |
| CINMS | Balboa Building | 735 State Street | Santa Barbara | CA | GSA Leased | | 1,329 | | $54,358 | | $54,415 | | $54,473 | | $54,530 | | $54,588 |
| FKNMS | Florida Keys NMS - Upper Region | 95230 Overseas Highway | Key Largo | FL | DOC Leased | 7/31/2007 | 7,993 | | $247,938 | | $255,159 | | $262,381 | | $269,602 | | $276,824 |
| FKNMS | Nancy Foster Center - Boat Maintenance Building | 31 East Quay Road | Key West | FL | DOC Owned | | 3,600 | $13 | $45,432 | $13 | $46,800 | $10 | $37,440 | $14 | $49,320 | $14 | $50,796 |
| FKNMS | Nancy Foster Center - Admin & Operations | 33 East Quay Road | Key West | FL | DOC Owned | | 13,000 | $10 | $131,300 | $10 | $135,200 | $11 | $139,230 | $11 | $143,390 | $11 | $147,680 |
| FKNMS | Nancy Foster Center - Eco-Discovery Center | 35 East Quay Road | Key West | FL | DOC Owned | | 13,000 | $16 | $203,840 | $16 | $209,950 | $17 | $216,190 | $17 | $222,690 | $18 | $229,320 |
| GRNMS | Sanctuary Office | 10 Ocean Science Circle | Savannah | GA | DOC Leased | 2017 | 4,250 | | $12,945 | | $13,095 | | $13,245 | | $13,394 | | $13,545 |
| PMNM | Papahānaumokuākea NMS - Hilo Office and Visitor Center | 308 Kamehameha Ave, #203 | Hilo | HI | DOC Leased | | 5,674 | | $324,460 | | $343,928 | | $364,563 | | $386,437 | | $409,623 |
| PMNM | Papahānaumokuākea NMS - Main office*** | 6600 Kalaniana`ole Hwy, #300 | Honolulu | HI | GSA Leased | | 14,001 | | $412,054 | | $436,777 | | $462,984 | | $490,763 | | $520,208 |
| HIHWNMS | Sanctuary Office | 726 S Kihei Road | Kihei (Maui) | HI | DOC Owned | | 1,660 | $16 | $26,842 | $17 | $28,452 | $18 | $30,162 | $19 | $31,972 | $20 | $33,897 |
| HIHWNMS | Multi Purpose Facility(Conference) | 726 S Kihei Road | Kihei (Maui) | HI | DOC Owned | | 2,120 | $16 | $34,280 | $17 | $36,337 | $18 | $38,520 | $19 | $40,831 | $20 | $43,290 |
| HIHWNMS | Visitor Center | 726 S Kihei Road | Kihei (Maui) | HI | DOC Owned | | 940 | $25 | $23,566 | $27 | $24,976 | $28 | $26,470 | $30 | $28,059 | $32 | $29,742 |
| SBNMS | Sanctuary Office | 175 Edward Foster Road & Sunset | Scituate | MA | DOC Owned | | 6,700 | $12 | $83,348 | $13 | $86,698 | $13 | $90,182 | $14 | $93,800 | $15 | $97,552 |
| SBNMS | Conference Center (former Garage) | 175 Edward Foster Road & Sunset | Scituate | MA | DOC Owned | | 1,932 | $12 | $24,034 | $13 | $25,000 | $13 | $26,005 | $14 | $27,048 | $15 | $28,130 |
| SBNMS | Boat House | 175 Edward Foster Road & Sunset | Scituate | MA | DOC Owned | | 3,614 | $16 | $56,198 | $16 | $58,438 | $17 | $60,787 | $17 | $63,209 | $18 | $65,739 |
| TBNMS | Sanctuary Office | 500 West Fletcher | Alpena | MI | DOC Leased | | 20,100 | | $465,287 | | $481,270 | | $497,733 | | $514,690 | | $532,156 |
| | NOAA's Great Lakes Environmental Lab | 2205 Commonwealth Blvd | Ann Arbor | MI | MOA | | 110 | | $4,000 | | $4,000 | | $4,000 | | $4,000 | | $4,000 |
| FGBNMS | NOS (part of NMFS lab) | 4700 Avenue U, Building 216 | Galveston | TX | MOA w/ NMFS | 9/30/2015 | 11,000 | | $92,494 | | $95,269 | | $98,127 | | $101,071 | | $104,103 |
| MNMS | Mariner's Museum (5,400 SF) | 100 Museum Drive | Newport News | VA | DOC Leased | 10/31/2022 | 5,400 | | $40,858 | | $42,429 | | $44,001 | | $45,572 | | $47,143 |
| MNMS | Sanctuary Office | 100 Museum Drive | Newport News | VA | DOC Leased | 10/31/2022 | 1,200 | $5 | $5,472 | $5 | $5,688 | $5 | $5,916 | $5 | $6,156 | $5 | $6,408 |
| OCNMS | Port of Port Angeles and La Push Moorage | | Port Angeles & La Push | WA | GSA Leased | | | | $4,264 | | $4,435 | | $4,612 | | $4,796 | | $4,988 |
| OCNMS | Trailer | 1321 Bayview Ave, Suite 301 - USCG St | Neah Bay | WA | DOC Owned | | | | $1,456 | | $1,514 | | $1,575 | | $1,638 | | $1,703 |
| OCNMS | Sanctuary Office | 115 Railroad Ave. East, Suite 301 | Port Angeles | WA | GSA Leased | 11/30/2012 | 2,850 | | $73,302 | | $73,872 | | $74,471 | | $75,069 | | $75,696 |
| OCNMS | Visitor Center | 115 Railroad Ave. East, Suite 208 | Port Angeles | WA | GSA Leased | 11/30/2012 | 800 | | $11,808 | | $12,056 | | $12,320 | | $12,592 | | $12,872 |
| OCNMS | Sanctuary Office | 115 Railroad Ave. East, Suite 206 | Port Angeles | WA | GSA Leased | 11/30/2012 | 906 | | $23,302 | | $23,484 | | $23,674 | | $23,864 | | $24,063 |
| OCNMS | Owen Enterprises | 1921 Highway 101 West | Port Angeles | WA | GSA Leased | 11/30/2012 | 2,600 | | $15,148 | | $15,716 | | $15,924 | | $16,132 | | $16,340 |
| | | | | | | | **Estimated Total Required Facility Resources** | | **$19,452,129** | | **$3,500,928** | | **$3,607,929** | | **$14,578,779** | | **$3,672,575** |

**Operations Cost for Owned and Leased Facilites - See Table 4.1 and 4.2*

*** Current lease data provided by ONMS and may not include GSA or DHS charges and does not reflect actual annual expenditure Escalation is based on historic and/or regional data in addition to industry references*

**** Includes space for the Pacific Islands Region and HIHWNMS*

Making facility investments for operations and maintenance of ONMS facilities will resolve many of the issues facing the program's facilities needs and ensure that facilities are properly cared for throughout their useable life. Additional funding for the program will not only help to maintain existing facilities but also to assist in creating new facilities to support the ONMS mission.

To conclude, it has been determined that a significant operations and maintenance investment must be made for buildings owned and operated by NOAA over time. This investment includes both building operational costs and maintenance and repair costs. Underfunding in this area has continued to affect the effectiveness of current ONMS facilities.

## Ownership versus Leasing

The question of ownership versus leasing is a growing issue within the federal landscape and affects the ONMS as well. For the first time, the federal government in 2008 has more leased properties than owned, even though studies[3] have shown that building ownership often costs less than operating leases. Like other agencies, ONMS has often turned to leasing. There are many reasons, but predominant among them is the recurring difficulty in obtaining funding for the required operations, maintenance, and upkeep of owned facilities, in addition to the human capital required to operate those facilities.

There are other factors that influence the decision to own versus lease. For example, leased facilities may have restrictions which can limit implementation of space standards and/or have specific rules for signage and branding. Conversely, leasing opens the door for successful partnerships with local stakeholders, leading to a sharing of resources and knowledge. ONMS must evaluate each requirement on a project by project, site by site, mission by mission basis and research the constraints as well as the potential benefits associated with each decision.

The following table lists average lease rates per SF for many locations currently occupied by ONMS, and several potential locations. Lease agreements are very difficult to project; this gives the ONMS an idea of what the average rates are in areas currently occupied by sanctuary sites.

*Table A.5 Average Rentable Rates per SF per Year*

***2009 CLASS AA AVERAGE RENTABLE RATE / SQUARE FOOT / YEAR**

| STATE | LOCATION | LOW | HIGH | AVERAGE |
|---|---|---|---|---|
| CA | Bodega Bay | $23.88 | $29.40 | $26.64 |
| CA | Gualala | N/A | N/A | N/A |
| CA | Half Moon Bay | $24.00 | $42.00 | $33.00 |
| CA | Monterey | $24.00 | $37.20 | $30.60 |
| CA | Oxnard | $18.00 | $33.00 | $25.50 |
| CA | Point Arena | $12.00 | $14.20 | $13.10 |
| CA | Santa Barbara | $24.50 | $39.40 | $30.50 |
| CA | Santa Cruz | $24.00 | $37.20 | $30.60 |
| CA | San Francisco | $25.20 | $110.00 | $50.91 |
| FL | Key Largo / Key West | N/A | N/A | $27.86 |
| FL | Marathon | N/A | N/A | $14.00 |
| GA | Chatham County | $18.60 | $26.00 | $22.30 |
| HI | Maui County | $30.20 | $90.00 | $60.10 |
| HI | Kauai County | $24.20 | $35.88 | $30.04 |
| MA | Boston | $45.00 | $65.00 | $50.00 |
| MA | Gloucester | N/A | N/A | $25.60 |
| MA | Salem | $19.50 | $29.00 | $24.25 |
| MA | Scituate | N/A | N/A | $22.00 |
| MI | Alpena | $8.50 | $14.90 | $11.70 |
| NC | Cape Hatteras | $14.00 | $18.90 | $16.45 |
| TX | Galveston | $12.00 | $37.50 | $24.75 |
| VA | Hampton Roads | $17.00 | $25.00 | $20.50 |
| WA | La Push | N/A | N/A | N/A |
| WA | Port Angeles | $15.00 | $24.80 | $19.90 |

*Source: NAI Global and LoopNet*

[3] *US Government Accountability Office (GAO) "Federal Real Property, an Update on High Risk Issues" July 15, 2009*

## Capacity: Space Standards and Utilization

Using space standards and understanding space utilization is a common practice among many large organizations to streamline their facilities. The ONMS should consider a stringent and detailed planning and programming exercise before a facility is procured. Understanding space needs, utilization, growth, and redundancies can have a high return on investment through time.

Specific solutions to solve the need for additional space at sanctuary sites will vary. In some cases, shared offices can be a simple solution to growth because the specific responsibility of the staff requires them to be out of the office for a majority of the work day. Hotelling or benching can create a solution for staff that does not require a permanent office; flexible design solutions can be utilized to accommodate a multi-functional room requirement.

The following table represents a benchmark strategy conducted by GSA for administrative and managerial staff based on commercial standards to assist the ONMS in capturing facility requirements:

*Table A.6 Commercial Company Benchmark, Space Allocation by Employee Position*

| Position (ONMS Equivalent) | Useable Square Feet |
|---|---|
| Executive (Regional Dir. Equivalent) | 140 (office) |
| Director (Site Superintendent Equivalent) | 130 (office) |
| Managerial, supervisory, technical (Coordinator Equivalent) | 120 (office) |
| Support staff | 64 (cubicle or workstation) |
| Telecommuters, hotelling | NA |

The ONMS must optimize the use of existing assets. Reasonable and credible space utilization guidelines can serve as an objective baseline to:

- Evaluate space requests for new or growing functions,
- Project space demand for new projects, and
- Ensure each sanctuary unit is adequately and equitably housed.

As for special function or support spaces such as a visitor center, research room, dive locker, conference room, training room, and IT space, a detailed and inclusive space programming exercise is recommended. Without a comprehensive planning and programming process, many unique facilities requirements such as the exhibit design and needs, maturity and complexity of the sanctuary, aspects of the local community and partnerships, specific goals of the

sanctuary, and infrastructure to support all design features may not be determined. To dictate a standard size for unique spaces can lead to construction of facilities that will not sustain the future mission of the ONMS.

## Project Planning

It is recommended that the ONMS continue to plan projects with updated national master planning, site specific planning and programming, and regional master plans. Facility planning will achieve several goals for the program, including:

- Help to make good space and/or location decisions at current sites, expanded sites, and future sites,
- Justify future space needs,
- Establish best practices and standards that can be used across the program,
- Create a long term strategic space and management plan that aligns with program needs and directives.

In fiscal year 2010 to 2015, ONMS is likely to consider regional plans for the three regions not yet addressed, an update of the Pacific Islands Region plan, and an update to the national facilities and exhibits master plan. Other site specific plans are also possible.

The following worksheet is a sample template for programming current and future space needs for the ONMS. The worksheet allows the ONMS to insert space needs to determine the square footage needed for ONMS facilities. The worksheet depicts area sizes in useable square feet (USF) unless gross square feet (GSF) is specifically noted. Useable square footage measures only the usable area of a given space. It does not include spaces such as lobbies, corridors, walls and other public and support spaces such as mechanical rooms, restrooms, stairs, etc. These types of spaces are included in the USF to GSF factor. The sum of the useable square footage and the non-assignable square footage is equal to the gross square footage of the building.

*Table A.7 Sample Programming Worksheet*

| Facility / Space Programming | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Site** | **State** | **Year Designated** | **Sanctuary Size** | | **Owned/Lease** | **Lease Over** | **Yr of Bldg.** |
| MBNMS | CA | | | | | | |
| **Staffing Requirement** | | | | | | | |
| **Position** | | **Current** | **Projected** | **USF** | **Total USF** | **Description** | |
| Regional Director | | | | 140 | | Private Office | |
| Site Superintendent | | | | 130 | | Private Office | |
| Deputy Site Superintendent | | | | 120 | | Private Office | |
| Research Coordinator | | | | 120 | | Private Office | |
| Volunteer / Outreach Coordinator | | | | 120 | | Private Office | |
| Resource Protection Coordinator | | | | 120 | | Private Office | |
| Education Coordinator | | | | 120 | | Private Office | |
| Specialists or Support Staff | | | | 64 | | Workstation | |
| Hotelling | | | | 42 | | Shared Workstation | |
| **Special Function / Support Spaces** | | | | | | | |
| **Space Type** | | **Current** | **Projected** | **USF** | **Total USF** | **Description** | |
| Conference Room | | | | | | | |
| Collaboration Room | | | | | | | |
| Training Room | | | | | | | |
| Mail / Copy Room | | | | | | | |
| Storage Room | | | | | | | |
| Toilet Room (per Code) | | | | | | | |
| IT Room | | | | | | | |
| Break Room | | | | | | | |
| Visitor Center | | | | | | Work with Exhibit Designer | |
| Exhibit Area | | | | | | Work with Exhibit Designer | |
| Research | Wet Lab | | | | | Work with Science SME | |
| | Dry Lab | | | | | Work with Science SME | |
| | Video Lab | | | | | Work with Science SME | |
| Vessel Support | Dive Locker | | | | | Work with Vessel SME | |
| | Gear Storage | | | | | Work with Vessel SME | |
| | Equipment Storage | | | | | Work with Vessel SME | |
| | Shower | | | | | Work with Vessel SME | |
| Subtotal | | | | | | | |
| *USF to GSF Factor (For Circulation, Mechanical Rooms, Electrical Rooms)* | | | | | *45%* | | |
| **Total** | | | | | | | |

The programming worksheet is a simple template that addresses various space types and can help to validate current and projected needs. Again, there is no recommended standard USF for special space types; determining specific sizes for these spaces would require going through a programming exercise with each stakeholder to determine space function (note: the 45 percent USF to GSF factor is a benchmark factor used by the military and is found to be close but it is only a suggested factor used for programming purposes. This number will be increased or value engineered after the design starts).

## IT and Infrastructure

Many IT and infrastructure standards and best practices can be taken from the NOAA Facility IT Standards and other common industry practices. A system-wide IT policy or standard for management should be adopted, such as Information Technology Infrastructure Library (ITIL) or Control Objectives for Information and related Technology (COBIT). Implementing such a management plan for IT practices, much like a facility management plan, will help the ONMS operate as a single-unit using a common standard of practice.

## IT Facility Needs

Providing the proper facilities will allow the organization to provide the state-of-the-art technologies needed for public outreach and education programs.

The physical layer of technology infrastructure consisting of the equipment rooms, cable pathways and cable is often said to be more important than the end point network electronic equipment. Technology infrastructure should be standards-based, flexible, and designed with spare capacity to allow for future growth and easy migration to allow for future technologies. The following section details the standard facilities needed for technology infrastructure; further information can be found in the NOAA IT Standards.

## NOAA Facility IT Standards

- **Work Areas:** The design of work area telecommunications infrastructure should comply with industry standard Building Industry Consulting Service International -- Telecommunications Distribution Methods Manual guidelines.
- **Telecommunications Rooms:** A dedicated telecommunications room is required for every NMS facility and should be provided whether the facility is leased or owned. The following size standards apply to telecommunications rooms.
  - 5,000 SF or Less 10’ x 8’
  - 5,001 to 8,000 SF 10’ x 9’
  - 8,001 SF to 10,000 SF 10’ x 11’

- **Equipment Rooms:** Equipment rooms, or Main Distribution Frame (MDF) rooms, should be sized according to the equipment to be accommodated and the size of the area being served from the room.

## IT Planning

IT capability should be planned from the beginning of any facility project. This can take place during pre-project planning meetings and be determined through detailed programming and project planning.

Planning for technology capability early in a project makes it easier to integrate technologies in the future and will allow ONMS facilities the ability to adapt to new technology and to provide the "wow" factor that is desired in exhibits and visitor centers if the right infrastructure is in place and is planned for from the beginning.

## Sustainability

Building green and sustainable buildings is now common practice around the globe. A sustainable building looks to employ both green building standards and sustainable design that supports the mission of the user long term. Best practice within the realm of "greening" facilities is the Leadership in Energy and Environmental Design (LEED®) Certification System, the Energy Policy Act 2005, and several other federal standards.

ONMS has worked to be a leader within NOAA to meet Federal goals and requirements to reduce energy consumption in existing buildings and to construct high performance buildings that have a lower demand for energy, water and other materials. The 2007 NOAA directive requiring minimum design criteria for all new construction, major repair / renovation and lease construction to attain LEED® Silver rating from the US Green Building Council has led the ONMS to adopt its own LEED® policy. ONMS policy on LEED® states that when undertaking the construction of new facilities or renovation of existing facilities, the ONMS shall follow the protocols of the LEED® certification process, implement LEED® at the earliest stages of building site identification and concept design, and where practicable seek LEED® certification, *preferably* at the LEED® Silver level or higher. Furthermore, ONMS should follow and maintain Executive Order 13423 (which sets goals in the areas of energy efficiency, acquisition, renewable energy, toxics reductions, recycling, renewable energy, sustainable buildings, electronics stewardship, fleets, and water conservation[4]) and Energy Policy Act 2005, both setting building efficiency and environmental responsibility goals for government facilities. The Federal, NOAA, and ONMS directives for sustainable facility practice push the program to incorporate designs that conserve resources and

[4] *Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Modeling", January 2007*

are environmentally friendly; the program should continue to execute such practices in new facilities and renovations as the specific projects allow.

## Benefits of LEED Certification

The move toward LEED® and green building practices has been driven greatly by the tremendous benefits that are a direct result of implementing a green approach. Green buildings use key resources more efficiently when compared with conventional buildings that are simply built to code. LEED® creates healthier work and living environments, and contributes to higher productivity and improved user health and comfort. The Green Building Certification Institute (GBCI) has also compiled a long list of benefits of implementing a LEED® strategy which range from improving air and water quality to reducing solid waste. The fundamental reduction in environmental impacts, in addition to all of the economic and occupant benefits, makes a strong case for green building practices. It is also important to note that these benefits are experienced by anyone who comes into contact with the project, including owners, designers, occupants, and society as a whole.

## Project Approach

When planning for a new or renovated facility, achieving a LEED® certification requires a sustained team effort from design through construction by ONMS, the Project Architect, engineers and consultants, and the Construction Manager. To fully understand the many opportunities in achieving a LEED® accredited project, ONMS should have a LEED® Accredited Professional on board from the programming stage through the construction phases for any future facilities. For all new LEED® projects, the design team should refer to the most recent version of the LEED® Reference Guide.

The ONMS can contribute further to "greening" ONMS buildings through Green Power purchases, Energy Star appliances, water efficient landscaping, low-flow plumbing fixtures, window upgrades, sustainable design education, and other strategies that may not be standard NOAA practice but can be implemented at all sites and facilities whether leased or owned. Sustainable and high performance buildings have become the "norm" in the construction and real estate industries; therefore implementing green building strategies has become easier and less costly for tenants and building owners.

For future ONMS facilities, at the site team's earliest convenience, a LEED® strategy should be mapped out and agreed to in order to ensure the building is as green as possible and opportunities to implement sustainable elements in construction and facilities are not missed.

Cost is often a consideration when thinking of greening ONMS facilities; although there is no "one-size-fits-all" answer to the cost question, it is clear from the substantial research in the

marketplace that reasonable levels of sustainable design can be incorporated into most building types at little or no additional cost. Most studies show a cost premium of between 0.5 percent and 6 percent for a moderate level of sustainable design; obviously higher levels of sustainability (or higher LEED® certifications) will require greater initial investment by the program. In addition, sustainable materials and systems are becoming more affordable, sustainable design elements are becoming widely accepted in the mainstream of project design, and building owners and tenants are beginning to demand and value those features.[5]

A study completed by the GSA in 2004 for costs associated with LEED® construction found the following cost per square foot associated with green building renovations on a typical office building model:[6]

*Table A.8* LEED® *Cost Impact for Renovations*

**LEED® Construction Cost Impacts**

Typical Office Building Renovation
Base Construction Cost = $130 / GSF

| Cost per GSF | Low | High |
|---|---|---|
| **Certified** | $1.78 | $2.73 |
| **Silver** | $3.94 | $5.55 |
| **Gold** | $10.58 | $10.22 |

The costs for incorporating sustainable design elements will depend greatly on a wide range of factors, including building type, project location, local climate, site conditions, and the familiarity of the project team with sustainable design. Also, after a LEED® rated construction is completed, it is important to monitor and confirm that a project's energy-related systems are installed, calibrated, and perform as intended through commissioning activities. Energy related systems included heating, ventilating, air conditioning, and refrigeration, lighting, domestic hot water, and renewable energy systems along with all related controls. Implementation of commissioning processes maintains the focus on high performance building principles from project inception through operation.[7]

Additionally, sustainability is not just about renewable materials or LEED® certifications. Organizations should think about how a facility can sustain a mission for the next 10, 20, or 30 years without major relocation, renovation or construction. Occupying the right facilities that meet mission needs is critical for every NMS site, and each facility should have space for growth.

[5] *Source: What Does Green Really Cost, Davis Langdon; USGBC*
[6] *Source: GSA LEED Cost Study, Final Report, October 2004, USGBC*
[7] *Source: USGBC LEED for New Construction & Major Renovation V2.2 and LEED CI V2.0 Reference Guides, 2006*

*The following sections detail thematic areas that are directly affected by facilities and space requirements.*

# Exhibits, Signs, and Kiosks



*Examples of what is being done in the world of exhibits and signs, demonstrating how they can bring the public to the sanctuary in many venues. (Source: ONMS)*

The ONMS is mandated by legislation to educate the public about ocean and Great Lakes resources, both natural and cultural, which are difficult for most of the general public to see firsthand. The lack of public awareness about marine resources and threats, and the lack of visibility for the ONMS and ocean conservation, is a prominent issue for the ONMS. Therefore, ONMS uses exhibits, signs, and interactive kiosks to bring sanctuaries to the public. The ONMS strives to provide more "model" interpretive assets like visitor centers, signs, and exhibits, such as those found at the Florida Keys NMS and Thunder Bay NMS, or through strong partnerships such as the ONMS exhibit at the California Academy of Sciences.

## Exhibit Planning Considerations

Planning for and around exhibits is recommended from the start of every project for ONMS future exhibits projects. Exhibits and signs are provided in a variety of venues, including NOAA facilities and ONMS visitor centers, environmental agencies visitor centers (such as NPS), aquariums and museums, and at strategic shoreline locations. Because exhibits and signs are often more complicated than they look, the concept planning and design process is often the first step to a successful exhibit.

The following section highlights emerging issues in the ONMS exhibits program, along with best practices within the world of exhibits.

## Exhibit Partnerships

Museums and aquaria are often seen as natural partners for the ONMS to bring the message to the public. Museums and aquaria often present unique and dynamic venues for the ONMS to display sanctuary messages, and often have large numbers of visitors and school groups visiting the venue.

There are several considerations to be made when entering partnerships, including:

- **Message:** The ONMS must ensure that the message of the partner organization and facility meets those of the marine sanctuaries.
- **Budget and long-term financing:** A clear agreement must be made as to the responsibilities and financing of both the initial construction and long term operations of the exhibit.
- **Cost effectiveness:** Make sure that the agreement is cost effective and makes sense.

- **Location:** Location may be a consideration as the ONMS considers reaching more people in regions that are not adjacent to marine sanctuaries. Duplicating marine-related exhibits in communities that already have many of these types of venues may not be as effective as trying to reach other communities not attached to a sanctuary or high population areas.
- **Outreach and Education:** Consider who will be manning the exhibit and if additional training will be needed. If educational programs are possible, the ONMS should consider marine sanctuary focused programming at the venue.

Partnerships are often a successful and cost effective method to reach the public, but the ONMS must clearly outline and plan expectations, funding and strategy early in the process to avoid pitfalls.

## Experience

Best practices for marine and conservation exhibits can be found at various museums and aquaria from around the world. The goals of each exhibit should be to tell a story, educate about a particular subject, and connect with the local community. The experience at each exhibit is what the audience will take away with them, and the message will only be inherited if the goals are relayed in an interactive, entertaining manner.

Interactive exhibits with a combination of moving parts or electronic technology that requires manipulation or role-playing from the audience is what works best in relaying a message.

- Create an experience of being submersed.
- Create a theatrical experience with sound and/or smell immersions.
- Provide open aquariums where children and adults can “get wet” and touch marine life.
- Re-create the underwater environment with lighting and theatrical projections.
- Bring the conservation and research functions to the people through microscopes, ROVs, learning labs, conservation labs, and others.
- Create an experience that can allow visitors to travel to all the sanctuaries.

Each sanctuary has a similar function in research, resource protection, and enforcement. The ability to observe how these functions are carried out can and will bring the public closer to the sanctuary, helping the audience appreciate the goals of the ONMS more. Successful ONMS exhibits often tie in research and science already being conducted in the sanctuary waters and can inspire children and adults to learn more about the sanctuary and how to protect it.

Static displays are not obsolete and may have a new function in today’s technological world. To expand unused outdoor space, many museums are utilizing outdoor exhibit areas as static interactive interpretive exhibits. Static displays

*Children often experience the ocean through touch at child focused tide pool exhibits. (Source: FCA)*

can also come to life with power from solar cells and a 12-volt audio system; the viewer can have a sensory experience through sound or light.

## Remote Access

Remote access embodies the larger idea of being able to reach people and places from anywhere. When applied to the ONMS, the ability to reach out to various communities, academic partners, and other sanctuary offices to share ideas and information is needed for outreach and education purposes, along with exhibits.


*Multiple video monitor screens on a mobile telepresence unit showing both the underwater and presentation feeds. Telepresence is an innovative tool that can bring sanctuary research to the public. (Source: immersionlearning.org)*

ONMS has established an innovative educational and technological framework to bring the excitement of the nation's underwater ecosystems to the American public by linking what the ONMS has called "telepresence" activities with system-wide oceanographic monitoring programs. This initiative will revolutionize oceanographic information dissemination by integrating live video camera feeds with data streams as diverse as observations collected by monitoring stations in the marine sanctuaries. NOAA, a member of the Internet2 networking community, works within this collection of research and education partners to promote cutting-edge network capabilities and unique partnering opportunities for telepresence. Internet2 members leverage a high-performance network and worldwide partnerships to support and enhance educational and research missions.

Interest in either expanding telepresence and Internet2 opportunities, along with providing the needed infrastructure, has been expressed at many NMSS sites. This may come in the form of remote access to make visitors feel as if they are actually in sanctuary sites, using live video cameras, feeding video presentations remote from the site, operation of remote camera systems, robots, and underwater vehicles. The ONMS has made other strides in accomplishing the many aspects of providing a real-time experience in exhibits, but more could be done. Technology in exhibits can be accomplished in the following ways:

- **Vision:** A minimum system usually includes visual feedback from the sanctuary site. For example, while the cost of deep-water diving is extremely high, remote video systems can be used to view underwater environments. For

example, the Florida Keys NMS has a camera focused on an underwater coral nursery visible from the Florida Keys Eco-Discovery center where visitors can view the nursery. Monterey Bay NMS employs numerous "web cams" including weather cams, critter cams, and surf cams that show local scenes around the bay.

- **Sound:** Sound is generally the easiest sensation to implement, because sound equipment is readily available and affordable. For example, both the *USS Monitor* Center and the Great Lakes Maritime Heritage Center have sound loops running of storms, giving the visitor the impression of being caught in the type of ocean squall that sank many ships in the sanctuaries.
- **Manipulation:** The ability to manipulate a remote object or environment is an important aspect of real-time systems and can be implemented in a variety of ways depending on the needs of the user. Typically, the movements of the user's hands (position in space, and posture of the fingers) are picked up by a sensor, giving the user the ability to control the movement. For example, the Channel Islands NMS has an exhibit at the Santa Barbara Maritime Museum where the visitor can simulate maneuvering a boat using modern vessel controls.


*Stellwagen Bank NMS' exhibit hall at the Gloucester Maritime Heritage Center brings the sanctuary to visitors through a historical educational experience. (Source: ONMS)*

## Exhibit Concept Planning

Exhibits should be planned to coincide with the facility programming process when a new building or facility is first envisioned by the ONMS. Exhibit planning plays a critical role in the development of architectural and engineering parameters for a new or existing exhibit facility, and ultimately in the success (or failure) of the visitor experience.

A successful exhibit starts with an exhibit planner coming on-board early in a project planning stage to work with the client's educational and operational staff on clearly defining the goals, concept, and key take-away messages of the exhibit. The exhibit planner works with the ONMS team on developing and prioritizing educational and programming guidelines, key narrative elements and factual content they want to present


*The entrance to "The Living Reef" maintained by the Mote Marine Laboratory at the Florida Keys Eco-Discovery Center. The exhibit features living exhibits and is an example of a successful partner exhibit in an ONMS facility. (Source: ONMS)*

in the exhibit, and helps to determine the desired type and level of interactivity. Determining the message and level of complexity of an exhibit can also help the ONMS determine the construction cost and operations cost of the exhibit early in the process so that funding can be planned and/or agreed upon by partners.

Early work on exhibit planning can also help determine the level of IT infrastructure needed to support exhibits now and in the future, as well as saving on cost and change orders later in the design process. For example, if telepresence presentations are to take place at an ONMS facility, the wiring and cabling needed for this should be planned early. Concept planning impacts the end message of an exhibit, and who is benefitting from it, which is important to plan if the ONMS wants to get a common message to all viewers that does not confuse the intent.

## Performance Measures

Although interpretive assets and visitor centers are effective at attracting the public, the displays and format are vital to effectiveness of the actual message. A virtual experience is always preferred, but is it right for all sites and all audiences? Understanding and implementing an "Outcome Based Performance Measure" can assist the ONMS in expenditures for the most effective interpretive assets.

This type of evaluation is a systemic way to determine if a program has achieved its goals. ONMS staff can ask program partners and other stakeholders questions, such as "why are we offering this program, what do we want to accomplish, and who do we want to benefit from it?" Understanding the most effective format and its requirements can lead to better facility programming for spaces and entire buildings. Exhibits and signs should be measured for effectiveness to:

- Align signs and exhibits with overall strategies of the organization.
- Measure results and effectiveness of signs and exhibits.
- Identify and eliminate wasted efforts.
- Encourage and leverage opportunities for new and exciting ideas for signs and exhibits.

Smart exhibitors often analyze the effectiveness of sign and exhibit efforts to better plan for future installations, and to help leverage opportunities to improve existing exhibits and signs.

## Cost

The cost associated with providing exhibits is usually a big consideration when planning for a new or updated exhibit. The cost for exhibits is usually an additional facility cost taken on by the ONMS and/or partner organizations, and includes exhibit design and planning, fabrication, and installation. The historical cost is typically around $350 to $650 per square foot of the space to be occupied by exhibits and is driven by the level of complexity of the design, ranging from static

exhibits to something with a high level of media, technology, or live exhibits. As a general rule of thumb, about 40 percent of the total construction budget available should be dedicated for exhibit planning, design, and installation.

*Table A.9 Exhibit Cost Ranges*

| Exhibit Cost Range * | |
|---|---|
| Static Exhibits | Approx. $350 per SF |
| Interactive Exhibit | Approx. $500-$550 per SF |
| Living or High-tech Exhibit | Approx. $600-$650 per SF |

* *Seruto & Company*

For example, a 1,000 SF exhibit space in Washington, D.C., currently being planned by the ONMS is estimated to cost around $350,000 for a static exhibit with a few interactive components. Historically, about 25-30 percent of the cost for an exhibit goes into the planning and design of the exhibit, with the remaining going toward physical fabrication and installation of the exhibit.

Another cost to be considered is the life cycle cost of operating, maintaining, and repairing exhibits. Much like buildings, exhibits must be maintained and repaired throughout their life. While there is no industry standard for the costs associated with maintaining exhibits, several factors can help when planning exhibits that can determine the operational cost.

- **What is the construction budget?** This can drive the quality of materials, the level of technology, and other things that can affect the long-term operations cost of the exhibit. For example, constructing an exhibit from a higher cost material initially that is easier to maintain will save money in the long term. Also, the construction budget drives the level of complexity of the exhibit; a static exhibit is easier to maintain than one with media or moving parts.
- **What is the message?** While this may seem like a straightforward question, the end goal and message of an exhibit can really drive the complexity of the design, thus affecting the long term costs to operate the exhibit.
- **Who will be manning and maintaining the exhibit?** This includes docents or volunteers and maintenance staff. For example, a video presentation may need someone to consistently monitor and restart the video loop; a high technology or live exhibit may need dedicated specialty staff to keep it running. If maintenance staff is not available for day to day maintenance, an outside vendor may need to be hired to run and keep up the technology or moving parts of an exhibit. This is an additional cost to be incurred by the user.
- **What is the tolerance of the organization for operations cost?** Because the ONMS may not be able to pinpoint funds that will be available for the operations budget at the onset of a project, a tolerance of what can be expended for operations should be understood at the onset


*The Mariners Museum Monitor Center "Ironclad Revolution" exhibit features NOAA and the sanctuary prominently and is an example of a successful ONMS exhibit partnership. (Source: MNMS)*

of an exhibit project. Additionally, an agreement between the ONMS and a partner may need to be established that outlines who has responsibility for both cost and operations activities.

A more thorough and thoughtful exhibit planning and design process can help the ONMS determine what funding needs to be allocated toward long-term exhibit operations. Often, choices made early in the concept and design planning for exhibits can affect the long term operations cost of the exhibit; early planning can help the ONMS make decisions that best match the message, goals, and long-term budget for the project. The ONMS should also make a formalized agreement with partners on exhibits both the ONMS' and the partner's financial involvement in operations and maintenance.

## Maritime Heritage Exhibits

Increasing public awareness and promotion of maritime heritage cultural assets is a common desire at many sanctuaries not dedicated to shipwrecks; many of these sites have existing maritime heritage materials, but have no place to share them with the public because much of the existing funding for exhibits goes toward promotion of marine environments. While many sanctuary sites have expressed interest in expanding maritime heritage exhibits, both at current locations and at partner locations, funding is needed to develop these ideas and leverage partnerships.

*Visitors can explore the ship's deck and cabin, then move on and find themselves amidst the remains of replica shipwreck on the bottom of Thunder Bay at NOAA's Great Lakes Maritime Heritage Center in Alpena, MI. (Source: ONMS)*

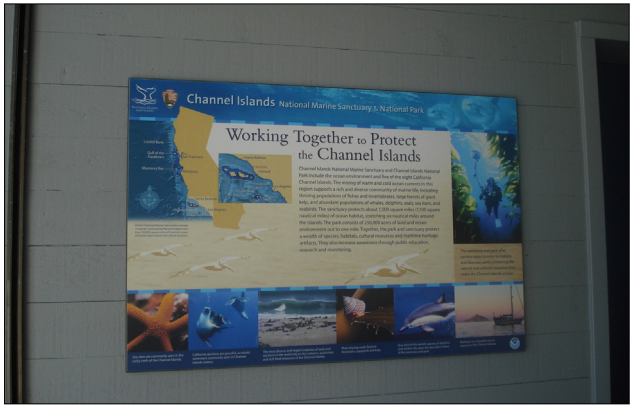
## National Signage Plan and Standards

The ONMS National Signage Plan and the California Signage Plan established standards for ONMS signs. The national standards for ONMS signage are guidelines to establish a uniform identity across the program that provides a common look, while still allowing each sanctuary to maintain its individuality and allowing coordination with partner agencies and local signage guidelines. Any enhancements or partnerships for ONMS signage must maintain the color scheme and general design as the national standards. These include sign borders, fonts, placement of logos, and sign configuration. [8] Because past signage plans have been so successful in supporting the ONMS, future additional signage plans can help determine the direction for interpretive signs within the organization and may also help to resolve some of the evolving concerns facing the ONMS signage program.

One example of a best practice for signs can be taken from the National Park Service (NPS), which places signs announcing to visitors that they are in or entering a national park. These brown signs featuring the NPS logo are easily recognizable by the general public and serve the purpose of informing people they are in a special place. The NMSS might duplicate this idea in the future,

[8] *Long Range Master Plan for Facilities, Real Property, Signage and Exhibits, 2005*

announcing that a coastal area is a marine sanctuary, encouraging the public to distinguish the importance of protecting these areas and providing a recognizable network of signs that perpetuates the ONMS "brand."




*A sign for the Channel Islands NMS at the Ana Capa Visitor's Center features NOAA and the ONMS in a partner facility, just one way the ONMS reach many people. (Source: FPC)*

A common issue with signage is the integration of ONMS sign standards, graphics, and templates with those of partner organizations, such as the NPS. As a common partner in sign opportunities, NPS has its own sign templates, standards, and logos that do not always merge with those of the ONMS. A more consistent standard has been developed to make these sign partnerships more straightforward and simple. This standard hybrid sign, designed for Harpers Ferry at the *Monitor* NMS, is currently undergoing approval and will be the new ONMS national standard for hybrid signs with the NPS.

An additional requirement in the signage program is the need for more directional signage; an organization cannot have facilities such as visitor centers and storefronts without directional signs to point visitors and tourists to the attraction. With every ONMS facility must come a network of signs directing people to the building, and the ONMS looks to expand directional signs to its facilities.

An important next step for the signage program is the creation of an ONMS national signage database with common standards. This was commonly discussed during the master planning effort as a way to share among sites and benchmark "best practices" for signage graphics and educational information. The signage database could also help ONMS with ideas for the integration of ONMS standards with partner agency standards.

## Interactive Kiosk Program

The Sanctuary Interactive Kiosk Program offers a high-impact visual and auditory showcase of all the treasures the sanctuary has to offer. Users can learn about the research projects, education, outreach and resource protection programs, and extensive information on sanctuary species and habitats. The result of the program is a better and more meaningful experience for visitors, who get to see and interact with sanctuary resources in a way not before possible.

Because each sanctuary has its own unique makeup of attractions and marine life, much of a


*The ONMS interactive kiosks use innovative technology to serve as a NOAA portal that provides information on sanctuary resources and up to the minute weather and marine forecast information. (Source: ONMS Kiosk Brochure)*

kiosk's content is specific to its location. Kiosks are different from websites in that they are not in HTML format, although the interface is quite similar. Setting up a system of kiosks at a sanctuary location requires management of the content and design process, coordination with the kiosk team and the various sanctuary partners, as well as maintaining updates to the system after the kiosk is installed.[9] To place an interactive kiosk, the ONMS must coordinate heavily with partners for the space and system requirements, along with the ongoing maintenance and upkeep requirements for the unit. This requires both time and effort on the part of ONMS and partnering agencies. Resource requirements for NOAA interactive kiosks include:

- 24-hour high-speed Internet access.
- Graphic materials need optimizing, photos and other elements need editing and formatting to fit the kiosks' specific requirements.
- Space to accommodate the kiosk, which can include both indoor and outdoor models (approximately five square feet).
- Power outlet
- ADA accessibility
- Climate control is needed for indoor kiosks.

[9] *Source: National Marine Sanctuaries Interactive Kiosk Program Catalog, 2008*

Additionally, the design and content for each ONMS kiosk is heavily coordinated by a team of individuals who plan and implement the kiosk requirements:

1. **The Technical Team:** The Technical Team is responsible for all aspects of planning and implementing the Sanctuary Interactive Kiosks. The team coordinates with other NOAA agencies, sub-contractors and the various local partners in the development of the sanctuary-specific kiosk.
2. **The Content Team:** This team is designated on a project basis. Each sanctuary site has provided content creation and collaboration along with various partners to work with the technical team.

The costs associated with the kiosk program also have implications to the future planning of the program. This includes both first cost for fabrication and installation, and ongoing maintenance and other charges. The initial cost associated with a new kiosk is as follows:

- **New Kiosk:** Approximately $30,000
- **Additional units at a site that already has a kiosk:**
  - Indoor unit: $5,000
  - Outdoor unit: $16,000

The initial cost to place a kiosk(s) can be prohibitive, along with the continued funding needed for maintenance of the software and

hardware updates, as well as unplanned malfunctions, should also be considered. The cost for maintaining kiosks is often obtained from a sanctuary site's educational budget, which deducts funding from these programs. The ONMS should make clear on every kiosk placement the recurring costs associated with the machine and who is responsible for maintenance.

The following table illustrates a cost model for a sanctuary that is placing kiosks, and some of the costs that may be associated over the lifespan of the kiosk. The table assumes that an NMSS site places two kiosks originally, and would then place an additional kiosk every three years. The life span is assumed at eight years, with major maintenance such as the replacement of a hard drive or screen every four years. While this is not a real case, it has been provided to give an idea of the costs associated with kiosks and to help ONMS plan for more interactive kiosks in the future.

As shown in the chart, the cost for maintaining a kiosk is consistent and potentially uses funds that could be allocated to outreach and educational programming.

In the future, it is recommended that the kiosk program be further streamlined and developed, and that the technology associated with the program be updated as newer and faster capabilities arise in the market, to make the interactive kiosk program a state-of-the-art messenger for the sanctuaries that is both an effective and efficient tool for the program. A common message that is the same throughout the program should be inherent in all kiosks. In addition, the ONMS may consider taking on more of the programming and update requirements to be completed "in house" by ONMS staff members, rather than contracting these tasks to outside vendors. Simple updates are easily accomplished through training and can save the program money over time.

*Table A.10 Lifecycle Cost Analysis for Kiosks*

| Kiosk Lifetime Operations Cost | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 |
|---|---|---|---|---|---|---|---|---|
| **Program, Design, and Install Kiosks (2)** | $60,000 | | | | | | | |
| **Yearly Programming and Maintenance Fee (3% escalation per year)** | $850 | $876 | $902 | $929 | $957 | $985 | $1,015 | $1,045 |
| **Annual Update (1 update per year x $150 per hour x 8 hours x 2)** | | $2,400 | $2,400 | $3,600 | $3,600 | $3,600 | $4,800 | $4,800 |
| **Unplanned Maintenance (example: replace monitor x 2)** | | | | $3,000 | | | $3,000 | |
| **Place New Additional Kiosk (Indoor)** | | | $5,000 | | | $5,000 | | |
| **Subtotal** | **$60,850.00** | **$3,276** | **$8,302** | **$7,529** | **$4,556.68** | **$9,585** | **$8,815** | **$5,845** |
| | | | | | | | **Total** | **$108,758** |

# Vessels and Support

*Vessels and vessel support facilities are an emerging priority for ONMS because vessels serve many purposes, including research, monitoring, and outreach. (Source: ONMS, FPC)*

A strategy is currently in development to plan for future vessel requirements and eliminate outdated and incapable vessels. However, facility needs related to vessels are mentioned only briefly. Facilities to support vessels of all sizes are just as important to the mission of the ONMS as the vessels themselves. Vessels and support are needed to support field operations, such as research, monitoring, and enforcement, and buoys in offshore sanctuary locations.

The Small Boats Requirements Study 2005 determined best practices within ONMS boats program. The report predicts that by 2010, the sanctuary system will need for more than 6,200 days-at-sea in small boats to meet its mandated requirements. This figure is approximately 48 percent higher than current use. Therefore, as vessel use and the number of vessels within the program increase, the need for the facilities to support the boats program will increase. Facilities needed for vessel support include storage, dive lockers, shop space, and mooring and piers. While there is no standard for vessel support, the size and/or type of vessel support needed varies greatly and is dependent on the size and number of vessels at each site.

The facility needs determined by the Small Boats Requirements Study 2005 are the following:

- Renting or owning a protected slip or mooring at an appropriately sited marina or partner facility such as the Coast Guard or a University.
- Shed or trailer and foul-weather storage for smaller vessels.
- For larger vessels, appropriate on-site office, workshop and maintenance space.
- Maintenance and upkeep of the waterfront facilities, moorings, etc.

Through site visits and related interviews, other needs were found that relate to vessel facilities and infrastructure that also rank as a priority. These include:

- **Appropriate access:** Access to the vessel should allow staff and researchers to load equipment, such as ROVs and dive tanks. This can affect the location of the piers and mooring facilities for vessels, and should be a consideration in the future for new pier and mooring facilities.
- **Security and safety:** Security assessments should be performed at NMSS vessel sites. The purpose of the security assessment is to provide an analysis of the assets to be protected, the threats to those assets, and proposed security measures that could help to protect the assets from identified threats. All mooring, piers, and storage sites should take into consideration the security of assets and the safety of members of the public who are able to access the area.

Like with any facility, all support facilities should be planned in advance of new, additional, or replaced vessels. Proper planning or programming of the facilities related to vessels at each site will assist the ONMS in providing vessel support facilities that align with and support program needs. Determining vessels and related support early in the process can help ONMS sites create long-term management plans as related to enforcement and monitoring of sanctuary waters.

*Proper storage for monitoring buoys, research equipment, and boat equipment is a priority for ONMS because the equipment must be protected from coastal elements and weather. (Source: FPC)*

At many NMSS locations, consolidated facilities are a best practice from an operational standpoint, where administrative, vessel support, and mooring facilities are co-located in one place. For example, the Dr. Nancy Foster Florida Keys Environmental Complex for the FKNMS consists of the visitor center, the administrative building, boat maintenance shop, and adjacent docking for vessels. While this is the preferred arrangement for many sites, due to local constraints, funding, or availability of facilities, this layout has not always been possible. However, proximity improvements could be examined at several other sanctuary sites, such as the OCNMS or the Upper Keys management office. Opportunities and partnerships are in place; funding is needed to develop and explore these options to further improve vessel operations at these sites.

# Science and Research

*A Stellwagen Bank NMS maritime archaeologist deploys an ROV off the research vessel* Auk *to gain data on the sanctuary's habitats and maritime heritage resources. (Source: SBNMS)*

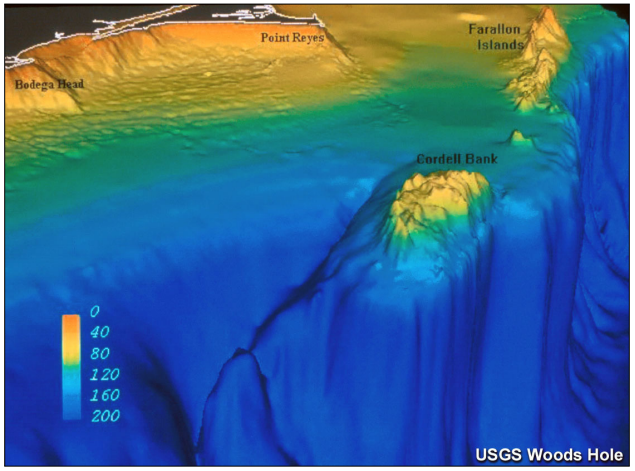
Increasing research capability at sanctuary sites will be especially important in future protection and preservation of marine environments and is an emerging priority at many NMSS sites for additional facilities and infrastructure. Monitoring and understanding conditions within sanctuary waters is vital in recognizing how to protect sanctuary habitats and resources, as a basis for decision making, and providing a platform with which future management plans and performance goals are determined at each site. Although research requirements vary from site to site, the goal of conservation science is the same. Research capabilities can serve as the glue that ties local educational partnerships together. Funding local research projects passed down from NOAA and the National Science Foundation can ensure that the ONMS is on local selection committees, utilize local scientists, and answer sanctuary specific questions with more confidence.

Individual sites have seen a growing need for various research capabilities and demands. Whether the capability is a wet lab or a video lab, each sanctuary has done remarkably in meeting individual requirements with make-shift labs and through partnerships. In addition to research projects, many sites have a growing requirement in hosting fellowships, visiting scientists, and interns. Many remote sites often do not have many choices of hotels or dormitories so many visitors need a place to stay. It is very difficult to leverage visiting scientists' knowledge or to facilitate the education of an intern or grad student without research capabilities such as labs and bunking space. TBNMS has been successful in attracting many researchers and students to the remote location in Alpena, MI, because they are able to provide a low-cost solution to the problem with their small bunking facility. Providing such facilities at other NMSS sites is a best practice within the system and can further expand the possibilities of research in the sanctuary.

Providing research-related capabilities at sanctuary sites can support many goals of the program and the right facilities can even promote new programs and existing missions such as resource protection, public outreach, and education. Beyond facility needs, vessels and vessel support is closely tied to research needs within the sanctuary. Dedicated and NOAA-owned research facilities are not required at all sites, but access to these facilities is needed at most, and can be accomplished through local partnerships. Partnerships with outside organizations such as universities, other federal agencies, and other regional science organizations are imperative to the research, but funding is needed to develop these relationships further.

Sanctuary supported research and monitoring activities can occur in any appropriate facility, but if these functions are conducted within sanctuary

facilities, they should be located at points of easy access to sanctuary waters. Research and monitoring can also occur at places where there are other compatible and supportive activities, such as university complexes. Full implementation of research goals and the necessary facilities for this within the NMSS depends on continued support from state and federal funding, grants, donations, and contributions from partners.




*A computerized image of the topography of Cordell Bank NMS (Source: ONMS)*

Best practice in the world of research and science is varied, but for the ONMS, a small wet lab with sinks, refrigerator / freezer, and storage should be a minimum standard for sanctuary sites. More developed sites may require a larger and more complex wet lab, along with the need for a dry lab for video and media production. Often monitoring of underwater environments involves remotely operated vehicles that send video back to sanctuary staff; to do this a space is needed to store batteries, equipment, and computers to analyze the data. While a large video lab is likely a regional requirement at this time, all sites will have varying needs for video labs. Additionally, ideal operating standards call for at least minimal bunking capability for visiting scientists and students at all sanctuary sites, with more developed sites requiring larger bunking capability for more people.

Simple programming and planning exercises concentrating specifically on local research requirements should be conducted at each sanctuary site. Different lab designs require unique infrastructure such as HVAC, lighting, power, plumbing, IT, and physical size. Although laboratory features can lead to different physical requirements, common functionality should be considered such as sample storage, sample sorting area, equipment storage, laboratory sinks, and actual research space. In planning for building space to support the research and monitoring function, each sanctuary shall determine the expected number of personnel, both sanctuary staff and visiting personnel, who will be attached to the activity at any given time, as well as any specialized equipment that will require building space. Planning can also determine how partnerships can be used to help with research capabilities.

# Outreach and Education

Outreach and education activities are directly supported by corresponding facilities and assets such as visitor centers, classrooms, labs, and signs and exhibits; this master planning effort has determined the need for developing a network of visitor center facilities and store fronts that increase the visibility of NOAA and the sanctuary system, as well as a need for upgrading an aging infrastructure of existing facilities. Other physical assets such as signs and exhibits are also a direct messenger for education and public outreach activities and the two often go hand in hand.

*The "Dive into Education" teacher professional development session hosted by the Hawaiian Islands Humpback Whale NMS educates teachers on how to teach ocean literacy to their students. (Source: ONMS)*

Education can encompass both educating the general public on the marine sanctuaries and educating school children about marine biology. Often, educational opportunities are contingent on staffing and budget available to the educational programs, but facilities are very important to support education. Facilities to support education activities include classrooms and large meeting spaces, learning labs, and facilities equipped with Internet2 (allowing telepresence) where the public can experience the sanctuary.

Another successful educational model for the sanctuary has been a mobile educational van at the Gulf of the Farallones NMS called the "Sharkmobile." The vehicle can travel to schools with educational materials and get children excited to learn more about shark biology. The mobile nature of the Sharkmobile has made it a flexible option that may be duplicated at other sanctuary sites, and can be adapted for different messages.

Education and outreach is often accomplished at various interpretive facilities, exhibits, and signs implemented by the ONMS. Through past successes, the ONMS has learned many lessons and come away with a clear vision to implement more best practice interpretive facilities. These successful past experiences have determined that the best strategy with the most positive outcome is to bring the audience to the ocean, that visitor centers or storefronts are often the best venue for

this (whether dedicated to the ONMS or shared with a partner such as the NPS), and that through an expanded network of facilities ONMS will broaden its education and outreach opportunities for the public.

Such interpretive centers have become the model for ONMS and can serve to reach the public, as well as other missions such as education, research, and exposing audiences to innovative technology. ONMS interpretive facilities can bring the marine environment to the visitor utilizing real-time ocean technology, interactive exhibits, aquariums, and educational seminars, allowing visitors to explore a variety of underwater environments.

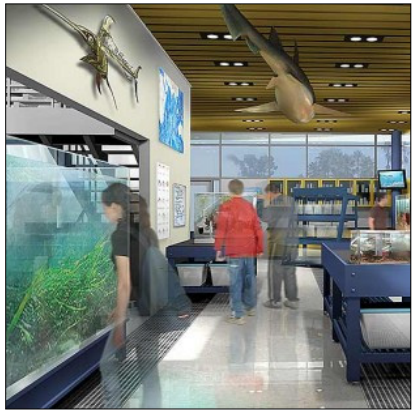
ONMS has identified several potential programmatic and funding partnerships with other organizations with related objectives; funding is needed for these partnerships to progress through the planning stage into the construction phase. Additionally, locations have also been identified for visitor centers and storefronts within other sites that give the best opportunity to reach visitors, locals, and students and provide the best possible visibility to ONMS, but further development and funding is needed to turn these ideas into realities.

The following sanctuary sites or satellite offices currently do not have a visitor center or store front, but have determined a requirement for some sort of outreach facility:

- Half Moon Bay, GFNMS
- Key Largo, FKNMS
- Stellwagen Bank NMS
- Fagatele Bay NMS
- North Carolina, *Monitor* NMS
- Flower Garden Banks NMS
- Gray's Reef NMS

Leveraging current partnerships, developing new partnerships, and raising the funding needed for such visitor centers will allow the program to take its marine education expertise to the next level, by supporting cooperative development of a network of interactive visitor centers, with appropriate partners, that will bring an ocean experience to the general public. The ONMS will capitalize on its unique partnerships with museums, aquaria and other marine exhibition facilities, to bring the world of ocean exploration, marine protected areas, and the significant resources of the ONMS to the public through these facilities.

While a dedicated storefront or visitor center is not feasible at all ONMS sites at this time, outreach and education activities can be accomplished through other venues and facilities through partnerships. Successful partnerships, such as the one at the California Academy of Sciences, can provide both exhibit opportunities, and access to other facilities such as classrooms and labs. Leveraging such partnerships is a viable option for NMSS sites that cannot implement a dedicated visitor center.



*The future Outreach Center for Teaching Ocean Science (OCTOS) Building will be a state-of-the-art educational outreach facility at the University of California, Santa Barbara, and the Channel Islands National Marine Sanctuary (Source: CINMS)*

# Emergency Response and Enforcement


*An example of a mobile emergency operations center, which is just one solution for emergency response within the sanctuary system.*

Resource protection facilities cover a broad range of spaces that work to support the reduction of threats and impacts of human-induced effects on the natural and maritime heritage resources in the sanctuaries. Resource protection in the sanctuaries includes regulations, permitting, incident response and contingency planning, damage assessment and restoration, and enforcement. Due to the broad range of functions in resource protection, facilities to support this function may vary from office space for outside enforcement personnel, to lab spaces for necropsy practices. ONMS resource protection staff members are often the first on-scene personnel responding to emergency incidents in sanctuary waters. These types of emergencies include such incidents as vessel groundings, airplane crashes, and oil spills.

Sanctuary staff members help contact key federal, state, and local agencies; mobilize assets for response; and ensure that sensitive sanctuary resources are protected. Improving emergency preparedness and contingency planning remains one of the sanctuary program's higher priorities and facilities are needed to support this priority.

## Capabilities

Through past experience with emergencies within sanctuary waters, one need is for emergency response and operations spaces, especially in regions where the likelihood of such events is high (such as the California coastline and the Florida Keys). This includes dedicated space that can be transformed and utilized as a "war room" with adequate phone lines, electrical outlets, electrical capacity, HVAC capacity, video teleconferencing capability, short wave radio capabilities, and large surface or area for maps and charts to meet the surge in utilities and personnel.

## Required Support Spaces

One idea or need common at many sites is the desire for facilities to support research on marine mammals and for training students and professionals that provide information to natural resource managers. Such lab spaces, discussed for several other purposes throughout this document, would support many functional areas of the ONMS, including resource monitoring. Specific needs for these spaces include lab space to support emergency response, as well as necropsy research.

- Intake area for dead animals.
- Evidence freezers and refrigerators.
- Intake area for rescued animals with ability to handle contaminated water.
- All ONMS sites will need this capability except perhaps those with a low likelihood of an emergency spill.

- Conference space with video conferencing capability and extra power and data connections.

## Potential Solution

A mobile command post unit with the above capabilities and with a repeater station for cell phone coverage can work at some sites. The mobile command center, a vehicle with the connectivity required for such emergencies, can be a regional asset to be shared between sites. The State of California (West Coast Region) can share one trailer amongst the four sites and the State of Florida and South East Region can do the same with its three satellite locations. A basic mobile command may consist of cargo vans with communication and wireless capabilities, while a more complex site would have a step van to extended cab chassis with war room capabilities.

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