National Park Service
Cultural Landscapes Inventory
2020

Ford Island CPO Bungalows Neighborhood and Battleship Row
Pearl Harbor National Memorial

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June 25, 2020

IN REPLY REFER TO:
LOG NO: 2020.00032
DOC NO: 2006TGM36
Architecture

Jacqueline Ashwell
Superintendent, Pearl Harbor National Historic Landmark
National Park Service
United States Department of the Interior
1845 Wasp Boulevard, Building #176
Honolulu, HI 96818
Via email: jacqueline_ashwell@nps.gov

Dear Ms. Ashwell:

SUBJECT: **National Historic Preservation Act (NHPA) Section 106 Review**
Request Concurrence on Final Historic Structures Report for the Chief Petty Officers Bungalows
Ford Island, Pearl Harbor National Historic Landmark
Owner: National Park Service
Hālawa Ahupua'a, 'Ewa District, Island of O'ahu

On April 22, 2020, the State Historic Preservation Division received the requested additional information from the National Park Service (NPS) for review and concurrence with the final Historic Structures Report (HSR), the final Cultural Landscape Inventory (CLI), and the final Cultural Landscape Report (CLR) regarding the *Rehabilitation of the Historic Chief Petty Officers (CPO) Bungalows on Ford Island Programmatic Agreement (PA)*.

The CPO neighborhood are contributing elements to the Pearl Harbor Naval Base, which was designated a National Historic Landmark in 1964. Section E of the 2017 PA Amendment stipulates that the NPS shall preserve, rehabilitate, and/or restore the five historic CPO Bungalows and associated landscape through the development of the HSR, CLI and CLR.

Based on the information provided, the State Historic Preservation Officer (SHPO) **concurs** on the findings of the final HSR treatment strategy and recommendations; the findings of the final CLI (including the contributing landscape characteristics and contributing and non-contributing features as described in the CLI); and the findings of the final CLR treatment strategy and recommendations.

The SHPO looks forward to receiving the electronic and hard copy finals of the CLI, CLR and HSR from the NPS.

Please contact Tanya Gumapac-McGuire, Architecture Branch Chief, at (808) 692-8022 or at Tanya.Gumapac-Mcguire@hawaii.gov regarding architectural resources or this letter.

Mahalo,
Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Katie Bojakowski, Chief of Cultural and Natural Resources, NPS, katie_bojakowski@nps.gov

Ford Island CPO Bungalows Neighborhood and Battleship Row
Pearl Harbor National Memorial

Cultural Landscapes Inventory

Pearl Harbor National Memorial concurs with the findings of the CLI, including the management category and condition assessment as identified below:

MANAGEMENT CATEGORY: **A: Must be preserved and maintained**

CONDITION ASSESSMENT: **Poor**

10/16/19

(Acting) Superintendent, Pearl Harbor National Memorial Date

Please return to:

Vida Germano
Cultural Landscapes Program Manager
National Park Service
Interior Regions 8, 9, 10, and 12
333 Bush Street, Suite 500
San Francisco, CA 94104-2828
vida_germano@nps.gov

Management Category

Must be Preserved and Maintained (Category A): An inventory unit meeting any one of the following criteria: the preservation of the inventory unit is specifically legislated; the inventory unit is related to the park's legislated significance; the inventory unit is nationally significant as defined by National Historic Landmark criteria or serves as the setting for a nationally significant structure or object; the inventory unit is less than nationally significant, but contributes to the park's national significance; the inventory unit is prehistoric.

Should be Preserved and Maintained (Category B): An inventory unit meeting all of the following criteria (failure to meet any of the conditions moves it to Category C): the inventory unit meets National Register criteria; the inventory unit is compatible with the park's legislated significance.

May Be Preserved and Maintained (Category C): An inventory unit meeting one of the following criteria: the inventory unit meets the National Register criteria but because of condition or other factors does not qualify for Category B classification; there is currently insufficient information available to determine eligibility for the National Register but preliminary study indicates eligibility, or a landscape that has been determined ineligible but is managed as a cultural resource base through an NPS planning process.

May be Released, Altered or Destroyed (Category D): An inventory unit meeting one of the following criteria: the inventory unit is an irreparable hazard to public health and safety of has lost its historical integrity; the inventory unit is a physical or visual intrusion on the park's legislated significance, as defined through the planning process; the inventory unit has been disposed of by planned action or destroyed by natural forces.

Condition Assessment

Good: Indicates the inventory unit shows no clear evidence of major negative disturbance and deterioration by natural and/or human forces. The inventory unit's cultural and natural values are as well preserved as can be expected under the given environmental conditions. No immediate corrective action is required to maintain its current condition.

Fair: Indicates the inventory unit shows clear evidence of minor disturbances and deterioration by natural and/or human forces, and some degree of corrective action is needed within 3-5 years to prevent further harm to its cultural and/or natural values. If left to continue without the appropriate corrective action, the cumulative effect of the deterioration of many of the landscape characteristics will cause the inventory unit to degrade to a poor condition.

Poor: Indicates the inventory unit shows clear evidence of major disturbance and rapid deterioration by natural and/or human forces. Immediate corrective action is required to protect and preserve the remaining historical and natural values.

Undetermined: This pick can be used during consultation with the park regarding the landscape's condition. Condition must be determined before a record can be approved as complete.

Table of Contents

Inventory Unit Summary & Site Plan
- Inventory Unit Description 4
- Site Plan 6
- Property Level, CLI Number, Park Information 8

Concurrence Status
- Inventory Status 9
- Concurrence Status 9

Geographic Information and Location Map
- Inventory Unit Boundary Description 10
- State and County 10
- Size 10
- Location Map 11

Management Information
- General Management Information 12
- Adjacent Lands Information 13

National Register Information
- Existing National Register Status 14
- National Register Eligibility 14
- Period of Significance 15
- Area of Significance 15
- NRIS Information 16
- Statement of Significance 16
- National Historic Landmark Information 23
- World Heritage Site Information 23

Chronology & Physical History
- Cultural Landscape Type and Use 24
- Current and Historic Names 24
- Chronology 27
- Physical History 33

Analysis and Evaluation of Integrity
- Summary 105
- Natural Systems and Features 107
- Spatial Organization 110
- Cluster Arrangement 114
- Views and Vistas 116
- Buildings and Structures 119
- Circulation 131
- Vegetation 136
- Small Scale Features 145
- Archeological Sites 151

Condition
Condition Assessment and Impacts 154
Stabilization Measures 157

Treatment
Approved Treatment 157

Bibliography and Supplemental Information
Bibliography 158
Supplemental Information
Cultural Context
Appendix A: Site Plans
Appendix B: Feature Photos
Appendix C: FMSS Spreadsheet

Inventory Unit Summary & Site Plan

The Cultural Landscapes Inventory Overview:

Purpose and Goals of the CLI

The Cultural Landscapes Inventory (CLI), is an evaluated inventory of all significant cultural landscapes in units of the national park system in which the National Park Service has, or plans to acquire any enforceable legal interest. Landscapes documented through the CLI are those that individually meet criteria set forth in the National Register of Historic Places such as historic sites, historic designed landscapes, and historic vernacular landscapes or those that are contributing elements of properties that meet the criteria. In addition, landscapes that are managed as cultural resources because of law, policy, or decision reached through the park planning process even though they do not meet the National Register criteria, are also included in the CLI.

The CLI serves three major purposes. First, it provides the means to describe cultural landscapes on an individual or collective basis at the park, regional, or service-wide level. Secondly, it provides a platform to share information about cultural landscapes across programmatic areas and concerns and to integrate related data about these resources into park management. Thirdly, it provides an analytical tool to judge accomplishment and accountability.

The legislative, regulatory, and policy direction for conducting the CLI include:

National Historic Preservation Act of 1966 (16 USC 470h-2(a)(1)). Each Federal agency shall establish…a preservation program for the identification, evaluation, and nomination to the National Register of Historic Places…of historic properties…

Executive Order 13287: Preserve America, 2003. Sec. 3(a)…Each agency with real property management responsibilities shall prepare an assessment of the current status of its inventory of historic properties required by section 110(a)(2) of the NHPA…No later than September 30, 2004, each covered agency shall complete a report of the assessment and make it available to the Chairman of the Advisory Council on Historic Preservation and the Secretary of the Interior…(c) Each agency with real property management responsibilities shall, by September 30, 2005, and every third year thereafter, prepare a report on its progress in identifying…historic properties in its ownership and make the report available to the Council and the Secretary…

The Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act, 1998. Standard 2: An agency provides for the timely identification and evaluation of historic properties under agency jurisdiction or control and/or subject to effect by agency actions (Sec. 110 (a)(2)(A)

Management Policies 2006. 5.1.3.1 Inventories: The Park Service will (1) maintain and expand the following inventories…about cultural resources in units of the national park system…Cultural Landscape Inventory of historic designed landscapes, historic vernacular landscapes,…and historic sites…

Cultural Resource Management Guideline, 1997, Release No. 5, page 22 issued pursuant to Director's Order #28. As cultural resources are identified and evaluated, they should also be listed in the appropriate Service-wide inventories of cultural resources.
Responding to the Call to Action:

The year 2016 marks the 100th anniversary of the National Park Service. A five-year action plan entitled, *"A Call to Action: Preparing for a Second Century of Stewardship and Engagement"* charts a path toward that second century vision by asking Service employees and partners to commit to concrete actions that advance the agency's mission. The heart of the plan includes four broad themes supported by specific goals and measurable actions. These themes are: Connecting People to Parks, Advancing the NPS Education Mission, Preserving America's Special Places, and Enhancing Professional and Organization Excellence. The Cultural Landscape Inventory relates to three of these themes:

Connect People to Parks. Help communities protect what is special to them, highlight their history, and retain or rebuild their economic and environmental sustainability.

Advance the Education Mission. Strengthen the National Park Service's role as an educational force based on core American values, historical and scientific scholarship, and unbiased translation of the complexities of the American experience.

Preserve America's Special Places. Be a leader in extending the benefits of conservation across physical, social, political and international boundaries in partnership with others.

The national CLI effort directly relates to #3, Preserve America's Special Places, and specifically to Action #28, "Park Pulse." Each CLI documents the existing condition of park resources and identifies impacts, threats, and measures to improve condition. This information can be used to improve park priority setting and communicate complex park condition information to the public.

Responding to the Cultural Resources Challenge:

The Cultural Resources Challenge (CRC) is a NPS strategic plan that identifies our most critical priorities. The primary objectives is to *"Achieve a standard of excellence for the stewardship of the resources that form the historical and cultural foundations of the nation, commit at all levels to a common set of goals, and articulate a common vision for the next century."* The CLI contributes to the fulfillment of all five goals of the CRC:

> *1) Provide leadership support, and advocacy for the stewardship, protection, interpretation, and management of the nation's heritage through scholarly research, science and effective management;*
> *2) Recommit to the spirit and letter of the landmark legislation underpinning the NPS;*
> *3) Connect all Americans to their heritage resources in a manner that resonates with their lives, legacies, and dreams, and tells the stories that make up America's diverse national identity;*
> *4) Integrate the values of heritage stewardship into two major initiatives and issues such as renewable energy, climate change, community assistance and revitalization, and sustainability, while cultivating excellence in science and technical preservation as a foundation for resource protection, management, and rehabilitation; and*
> *5) Attract, support and retain a highly skilled and diverse workforce, and support the development of leadership and expertise within the National Park Service.*

Scope of the CLI

CLI data is gathered from existing secondary sources found in park libraries, archives and at NPS regional offices and centers, as well as through on-site reconnaissance. The baseline information describes the historical development and significance of the landscape, placing it in context of the landscape's overall significance. Documentation and analysis of the existing landscape identifies character-defining characteristics and features, and allows for an evaluation of the landscape's overall integrity and an assessment of the landscape's overall condition. The CLI also provides an illustrative site plan that indicates major features within the inventory unit and generates spatial data for Geographic Information Systems (GIS). The CLI also identifies stabilization needs to prevent deterioration of the landscape and provides data for the Facility Management Software System.

Inventory Unit Description:

Pearl Harbor National Memorial (PERL) was established by Presidential Proclamation in 2008. The national monument is located within the Pearl Harbor Naval Complex on the central leeward coast of the island of O'ahu, at the southeast end of the Wai'anae mountain range. This cultural landscape inventory includes Chief Petty Officer's (CPO) bungalows 28, 29, 31, 32, 68, 90, the USS *Oklahoma* Memorial, three sets of mooring quays that constituted part of Battleship Row (F6S, F6N, F7S, F7N, F8S, and F8N), USS *Arizona*, and the USS *Arizona* Memorial. The Ford Island Chief Petty Officer's bungalows and USS *Oklahoma* Memorial are located along the southeast shore of Ford Island, while the mooring quays and USS *Arizona* and USS *Arizona* Memorial are located offshore within the East Loch of Pearl Harbor. This CLI excludes the NPS-owned USS *Utah* Memorial as well as the submerged resources associated with the USS *Utah*, as there are no cultural landscape characteristics to assess at this location.

The 4.36-acre National Park Service-owned site is comprised of the CPO Bungalows Neighborhood located on Ford Island at approximately ten feet above mean sea level, while the nearby Battleship Row, USS *Arizona*, and USS *Arizona* Memorial are located in the harbor. The topography of Ford Island is relatively flat and the center of the island is defined by an airfield with a runway and open grassy spaces. The majority of the island's development is concentrated along the shoreline and includes buildings and structures associated with military operations and residential neighborhoods as well as recreational and community facilities.[1] Historically, Ford Island and Pearl Harbor were developed by the United States Navy between 1902 and 1965. During this period, the US Navy made several improvements to facilitate the growth of Naval Air Station Ford Island (also known as Naval Air Station Pearl Harbor). Notably, the December 7, 1941 attack on Pearl Harbor affected both the CPO Bungalows Neighborhood and Battleship Row.

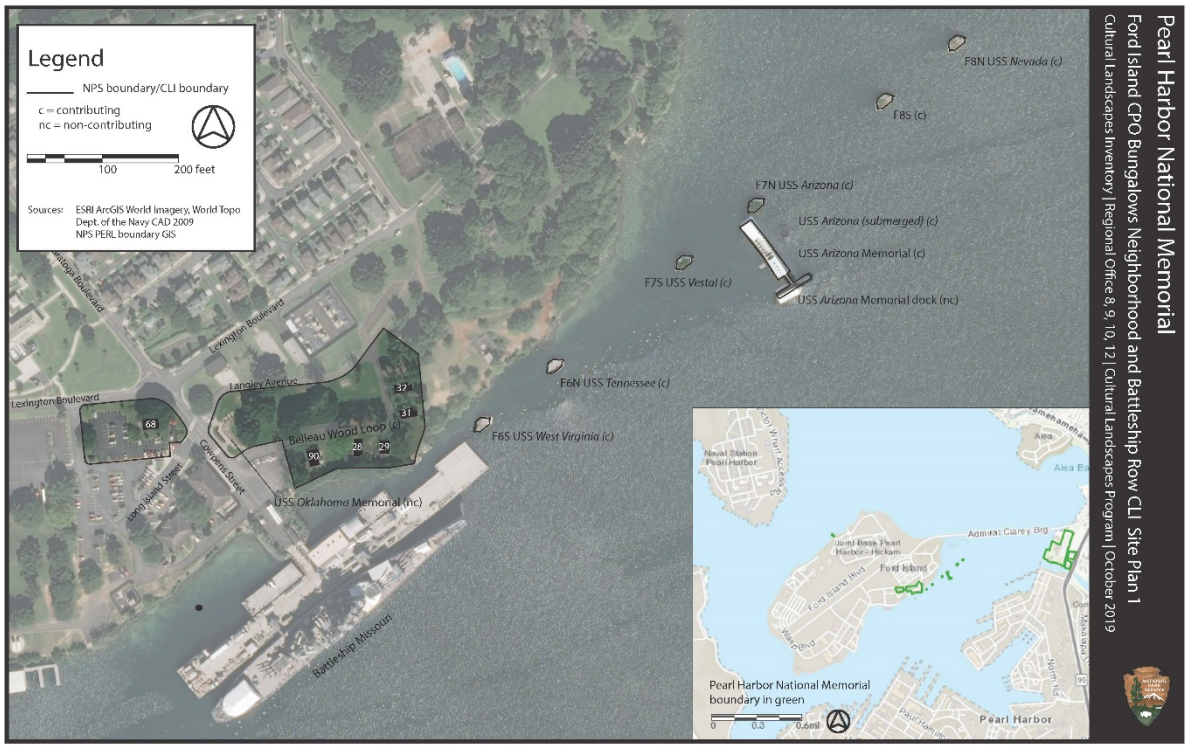
The Ford Island CPO Bungalows Neighborhood and Battleship Row are located within the boundaries of the 13,107-acre US Naval Base Pearl Harbor National Historic Landmark (NHL) District. The property was designated an NHL on January 29, 1964. In 1989, the USS *Arizona* and the USS *Utah* were also individually listed as National Historic Landmarks. The US Naval Base Pearl Harbor National Historic Landmark District is significant under NHL Criteria 1, 4 and 6. The period of significance encompasses the physical development and evolution of the US Naval Base Pearl Harbor and begins in 1902 when initial dredging operations were undertaken to provide access to the harbor. The period of significance extends to 1965 to incorporate US Navy achievements associated with the early Cold War period at Pearl Harbor. Significant events also include the Japanese Attack on Pearl Harbor Naval Complex on December 7, 1941 and World War II.

Several landscape characteristics help to convey the historic character of the site, including natural systems and features, spatial organization, cluster arrangement, views and vistas, buildings and structures, circulation, vegetation, small-scale features, and archeological sites. Numerous features associated with the above-mentioned landscape characteristics contribute to the feeling and association of the property. Furthermore, the rich history that has defined and shaped the site are displayed through a number of buildings, structures and small-scale features associated with the development of the site, including the five remaining historic CPO bungalows, six mooring quays, USS *Arizona*, USS *Arizona* Memorial, concrete foundations, Belleau Woods Loop road, clotheslines, mature trees, foundation plantings, and lawn. The location, design, setting, materials and workmanship of these buildings, structures and associated landscape features convey the character of the Ford Island CPO bungalows site and Battleship Row as it appeared during the period of significance. Collectively, the site's contributing features are in

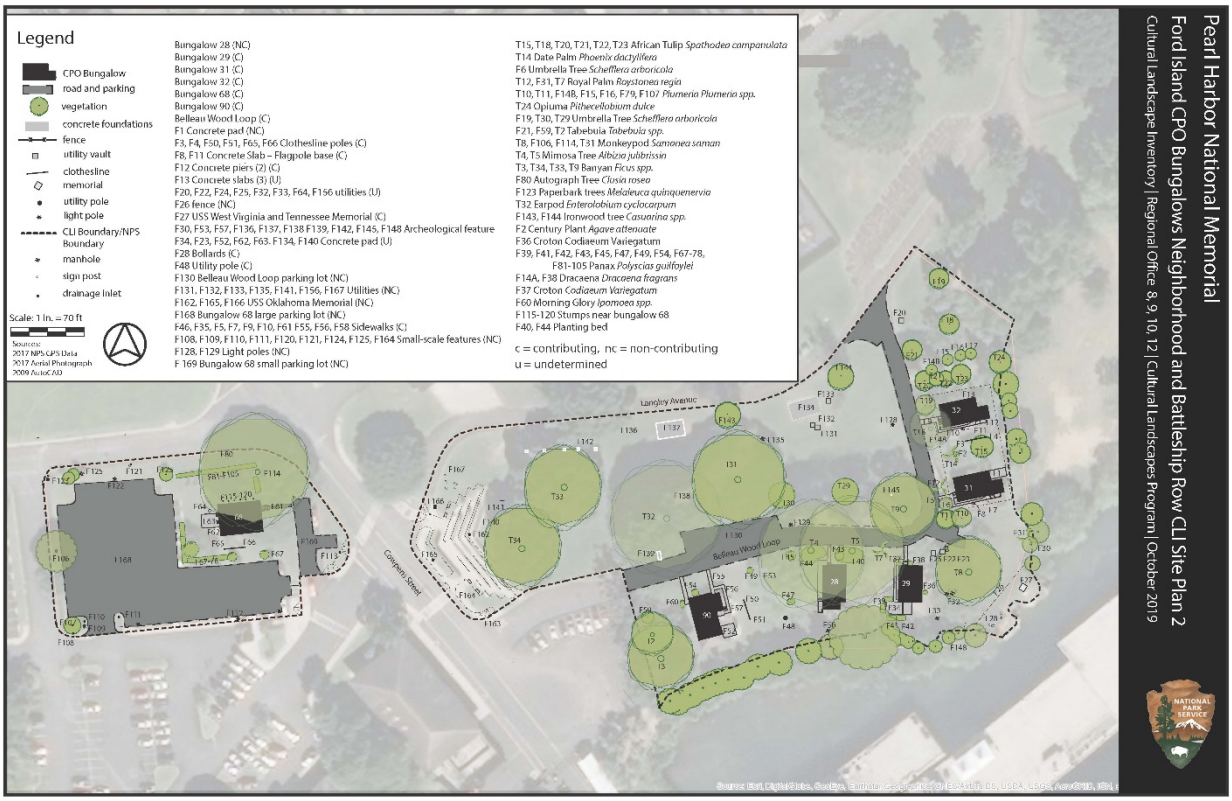
[1] Rick L. Smith, *Phase I Environmental Site Assessment, Ford Island Bungalows, Arizona Memorial, Ferry Reception Buildings, Pearl Harbor, Hawai'i,* Hawai'i International Environmental Services, Inc., Kailua, Hawai'i, November 8, 2004, 3-2.

poor condition and the landscape shows clear evidence of major disturbances and rapid deterioration by natural and/or human forces. Immediate corrective action is required to protect and preserve the remaining historical resources throughout the cultural landscape.

Site Plan



Site plan 1 of 2 showing the cultural landscape including the Chief Petty Officer's Bungalows Neighborhood on Ford Island, Battleship Row, and the USS *Arizona* Memorial. See the supplemental information section for a larger version of the site plan (NPS, Cultural Landscapes Program, 2018).



Site plan 2 of 2 showing a detail of the cultural landscape Chief Petty Officer's Bungalows Neighborhood on Ford Island. See the supplemental information section for a larger version of the site plan (NPS, Cultural Landscapes Program, 2019).

Property Level and CLI Numbers

Inventory Unit Name: Ford Island CPO Bungalows Neighborhood and Battleship Row

Property Level: Landscape

CLI Identification Number: 975011

Parent Cultural Landscape Inventory Name: Ford Island CPO Bungalows Neighborhood and Battleship Row

Parent Cultural Landscape Inventory Number: 975011

Park Information

Park Name and Alpha Code: Pearl Harbor National Memorial (PERL)

Park Organization Code: 8895

CLI Hierarchy Description

The Ford Island CPO Bungalows Neighborhood and Battleship Row cultural landscape has no associated component landscapes.

Concurrence Status

Inventory Status: Complete

Completion Status Explanatory Narrative:

In July 2017, Pacific West Region (NPS) staff, Vida Germano (NPS Cultural Landscapes Program Coordinator), Cortney Gjesfjeld (NPS Historical Landscape Architect), Elizabeth Gordon (NPS Section 106 Coordinator), and Julian Huertas (NPS Cultural Resources Intern) traveled to the Pearl Harbor National Memorial (PERL) to complete field documentation of the cultural landscape associated with the Chief Petty Officer's bungalows on Ford Island and Battleship Row. During the site visit, the cultural landscapes project team completed historical research at several repositories including the park central files located in the National Oceanic and Atmospheric Administration (NOAA) building on Ford Island, the park archives, the reference library at the Naval Facilities Engineering Command Hawai'i EV5 office (NAVFAC HI), and the NPS NPS Honolulu office. During the field investigation, detailed documentation of the site was undertaken, which included digital photos, measurements of features, collection of GPS data and descriptions of all landscape features including existing conditions.

This document was completed to fulfill a stipulation in the 2017 *Amendment to the Programmatic Agreement between the National Park Service, the Hawai'i State Historic Preservation Officer and the Advisory Council on Historic Preservation Regarding Rehabilitation of the Historic Chief Petty Officer Bungalows on Ford Island, Pearl Harbor National Memorial, Honolulu County, Hawai'i.*

The CLI was written by Vida Germano and Cortney Cain Gjesfjeld in 2018. The CLI will be considered "Complete" once it has Superintendent concurrence and receives SHPO concurrence.

Concurrence Status:

Park Superintendent Concurrence:	Yes
Park Superintendent Date of Concurrence:	10/16/2019
National Register Concurrence:	Eligible – SHPO Consensus Determination
Date of Concurrence Determination:	07/25/2020

Geographic Information & Location Map

Inventory Unit Boundary Description:

The boundary of the Ford Island Chief Petty Officer's Bungalows Neighborhood and Battleship Row site follows National Park Service lands on Ford Island, which includes the following: two discontiguous tracts that encompasses a total of 3.83 acres and contains five historic CPO bungalows (tract 101-06); the 0.19-acre USS *Oklahoma* Memorial (tract 101-03); three sets of mooring quays (tract 101-05) encompassing 0.17 acres; the 0.17-acre USS *Arizona* Memorial (101-01), and the USS *Arizona*. The boundary excludes the USS *Utah* Memorial and the USS *Utah*. Presidential Proclamation 8327 stated that the USS *Arizona* and USS *Utah* vessels would not be designated as part of the national monument, but instead would be retained by the US Department of Defense (through the US Department of US Navy) as the final resting place for those entombed there. However, through an agreement with the US Navy, the National Park Service is responsible for management of the archeological material features associated with the *USS Utah* and *USS Arizona* shipwrecks, which is why the USS *Arizona* is included in this cultural landscape inventory.

Parcels that include the CPO bungalows are identified by the City and County of Honolulu, Real Property Assessment Division as the sum of First Division, Tax Map Key [TMK] Zone 9, Section 09, Plat 001, Parcel 015.[2]

Ford Island CPO Bungalows Neighborhood and Battleship Row Cultural Landscape Boundary Justification

The cultural landscapes boundary includes all NPS-owned lands on Ford Island with the exception of the USS *Utah* Memorial and the USS *Utah*. The USS *Utah* Memorial was excluded from this evaluation because it was constructed after the period of significance, does not have any cultural landscape characteristics associated with it, and is geographically isolated from other NPS-owned parcels on Ford Island. The USS *Utah* was excluded from this evaluation because the submerged archeological materials are isolated from the NPS-managed cultural landscape of the CPO Bungalows Neighborhood and Battleship Row.

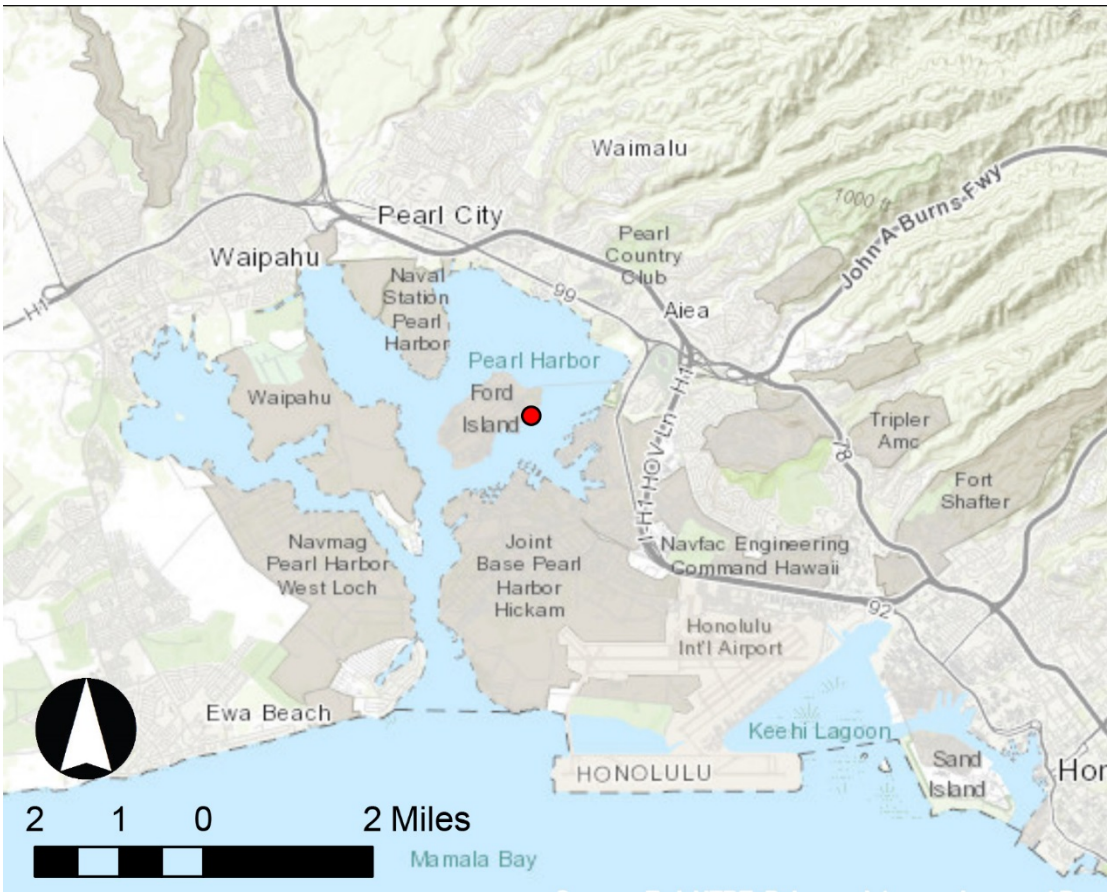
State and County:

State: Hawai‘i
County: Honolulu

Size (Acres): 4.36

[2] Rick L. Smith, *Phase I Environmental Site Assessment, Ford Island Bungalows, Arizona Memorial, Ferry Reception Buildings, Pearl Harbor, Hawai'i,* Hawai'i International Environmental Services, Inc., Kailua, Hawai'i, November 8, 2004, 1-1.

Location Map



The Ford Island CPO Bungalows Neighborhood and Battleship Row is located in Pearl Harbor within the Pearl Harbor National Memorial in Honolulu County, Hawai‘i (NPS, Cultural Landscapes Program, 2018).

Management Information

General Management Information

Management Category: A: Must be Preserved and Maintained

Management Category Date: July 28, 2017

Management Category Explanatory Narrative:

The Ford Island Chief Petty Officer's Bungalows Neighborhood and Battleship Row site meets criteria for Management Category A – Must be Preserved and Maintained. The inventory unit is nationally significant as defined by National Historic Landmark criteria. Additionally, preservation of resources associated within the Pearl Harbor area associated with World War II in the Pacific is specifically legislated through development of the Pearl Harbor National Memorial, which was established by presidential proclamation on December 5, 2008.

NPS Legal Interest

Type of Interest: Fee Simple

NPS Legal Interest Explanatory Narrative: The National Park Service owns and administers 4.36 acres associated with the Chief Petty Officer's Bungalows Neighborhood on Ford Island and parts of Battleship row and the USS *Arizona* Memorial in the harbor.

Type of Interest: None – Federal Agency Owned

NPS Legal Interest Explanatory Narrative: The National Park Service manages the submerged archeological materials in and on the USS *Arizona* per Attachment C of the 2012 Operational Agreement.

Public Access

Type of Access: Other Restrictions

Public Access Explanatory Narrative:

While private vehicle access to Ford Island is restricted, the public may access the grounds associated with the Chief Petty Officer's bungalows as well as the USS *Oklahoma* Memorial while visiting the Battleship *Missouri* Museum. Due to the deteriorated condition of the CPO bungalows, access to the interior of the buildings is restricted. The USS *Arizona* Memorial is accessible by ferry from the Pearl Harbor Visitor Center.

Adjacent Lands Information

Do Adjacent Lands Contribute? Yes

Adjacent Lands Description: Adjacent lands and waters associated with the US Naval Base Pearl Harbor National Historic Landmark District and Joint Base Pearl Harbor-Hickam contribute to our understanding of the historical development of the CPO bungalows, the mooring quays as part of Battleship Row, and associated landscape features.

National Register Information

Existing National Register Status

National Register Landscape Documentation: Entered – Inadequately Documented

National Register Explanatory Narrative:

The Ford Island CPO Bungalows Neighborhood is located within the boundaries of the 13,107-acre (4,599 land; 8,508 water) US Naval Base Pearl Harbor National Historic Landmark (NHL) District, which was designated an NHL on January 29, 1964. Additional documentation supplementing the 1964 NHL designation was accepted on June 7, 1974 and February 13, 1979. An update to the NHL nomination form is currently underway (2018).

The USAR USS *Arizona* Memorial was officially designated a historic unit of the National Park Service system on September 9, 1980. As a result of its designation the property was administratively listed to the National Register of Historic Places database under reference number 66000944.

Additionally, on May 5, 1989, the USS *Arizona* Wreck and the USS *Utah* Wreck were individually listed as National Historic Landmarks.

National Register Eligibility

National Register Eligibility Concurrence: TBD

National Register Eligibility Concurrence Date: TBD

National Register Significance Level: National

National Register Significance - Contributing/Individual: Individual

National Register Classification: District

Significance Criteria:

A – Associated with events significant to broad patterns of our history

C –Embodies distinctive construction, work of master, or high artistic values

D –Has yielded, or is likely to yield, information important to prehistory or history

Criteria Considerations:	None
Period of Significance:	1902-1965
Historic Context Theme:	Peopling Places
Subtheme:	Other Peopling Places
Historic Facet:	Other Peopling Places
Historic Context Theme:	Expressing Cultural Values
Subtheme:	Landscape Architecture
Historic Facet:	Regional Planning
Historic Context Theme:	Expressing Cultural Values
Subtheme:	Architecture
Historic Facet:	Bungalow
Historic Context Theme:	Shaping the Political Landscape
Subtheme:	World War II
Historic Facet:	The Home Front
Historic Context Theme:	Developing the American Economy
Subtheme:	Military-Indigenous Peoples Contact
Historic Facet:	Pacific Islands
Historic Context Theme:	Developing the American Economy
Subtheme:	Defense
Historic Facet:	n/a
Historic Context Theme:	Changing Role of the US in the World
Subtheme:	Expansionism and Imperialism
Historic Facet:	n/a

National Register Area of Significance

Area of Significance Category:	Architecture
Area of Significance Subcategory:	None
Area of Significance Category:	Politics/Government
Area of Significance Subcategory:	None
Area of Significance Category:	Military
Area of Significance Subcategory:	None

NRIS Information

NRIS Name (Number):	USAR USS *ARIZONA* Memorial (66000944)
Other National Register Name:	Pearl Harbor, US Naval Base
Primary Certification Date:	9/9/1980
Other Certification:	Additional Documentation
Other Certification Date:	6/7/1974

Statement of Significance

The Ford Island CPO Bungalows Neighborhood and Battleship Row are located within the boundaries of the 13,107-acre (4,599 land; 8508 water) US Naval Base Pearl Harbor National Historic Landmark (NHL) District, which is significant for its strategic importance related to the United States' annexation of Hawai'i and for its association with the Japanese attack on Pearl Harbor on December 7, 1941. In part, the statement of significance provided in the NHL nomination form noted that the US possession of Pearl Harbor "and the development of a naval base and headquarters there after 1898 were important factors in the rise of US naval power in the Pacific. The dispute of this power by Japan eventually contributed to the precipitation of war between the United States and Japan, the significant opening shots of which occurred at Pearl Harbor on the morning of December 7, 1941."

The *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report* noted that the district is significant under National Historic Landmark Criteria 1 (National Register Criterion A), 4 (National Register Criterion C), and 6 (National Register Criterion D). Under Criterion 1, the property is significant for its association with four historic contexts, including early development of the Pearl Harbor Naval Base (1902-1939), World War II (1940-1945), the Japanese Attack on Pearl Harbor (December 7, 1941); and the Cold War (1945-1965). Under Criterion 4, the property is significant as a military building landscape that is representative of a diversity and range of periods, functions, architectural design styles and types. Under Criterion 6, the district is recognized as significant for its submerged World War II cultural resources and their potential to yield important information in the future. [3]

The period of significance identified in the *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report* begins in 1902 when the US Navy began initial dredging operations to provide access to the harbor through early base development and World War II. The period of significance ends in 1965 to incorporate US Navy achievements associated with the early Cold War at Pearl Harbor.[4] Within the period of significance, 1902-1965, four sub-periods of significance were identified that correlate to the historic contexts: 1902-1939, 1940-1945, December 7, 1941 and 1945-1965.

The Ford Island Chief Petty Officer's Bungalows Neighborhood and Battleship Row Cultural Landscape Inventory (CLI) follows the criteria for evaluation, historic contexts and period of significance established in the 2011 *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report*. While the 4.36-acre CPO Bungalows Neighborhood and Battleship Row site is a small component of the larger Pearl Harbor Naval Complex, the criteria for evaluation, historic contexts and period of significance are all relevant to the historical development and significance of the site. It should be noted; however, that the site does not have known physical infrastructure directly associated with Cold War era operations at the Fleet

[3] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 1-7.
[4] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 1-15 – 1-16.

Intelligence Center Pacific. Despite the lack of infrastructure, the CPO bungalows in this area were in use during the Cold War and provided general support for this mission.

Today, the Ford Island CPO bungalows remain as an example of early US Navy residential development on Ford Island as well as a vivid reminder of the December 7, 1941 Japanese attack on Pearl Harbor. It retains integrity of location, design, setting, materials, workmanship, feeling and association.

Criterion 1/National Register Criterion A

Criterion 1: That are associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent, the broad national patterns of United States history and from which an understanding and appreciation of those patterns may be gained/National Register Criterion A: That are associated with events that have made a significant contribution to the broad patterns of our history.

The following narrative was adapted from the *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai‘i and NAVFAC Pacific, Pearl Harbor, Hawai‘i, May 2011, 4-20 – 4-26.

Under Criterion 1 (National Register Criterion A), the Pearl Harbor Naval Complex is significant within four historic contexts, including the early development of the Pearl Harbor Naval Base; the Japanese Attack on Pearl Harbor Naval Base on December 7, 1941; World War II; and early Cold War development.

The Early Development of the Pearl Harbor Naval Base: 1902-1939
Due to its role as a developing military power of the United States of America in the early twentieth century, the Pearl Harbor Naval Complex is significant under NHL Criterion 1 and National Register Criterion A. As described in the NHL nomination, the Pearl Harbor Naval Complex is significant within the area of Political and Military Affairs, 1865-1939, for its establishment of a US Naval Base and military activities in Hawai‘i. This encompasses the political and historical contexts through which the initial development of the naval base occurred. The development of the base was an important factor in the rise of US naval power in the Pacific and the national identity of the United States as a world power with a tremendous military capacity.

Japanese Attack on Pearl Harbor Naval Base: December 7, 1941
As a national symbol of the tragedy and triumph of World War II, Pearl Harbor Naval Base is significant under NHL Criterion 1 and National Register Criterion A. In the area of World War II, Pearl Harbor is significant for the singular event of the Japanese attack of December 7, 1941. As the determining event in the United States' decision to enter into World War II, it marks "a date which will live in infamy" as so eloquently spoken by President Roosevelt. The surprise attack by Japanese air forces caused the deaths of more than 2,400 people, the great majority sailors. In the years since the war ended, Pearl Harbor has become a site of memorialization, gaining almost mythical status. More than a million people are drawn to the memorials at Pearl Harbor every year to not only commemorate those who gave their lives in the attack, but to pay homage to "the great experience of American World War II."

World War II: 1940-1945
Due to its unique role as an attack target by the Japanese Empire, Pearl Harbor Naval Base played an important role for the allied forces for the duration of World War II. Under NHL Criterion 1 and National Register Criterion A, Pearl Harbor Naval Base is significant in the area of World War II for its function as operational and training headquarters for the Pacific Fleet. In support of the War in the Pacific, Pearl

Harbor also became a major hub for ship repair for the entire Pacific Fleet, having resuscitated many of the ships and submarines damaged during the December 7, 1941 attack. In addition, Pearl Harbor is significant within the area of World War II and the American Homefront for the colossal mobilization effort of island residents and those from afar who came together to work at Pearl Harbor Naval Base in support of the United States' mission.

Early Cold War: 1945-1965
The Pearl Harbor Naval Complex supported several major, threshold-setting missions for the US Navy's establishment of a successful Cold War fleet in the Pacific. These missions underlay multiple individual routine and non-routine events that collectively made a major contribution to—and outstandingly represent—the role of Pearl Harbor Naval Complex in the Cold War. For example, submarine patrol in the Pacific tracked increasingly sophisticated nuclear powered and nuclear-armed Soviet submarines, as well as provided intelligence gathering of Soviet activities along its eastern coast line. The US Navy sustained many, if not most, of these missions throughout the Cold War in the facilities first established for them, or augmented these facilities with new buildings to continue these same missions. The longevity of the missions and their same-type successors underscored their importance.

Under NHL Criterion 1 and National Register Criterion A, the Pearl Harbor Naval Complex is likely significant for the initial establishment of intelligence and command-control missions at Pearl Harbor for the US Navy's Cold War activities in the Pacific, beginning with immediate improvements to the Commander-in-Chief Pacific Fleet headquarters facility at Makalapa in 1945, adaptation of a World War II bombproof building as the headquarters for the Commander Submarines, Pacific, and establishment of the Fleet Intelligence Center Pacific on Ford Island in 1955.

Ford Island CPO Bungalows Neighborhood and Battleship Row

The cultural landscape of the CPO Bungalows Neighborhood and Battleship Row conveys the significance of the early development of the Pearl Harbor Naval Base, the Japanese Attack on Pearl Harbor Naval Base on December 7, 1941, World War II, and early Cold War development. The US Navy developed the CPO Bungalow Neighborhood and mooring quays of Battleship Row as part of the early development of the naval base. The neighborhood, like other housing areas on Ford Island, provided housing for military personnel to support operation of facilities on base. The mooring quays of Battleship Row, were constructed in this early period as part of the naval base facilities. During the 1941 attack, Battleship Row became the central target of bombing, and the CPO neighborhood, being closest in proximity to Battleship Row on Ford Island also sustained damage during the attack and sheltered people caught in the attack. During World War II, ships from Battleship Row were righted and those that could be repaired were, while the CPO Bungalows Neighborhood served as housing. After the war, additional bungalows were moved to the CPO Bungalow Neighborhood, war-era buildings were torn down, and Battleship Row continued to moor naval vessels.

Criterion 4/National Register Criterion C

Criterion 4: That embody the distinguishing characteristics or an architectural type specimen exceptionally valuable for the study of a period, style, or method of construction, or that represent a significant, distinctive, and exceptional entity whose components may lack individual distinction/National Register Criterion C: That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

The following narrative was adapted from the *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 4-20 – 4-27.

Under Criterion 4 (National Register Criterion C), the Pearl Harbor Naval Complex may be significant as a military landscape representative of a diversity and range of periods, functions, architectural design styles and building types.

More than one hundred years of military use of Pearl Harbor Naval Complex has resulted in the development of a complex historic district, composed of buildings, structures and other features. Collectively, the diversity and range of periods, functions, architectural design styles and building types represented at the Pearl Harbor Naval Complex create a good case for its significance under NHL Criterion 4 and National Register Criterion C.

From its earliest days, Pearl Harbor Naval Base was unique as a single US Navy installation with multiple functions including navy yard, submarine base, marine reservation, fuel facilities, hospital reservation, radio station, air station, and more. Most US naval bases were functionally more specialized in their development. In the area of Architectural Design, although Pearl Harbor is dominated by the US Navy's utilitarian and often repetitive approach to design, the base also hosts discrete examples of styles popular in the United States through successive periods such as Neo-Classical, Art Deco, and Art Moderne. In the area of Architectural Types, Pearl Harbor Naval Base also has significance, particularly regarding building types associated with the World War II era. The diversity and quantity of these types reflect different phases of the war. For example, permanent building types were constructed in the mobilization years prior to the American entry into the war. These included the Chief Petty Officer's bungalows on Ford Island. Splinter-proof buildings (typically 12-inch thick walls and roofs) and bombproof buildings (usually four-foot thick walls and six-foot thick roofs) were erected in response to the attack on December 7, 1941. The numerous temporary wooden structures and Quonset huts that were erected in 1942-1945 are indicative of the massive, rapid expansion in facilities that took place at this time, to support the United States' offensive against Japan. These temporary building types were erected both for speed of erection in the early years of the war, and in the last year or so when it was understood by facilities planners that permanent structures would not be necessary to win the war.

Ford Island CPO Bungalows

The Ford Island Chief Petty Officer bungalows are significant as a vernacular reflection of Hawai'i's architectural solutions for low-cost housing. Additionally, the bungalows represent the only remaining historic residential development at Pearl Harbor built for enlisted of US Navy personnel. Collectively, these buildings serve as powerful reminders of the Japanese attack on Pearl Harbor on December 7, 1941 and its aftermath.

The Ford Island Chief Petty Officer bungalows is one of three historic housing areas on Ford Island. The five remaining historic CPO bungalows associated with this site were constructed by the US Navy between 1923 and 1938 and represent the only remaining historic residential development at Pearl Harbor built for this rank of US Navy personnel.[5] Notably, the design and location of the CPO bungalows site reflects hierarchy in rank.[6] Not only was the CPO housing area physically separated from the officers'

[5] Polly Cosson and Ann Yoklavich, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)," Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, 1.
[6] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-99.

area that was located near the northern tip of Ford Island, but it was characterized by different sizes and designs of houses and open spaces. These differences offered both a physical and symbolic distinction between officers and enlisted personnel. It should be noted; however, that recreation (tennis courts and playgrounds) were found in of both locations.[7]

According to Historic American Buildings Survey documentation prepared by Polly Cosson and Ann Yoklavich for CPO bungalow 28, the "buildings are also significant as a group of vernacular houses that reflect Hawai'i's architectural solutions for low-cost housing."[8] Bungalows were popularized in the Hawai'ian Islands in the early twentieth century in part through the contributions of Lewers & Cooke, Limited, who were the leading residential builder in Hawai'i at that time. Touting its economical construction cost and suitability to the climate, the bungalow was ideal for military housing. *Homes in Hawai'i: Suggestions for the home-builder*, a booklet authored by Lewers & Cooke Limited circa 1925 stated that the booklet was published for the "benefit of those who wish to build attractive and convenient homes at a moderate cost."[9] This was further articulated by the company who proclaimed that they would not design house that cost over $5,000.00 to build.[10] Notably, this cost estimate was a close match for the limited military housing budget of the early 1920s. This was evidenced in a 1945 US Navy property list shows the per-unit cost for these 1923 bungalows as $3,000.[11]

Lewers & Cooke Limited considered board and batten to be structurally superior to the less expensive tongue and groove (T & G) single-wall houses. All of the CPO bungalows are of board and batten construction with hipped roofs and extended eaves with the exception of CPO bungalow 68. CPO bungalow 68 is clad with diagonal tongue and groove beadboard. Built in 1932, it is the only extant CPO bungalow with this type of exterior treatment.[12] Additionally, the extended eaves proved suitable for the Hawai'ian climate allowing the windows to remain open during rain events as well as protection from sun glare. The booklet produced by Lewers & Cooke circa 1925 and described above noted that for over three quarters of a century, their company was "the leading material establishment of Honolulu."[13] It is possible that their company provided the materials for construction of the CPO bungalows, while US

[7] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-99.
[8] Polly Cosson and Ann Yoklavich, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)," Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, 1.
[9] *Homes in Hawai'i: Suggestions for the home-builder*, (Honolulu, Hawai'i: Lewers & Cooke Limited), circa 1925.
[10] *Homes in Hawai'i: Suggestions for the home-builder*, (Honolulu, Hawai'i: Lewers & Cooke Limited), circa 1925, 4.
[11] Polly Cosson and Ann Yoklavich, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)," Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, 1.
[12] Dee Ruzicka, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility 68)," Historic American Buildings Survey, HABS No. HI-##, Mason Architects, Inc., Honolulu, Hawai'i, November 2010, 3. Preservation work has recently revealed stenciled lettering on the interior of the tongue and grove boards that suggests the material was reused from shipping containers. A partial address of Bristol, PA. was identified on one of the sections of cladding. This address may represent the location of an aircraft manufacture that supplied the Navy with amphibious airplanes in the early 1930s. In another location the address of the Peah Harbor Air Base was located. More research is needed to confirm the origin of bungalow 68's siding wall material.
[13] *Homes in Hawai'i: Suggestions for the home-builder*, (Honolulu, Hawai'i: Lewers & Cooke Limited), circa 1925, 3.

Navy records, including historic photographs, show that Station Enlisted Personnel actually built the bungalows. [14]

Criterion 6/National Register Criterion D

Criterion 6: That have yielded or may be likely to yield information of major scientific importance by revealing new cultures, or by shedding light upon periods of occupation of large areas of the United States. Such sites are those which have yielded, or which may reasonably be expected to yield, data affecting theories, concepts, and ideas to a major degree/National Register Criterion D: That have yielded or may be likely to yield, information important in history or prehistory.

The following narrative was adapted from the *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 4-27 – 4-28.

Under Criterion 6 (National Register Criterion D), the Pearl Harbor Naval Complex is recognized as significant for its submerged World War II cultural resources and their potential to yield important information in the future.

Pearl Harbor Naval Complex is widely recognized as having resources that are both known and likely to be significant under NHL Criterion 6 and National Register Criterion D for the potential to yield information about the prehistoric and pre-military historic occupation and use of the lands, and such significance has been extensively documented. Submerged Cultural Resources of World War II From 1983 to 1988, a submerged cultural resources study of World War II remains in Pearl Harbor was conducted. Exhaustive surveys were made of both sunken battleships, the USS *Arizona* and the USS *Utah*, sophisticated sonar equipment was used to scan the inner harbor for plane crash sites and the defensive perimeter outside the harbor mouth was surveyed for evidence of a Japanese mini submarine sunk by the US prior to the December 7, 1941 attack. The reason for the study was to help the National Park Service establish guidelines for the preservation of submerged cultural resources. Also, it was important to fill gaps in the historical records with archeological remains.

As a result of these archeological studies, a large amount of information was obtained for the USS *Arizona* and the USS *Utah*. Both the USS *Arizona* and the USS *Utah* wrecks were designated NHLs for their role as casualties of the Japanese attack on Pearl Harbor, and as war memorials and graves for those who died during the attack. Sonar surveys of the inner harbor found no materials conclusively attributable to the December 1941 attack. Just outside the harbor mouth, sonar scans made contact with the remains of what was probably the Japanese mini sub, however this was not verified during the study.

This investigation was crucial to bringing light to the importance of submerged cultural resources and their preservation. While substantive new information was obtained, there is undoubted potential for the lands and waters of Pearl Harbor to yield more information important to the history of the Pearl Harbor Naval Complex, Hawai'i, and the nation. Therefore, the Pearl Harbor Naval Complex cultural landscape is likely significant under National Register Criterion D.

[14] Polly Cosson and Ann Yoklavich, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)," Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, 6.

Historic Context

The following narrative was excerpted from the *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 1-5 – 1-6.

As part of the outcome of the Spanish American War and to offset the growing Japanese influence in East Asia, the US decided to strengthen its naval power in the Pacific and acquired Pearl Harbor in the Hawai'ian Islands. In 1901, Pearl Harbor was chosen as the main Pacific Base for the American naval fleet and by 1902 the first physical modifications to the base were imitated including primarily sand and coral dredging of the entrance channel to the harbor. Following the Russo-Japanese War in 1908, more money was appropriated to transform Pearl Harbor into a major US base in the Pacific with capabilities to repair and outfit the largest war vessels. This support provided the impetus for the initial layout and construction of Pearl Harbor Naval Base. By 1911, dredging of the channel was sufficient to allow passage of the first large vessel. On land, most of the activity revolved around developing the US Navy Yard and by 1913, several ship repair buildings had been constructed.

At the onset of World War I, Pearl Harbor Naval Base had a functioning US Navy Yard, Marine Barracks to provide security, Hospital Reservation with hospital and ancillary facilities, Naval Ammunition Depot, fuel facilities, high-power communications station, and various residential areas for officers and enlisted men. Throughout the 1920s and 1930s, development on the base focused on the establishment of the Submarine Base, creation of the Naval Air Station on Ford Island, major additions to the fuel oil storage capacity, the transfer of the Naval Magazine further from Main Base and the US Navy Yard, and extensive waterfront work including dredging, piers, quay walls, a marine railway and battleship mooring platforms. Hawai'i's position in the "American Defense Triangle" of the Pacific assured Pearl Harbor Naval Base would receive the support necessary for such a defense mission.

With the outbreak of war in Europe in September 1939, President Roosevelt declared a National Emergency calling for the strengthening of national defense of the United States. This triggered a "defense boom" at Pearl Harbor Naval Base during which the boundaries of the base were greatly expanded. Large acreage was acquired for housing, fuel facilities and operations. A consortium known as Contractors Pacific Naval Air Bases (CPNAB) erected numerous new buildings in all the established areas of the base including Ford Island, Shipyard, Submarine Base and West Loch Ammunition Depot. One example of the scale of the defense mission during this time is reflected in the construction of the Red Hill Fuel Storage Facility. This consisted of 20 vertical fuel storage tanks designed and built within the lava rock hillside, each 250 feet deep and 100 feet in diameter. In all, Red Hill system was capable of storing and transporting 250 million gallons of fuel through a network of tunnels to Pearl Harbor.

In an effort to weaken US Pacific naval power, the Japanese attacked Pearl Harbor Naval Base on December 7, 1941 as part of their strategy to conquer a large part of Southeast Asia. Although some areas of the base sustained damage, primarily in the drydocks in the US Navy Yard and at the Air Base on Ford Island, the majority of the damage was inflicted on the fleet. During the surprise attack, a total of 21 US vessels were sunk and damaged while casualties numbered 2,403. Recognized as the "worst single naval disaster in American history," this tragedy became a national symbol for World War II, Pearl Harbor became the hub of the newly defined offensive outpost, the Central Pacific Area. As the forward station in the War in the Pacific, Pearl Harbor played a major role as a training, staging and supply, and casualty evacuation area. Kūāhua Island was transformed into a peninsula at this time and became the focal point for all staging and supply for the thousands of troops fighting in the Pacific. Most of the shoreline and waterfront berthing facilities at Pearl Harbor were also built in this period to support the massive amount of ship repair being handled at the US Navy Yard. As an architectural response to the Japanese attack, splinterproof and bombproof designs were adopted for many facilities and structures on

the base. Temporary wooden structures and Quonset huts became ubiquitous on the landscape at this time, a response to the need for massive and rapid expansion of facilities.

By the end of World War II, Pearl Harbor was one of the most extensive defense installations in the world containing every possible land-based US Navy function. Following the end of World War II however there was a precipitous decline in the activity at Pearl Harbor Naval Base. Compared to the World War II period, very little new construction occurred. Instead, existing facilities were reused, renovated, and modernized. As the Cold War threat grew during the 1950s, the role of the Pearl Harbor Naval Complex became critical as the secure anchor in the line of defense of the continental United States. The Pearl Harbor Naval Complex supported several major missions for the US Navy's establishment of a successful Cold War fleet in the Pacific. Many significant Cold War functions such as Command, Control, Communication and Intelligence, Research and Development, Training, and Strategic Material Production took place mostly in buildings constructed during World War II or earlier. The most notable exceptions to this include new buildings built during the Cold War at the Shipyard, the Submarine Base, Makalapa, and West Loch.[15]

National Historic Landmark Information

National Historic Landmark Status: Yes
National Historic Landmark Date: 1/29/1964
National Historic Landmark Theme: IV. Shaping the Political Landscape

World Heritage Site Information

World Heritage Site Status: No

[15] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 1-6.

Chronology & Physical History

Cultural Landscape Type and Use

Cultural Landscape Type: Historic Site

Current and Historic Use/Function

Primary Historic Function-Major Category: Government

Primary Historic Function-Category: Government-Other

Primary Historic Function: Government-Other

Primary Current Function-Major Category: Landscape

Primary Current Function-Category: Landscape-Other

Primary Current Function: Landscape-Other

Other Current and Historic Uses/Functions

Major Category: Domestic (Residential)
Category: Institutional Housing
Subcategory: Institutional Housing
Type: Historic

Major Category: Defense
Category: Military Facility (Post)
Subcategory: Military Facility (Post)
Type: Historic

Major Category: Government
Category: Government—Other
Subcategory: Government—Other
Type: Both Current and Historic

Current and Historic Names

Current and Historic Name	Type of Name
Ford Island	Both Current and Historic
Ford's Island	Historic
Rabbit's Island	Historic

Moku'ume'ume	Historic
Marin's Island	Historic
Little Goats Island	Historic

Ethnographic Information

Ethnographic Associated Group Name: Native Hawai'ian Survivors/Families

Association Historic, Current or Both: Both Current and Historic

Ethnographic Study Conducted: No Survey Conducted

Ethnographic Explanatory Narrative:

An ethnographic study needs to be conducted to fully understand the associations of specific groups to the park. Native Hawai'ians, the survivors of the December 7, 1941 attack and their families, as well as the families of the deceased, have connections with Ford Island and Pearl Harbor. For detailed information on the cultural context of Pearl Harbor and survivor recollections, see the supplemental information section of this report.

Ford Island was known to the early Hawai'ians as Moku'ume'ume as well as the "Island of Attraction" and the "Island of Strife." Today, Ford Island remains an important place associated with Native Hawai'ian life and culture.[16] See cultural context information excerpted from the *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report, Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-7 – 2-8 for more information about Native Hawai'ian use and occupation of the land in the Supplemental Information section at the end of the document.

Survivors, the families of survivors, and families of the deceased associated with the December 7, 1941 attack who have formed an enduring relationship with the park for several generations also form a traditional users group as defined in *Management Policies* (NPS 2006a) and *NPS-28, Cultural Resource Management Guideline* (1997). According to the 2007 National Park Service *Environmental Assessment for the Project to Replace the Failing Visitor Center at the USS Arizona Memorial,* ethnographic resources are "about people and the ethnographic resources, or traditional park sites, structures, objects, landscapes and natural resources, they define as significant to their present way of life" (NPS 1998). Traditionally associated group may remain attached to the area despite having relocated, and

> "….people with loved ones buried or commemorated at NPS memorials represent another unique user group. They all represent a special client population with long-term stakes in the integrity of park resources and the outcomes of management decisions that affected resources associate with them….Less visible uses occur off-site as people recount oral traditions highlighting park resources with central roles in traditional beliefs, history, and

[16] National Park Service, *Environmental Assessment for the Project to Replace the Failing Visitor Center at the USS Arizona* Memorial, U.S. Department of the Interior, February 2007, 13-14.

practices. Heritage lessons for the young are embedded in narratives anchored to park localities….Traditional oral narratives…offer additional contexts for understanding the resources and their contributions to a people's cultural identity. …[A]ssociated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their lifeways" (NPS 1998).

Chronology

Year Begin	Year End	Event	Annotation
1800	1850	Purchased/Sold	In the early 1800s, Mokue‘ume‘ù (Ford Island) was owned by Don F. Francisco de Paula y Marin. Marin raised rabbits, sheep, goats and hogs on the island for many years.
1865	1865	Purchased/Sold	Caroline Jackson acquired Ford Island. Dr. Seth Porter Ford married Jackson and died on November 19, 1866.
1866	1891	Purchased/Sold	As a result of his father’s death, Seth Ford, Jr., inherited Ford Island.
1899	1899	Purchased/Sold	The John Papa ‘Ī‘ī Estate owned Ford Island. Irene ‘Ī‘ī (daughter of John ‘Ī‘ī) and her husband, Charles A. Brown managed the estate.
1899	1916	Planted	The O‘ahu Sugar Company leased a portion of Ford Island from the ‘Ī‘ī Estate and planted an extensive acreage of sugarcane on the island. Circa 1899, an artesian well was drilled on the island to facilitate large-scale cultivation of sugarcane.
1902	1902	Purchased/Sold	The US Government purchased a twenty-five-acre strip of land along the southeast shore of Ford Island for future use as a naval base.
1914	1914	Established	A 1914 map of Ford Island showed several improvements including two primary roads and irrigation ditches across the island as well as a cluster of plantation buildings on the west side of the island.
1915	1915	Purchased/Sold	The US Government purchased three parcels of land on Ford Island from the ‘Ī‘ī Estate on September 7, 1915.
1916	1916	Purchased/Sold	The following year, the remainder of Ford Island was purchased from the ‘Ī‘ī Estate by the US Government.
1917	1917	Built	Batteries Adair and Boyd were constructed on the northeast corner of Ford Island. (The guns were removed in 1925.)
1918	1918	Built	The US Army (US Army) air squadron relocated to Ford Island after construction of two seaplane hangars with ramps, a warehouse and a shop building had been built. The installation was officially named Luke Field in 1919.
1919	1922	Built	The US Army built twenty-eight craftsman style residential buildings or units (at least five duplexes) along the northern portion of the western shore of Ford Island.
1923	1923	Built	US Navy planes were moved to Ford Island in January 1923.
1922	1936	Excavated	Dredging activities were undertaken around the southeast shoreline of Ford Island in an effort to create berthing areas deep enough for large ships.

1923	1924	Built	Chief Petty Officer (CPO) bungalows 27, 28, 29, 30, 31, and 32 were constructed.
1924	1924	Built	US Navy maps from 1924 show several small scale features in the CPO bungalow area including street lights and fire hydrants.
1924	1924	Built	Nine 225,000-gallon reserve gasoline tanks were constructed along the southeastern shoreline of Ford Island. A gasoline wharf was also built on fill land. These features were also called aboveground storage tanks (AST). Barricades or fencing was installed around the tanks to provide additional security. Tanks 62 and 63 were located in close proximity to the CPO bungalows.
1925	1925	Built	By 1925, approximately forty US Navy facilities had been constructed on the in the southern portion of the southeast side of Ford Island.
1928	1928	Built	CPO bungalow 67 was constructed on the end of the L-shape of the first group of bungalows.
1931	1931	Built	CPO bungalow 69 was constructed on the end of the L-shape of the first group of bungalows.
1932	1932	Built	By 1932, CPO bungalow 68 had been constructed on the end of the L-shape of the first group of bungalows.
1934	1935	Built	Six pairs of mooring quays were built offshore on the southeast side of Ford Island.
1935	1939	Built	By the late 1930s, family housing areas on Ford Island had clotheslines in the yards.
1936	1936	Built	Fifteen houses were built in the northeastern part of Ford Island for married officers.
1937	1937	Built	Nine four-plex residential buildings were constructed adjacent to the CPO bungalows on newly reclaimed land that was developed using dredged materials.
1937	1937	Moved	CPO bungalow 68 and 69 were moved several hundred feet west between gasoline storage tanks 62 and 63.
1938	1938	Built	Five pairs or sets of mooring quays were built offshore on the northwest side of Ford Island.
1938	1938	Built	Chief Petty Officer bungalow 90 (formerly facility 70) was constructed along Long Island Street south of CPO bungalow 69. The building was not renumbered to CPO bungalow 90 until circa 1940-1942.
1938	1938	Built	A combined schoolhouse and activity center known as the Kenneth Whiting Building (building 73) was built in close proximity to the CPO bungalows.
1939	1939	Inhabited	Ford Island was utilized by both the US Army and US Navy until October 31, 1939 when US Army facilities were relocated to Hickam Field.

1941	1941	Destroyed	Pearl Harbor was attacked by Japan on December 7, 1941. Several battleships were damaged or destroyed as a result of the attack, including the USS *Arizona* and the USS *Utah*. The CPO bungalows suffered minor damage as a result of their close proximity to the explosions and fire.
1941	1941	Demolished	Days after the attack, mooring quays were partially demolished to release the USS *Tennessee*. The battleship was wedged between the mooring quays and the crippled USS *West Virginia*. The USS *Maryland* was directly in front of the USS *Tennessee* and the USS *Arizona* was behind.
1942	1942	Demolished	Circa 1942, CPO bungalow 27 and 67 were demolished. The buildings were removed in August 1942 to facilitate recovery efforts associated with salvage of the USS *Oklahoma*. Prior to the demolition of bungalow 67, the building served as an annex to the adjacent school (building 73) for a least one year.
1940	1942	Built	Between 1940 and 1942, building 202 (galley/mess hall) was built in the central lawn area associated with the CPO bungalows.
1942	1942	Military Operation	On December 1, 1942, the USS *Arizona* was decommissioned.
1942	1943	Removed	Components of the USS *Arizona* were salvaged, which included removal of the foremast, mainmast, stern aircraft crane and the conning tower. When the work was completed the ship had been stripped down to the main deck.
1942	1943	Established	Cables and winches were installed on Ford Island in an effort to salvage the USS *Oklahoma* and USS *Utah*. Salvage operations associated with the USS *Oklahoma* were in close proximity to the CPO bungalows and included modification (reducing height) of mooring quays F5S and F5N.
1943	1945	Altered	Circa 1943 and 1945, the F5 berth was converted from mooring quays to a pier and gasoline receiving. This action resulted in the need to relocate CPO bungalows 69 and 90.
1943	1945	Moved	Circa 1943-1945, CPO bungalow 90 (formerly facility 70) was moved from its original location to the site of former CPO bungalow 67.
1943	1945	Moved	Circa 1943-1945, CPO bungalow 69 was moved from its original location to the site of former CPO bungalow 27.
1943	1945	Moved	Circa 1943-1945, CPO bungalow 30 was relocated approximately 1,200 feet northeast to its present location at the northeast end of Langley Avenue in the North End or Knob Hill (also spelled Nob Hill) neighborhood of Ford Island.

1947	1947	Memorialized	There was a Pearl Harbor-wide effort to memorialize the December 7, 1941 attack, which resulted in the installation of a USS *West Virginia* and USS *Tennessee* memorial marker located in close proximity to the CPO bungalows.
1947	1948	Removed	Circa 1947-1948, the aboveground storage tanks were removed.
1950	1950	Memorialized	In March 1950, Admiral Arthur W. Radford, the Commander in Chief Pacific Fleet, initiated the practice of displaying the flag over the sunken remains of USS *Arizona*. The flagpole was installed on the protruding base of the hull's rear mast. Later that year, a wooden platform was built over the amidships area. On the ninth anniversary of the December 7, 1941 attack, a commemorative metal plaque was installed at the base of the flagpole and another welded to the deck of the wreck.
1952	1952	Built	Before 1952, facility S304 (transformer substation) was constructed in proximity to the CPO bungalows.
1953	1953	Excavated	By 1953, fill had been added to the north side of the CPO bungalows and was labeled "Public Works Storage Area."
1955	1955	Established	In May 1955, the Fleet Intelligence Center, Pacific (FICPAC) was established.
1959	1959	Established	Alfred Preis of the firm Johnson & Perkins, Preis Associates was selected to design the USS *Arizona* Memorial. The partnership was awarded the commission in August 1959.
1960	1960	Built	In October, the Walker-Moody Construction Company won the contract to build the USS *Arizona* Memorial.
1961	1961	Altered	In order to construct the memorial over the ship, a section of the boat deck that rested over the galley amidships was cut away. Initially this had been the area that supported the flag and platform that was installed in the 1950s. Eventually, the portion of the *Arizona* that was removed was sent to Waipio Point where it remains today.
1962	1962	Memorialized	The USS *Arizona* Memorial was dedicated in May of 1962 to pay tribute to the 1,177 crewmen who lost their lives with the sinking ship.
1962	1962	Military Operation	Ford Island Naval Air Station (NAS) was closed.
1962	1962	Demolished	By June 1962, four of the CPO four-plex units located at the northern end of Ford Island had been removed.
1963	1963	Established	Ford Island was selected as the location for a Polaris submarine training facility.
1964	1964	Established	The 13,107-acre (4,599 land; 8508 water) US Naval Base Pearl Harbor was designated a National Historic Landmark (NHL) on January 29, 1964.
1967	1967	Moved	By 1967, CPO bungalow 69 had been removed from the housing area.
1978	1978	Demolished	By 1978, the nine four-plex residential buildings that were located adjacent to the CPO bungalows had been demolished.

1978	1978	Constructed	Ground was broken for the museum-theater visitor complex for the USS *Arizona* Memorial on October 19, 1978.
1979	1979	Established	The US Naval Base Pearl Harbor NHL nomination was updated.
1980	1980	Established	On September 9, 1980, the USS *Arizona* Memorial was established as a unit of National Park System that would be administered by cooperative agreement with US Navy.
1982	1982	Altered	The name of the *USS Vestal* (AR-4) was painted on mooring quay F7 prior to memorial services held on 7 December 1982.
1989	1989	Established	The sunken hulls of both the USS *Arizona* and the USS *Utah* were declared National Historic Landmarks on May 5, 1989.
1994	1994	Established	"National Pearl Harbor Remembrance Day" was designated on December 7 of each year.
1998	1998	Built	The nearly one-mile-long Admiral Clarey Bridge was dedicated. The bridge connected Ford Island to Kamehameha Highway.
1998	1998	Established	The USS *Missouri* arrived at its new berth at F5S and F5N.
2003	2003	Planned	In June, the US Navy and Ford Island Properties entered the Ford Island Master Development Plan (MDP) pursuant to the Ford Island Development Legislation (10 USC Section 2814). The plan included numerous island-wide infrastructure improvements as well as housing development, and adaptive reuse of the historic theater (FAC. 89) as a conference center.
2005	2005	Established	Historic American Building Survey (HABS) documentation was completed for the CPO bungalows.
2006	2007	Memorialized	The USS *Oklahoma* Memorial was built adjacent to the CPO bungalows. The memorial stands to honor the 429 servicemen on board USS *Oklahoma* who lost their lives on December 7, 1941.
2008	2008	Established	On December 5, Pearl Harbor National Memorial was established by Presidential Proclamation. The monument encompasses nine historic sites located in Hawai'i, Alaska and California, including portions of Pearl Harbor and Ford Island.
2008	2012	Built	A fence was constructed as a safety measure blocking access to the USS *Tennessee* and USS *West Virginia* memorial marker.
2009	2012	Stabilized	In August, emergency stabilization work was completed on six CPO bungalows. Work included inspection to fumigate and exterminate termites and structural stabilization. Stabilization activities continued under the direction of the National Park Service through 2012.
2010	2010	Built	On December 7, 2010, the 69th Anniversary of Pearl Harbor commemoration and dedication of the new Pearl Harbor Visitor Center was held.

2010	2010	Established	Naval Station (NAVSTA) Pearl Harbor joined with Hickam Air Force Base to form Joint Base Pearl Harbor-Hickam.
2015	2016	Demolished	CPO bungalow 28 was demolished by the National Park Service. A new building was constructed in its place that does not meet the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.
2015	2015	Maintained	In the spring of 2015, Boy Scout Troop 135 painted the USS *Arizona* mooring quay.
2016	2016	Altered	An up lighting was installed at the USS *Oklahoma* Memorial to illuminate the flag.

Physical History

Pre-military History of Pearl Harbor and Ford Island

Archeological and Historical Context

The following archeological and historical context for lands associated with Pearl Harbor was adapted from *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai‘i and NAVFAC Pacific, Pearl Harbor, Hawai‘i, May 2011, 2-5 – 2-7. See document for citations information.

Prior to military use of lands, Pearl Harbor was first settled by Hawai‘ians and later, ranchers and commercial farmers. All of the past inhabitants of these lands left their mark in various forms. Abandoned stone structures and rock shelters, planting terraces, planting mounds, and graves reveal a time when many of these areas were densely populated. Later, lands were cleared for sugar, pineapple, and sisal production and cattle ranching. Evidence of early land use comprises the archeological record for these areas.

Polynesians are thought to have colonized the Hawai‘ian archipelago from an ancestral homeland, most probably the eastern Polynesian islands of the Marquesas or Tahiti, as early as AD 300. This early date for initial colonization is not universally accepted, however, since the credibility of the radiocarbon evidence has been questioned. Proponents of a later arrival date consider AD 800-1000 to be a more likely starting point for traditional Hawai‘ian culture.

Toward the end of this period (AD 1000) arcaeological evidence exists for the occupation of early Hawai‘ians on the ‘Ewa Plain, and presumably Pearl Harbor. With its rich marine and wetland resources, the Pearl Harbor area would have been an attractive settlement site and differential access to the estuarine and marine resources may have led to economically based social distinctions fairly early on in the socio-political evolution of Hawai‘ians. By the late 1200s, the Pearl Harbor area had become a center of agriculture and aquaculture, however the ruling center of the O‘ahu Kingdom remained in the upland plateau in Līhu‘e with the Lō Ali‘i. The sacred birth place, Kūkaniloko, and its associated temple, Ho‘olonopahu, are in this upland area. Radiometric data indicates that some of the fishponds within Pearl Harbor were constructed as early as the late 1200s. Other studies of the vicinity substantiate these findings. Within the next few centuries, the abundance of available resources found in the fishponds and cultivated fields surrounding Pearl Harbor provided the economic base for the emerging chiefly (ali‘i) class. Effectively, many of O‘ahu’s leading chiefs are credited with constructing, naming and managing several of Pu‘uloa’s fishponds. Fishponds proved to be stable and predictable economic and political resources and by the end of the sixteenth and seventeenth centuries, ‘Ewa was a prominent chiefly stronghold.

Large earth works were constructed through the chiefly lines. An ‘Ewa chief, Kala‘imanuia, is thought to have been responsible for the construction of fishponds as Kalauao at what is known as McGrew Point Housing today. Although Kūkaniloko and the upland areas remained a sacred birthplace, ‘Ewa chiefs began to spend more time along the edges of Pu‘uloa. Battles were more commonly fought in these lowland areas. Kalauao and the adjoining ‘Aiea were the scene of the 1794 battle of Kūki‘iahu between the O‘ahu chief Kalanikūpule and the Maui chief Ka‘eokulani. The O‘ahu chief arrayed his forces between the high point of the road between Kalauao and ‘Aiea (probably the ridge that becomes McGrew Point) and east into ‘Aiea proper. He was supported by William Brown, captain of the ships Jackal and Prince Lee Boo, which lay just offshore. Although previously bested by the Kaua‘i army, the O‘ahu forces prevailed in this battle and Ka‘eo was defeated and killed. Kamakau writes that the dead were brought to Loko Pā‘aiau and “left in a heap of corpses.”

As summarized in Tuggle and Tomonari-Tuggle 2004, several places along Puʻuloa served as the main centers for ʻEwa aliʻi in the years approaching European contact and during contact. Hālaulani in Waipiʻo was a place of aliʻi residence as were Kūkiʻiahu and Pāʻaiau in Kalauao. Coastal Waikele was used by the chief Haʻo in the early seventeenth century. Kākuhihewa grew up in Waipiʻo, Waiawa, and Mānana while Kamehameha sometimes stayed at Hālaulani.

After the arrival of Europeans in Hawaiʻi in the late eighteenth century, the Hawaiʻian Kingdom underwent radical changes. Following Kamehameha's (I) conquest of Oʻahu in 1795, an increasing number of foreigners were visiting in the Hawaiʻian Islands. Visitors brought diseases that led to a considerable decline in the Hawaiʻian population. Western influence also had a dramatic effect on traditional culture and technology. Most subject to new pressures were the aliʻi, those of high status. Western missionaries and entrepreneurs were particularly influential among the Hawaiʻian elite, some of whom became trusted advisors to Hawaiʻi's monarchs. Hawaiʻi was gradually brought into the rapidly expanding global trade network, providing provisions for ships and trade goods for export. Western goods and warfare technology became highly sought after among aliʻi and commoners. These trends had profound and permanent effects upon the environment as well as traditional Hawaiʻian political and economic systems.

In 1848, during the reign of Kamehameha III, the shared ahupuaʻa system of land division was replaced with a western influenced system of individual land ownership. This radical restructuring was called the Great Māhele (Great Division). The Māhele defined the land interests of the King, the high-ranking chiefs, and the konohiki (those who managed land on behalf of the chiefs) resulting in the division of lands into three categories: Government Lands, Crown Lands, and later, in 1850, Kuleana Lands, also known as Land Commission Awards (LCAs). LCAs granted fee simple title to tenants who occupied and improved the land. Within what is now the Pearl Harbor Naval Complex, several kuleana lands were awarded, particularly in and around McGrew Point and on Pearl City Peninsula. The low-lying marshland and abundant fresh water supplies supported extensive pondfield or loʻi taro cultivation and small scale aquacultural practices in these areas.

Extreme economic pressure, both foreign and domestic, during the late 1800s, led to the decline of traditional subsistence pursuits including aquaculture and traditional agriculture; fishponds fell out of use and into disrepair. Traditional lowland agricultural activities were replaced by new agricultural practices, such as rice paddies and watercress farms. Much of the upland cultivable land around Pearl Harbor was consolidated to support large-scale agricultural production of sugarcane and pineapple. These large-scale operations began to exercise political and economic clout in the affairs of the Hawaiʻian Kingdom eventually leading to the Reciprocity Treaty and further disenfranchisement of the Native Hawaiʻians.[17]

Ford Island

Ford Island was known to early Hawaiʻians as Mokuʻumeʻume. The name translates to "Island of Attraction":

> Moku 'Ume'ume, the Island of attraction, was the place where the sport of 'Ume [game] was played. No virgin or un-married person was permitted to take part for it was only for the married who were not blessed with offspring…The 'ume was not for chiefs but for the common

[17] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawaiʻi and NAVFAC Pacific, Pearl Harbor, Hawaiʻi, May 2011, 2-5 – 2-7.

people.[18]

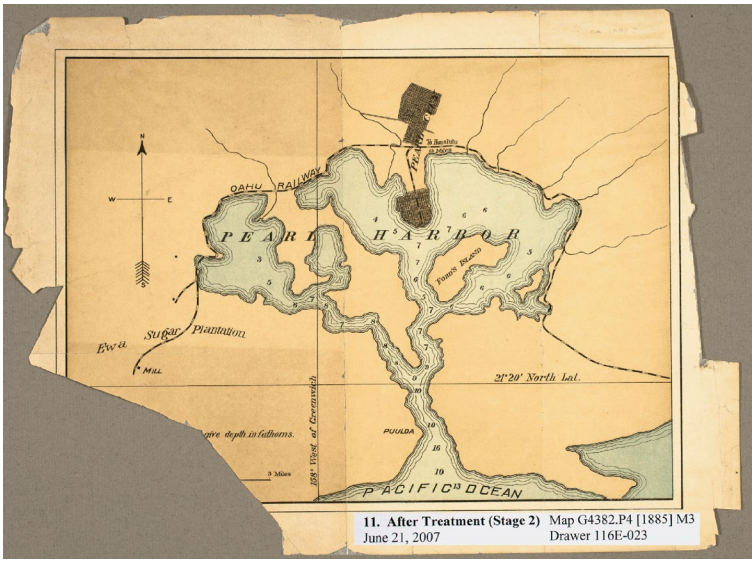
Alternatively, the "Island of Attraction" was also known as the "Island of Strife" because it served as the center of contention between certain chiefs over fishing rights.[19] See Tara E. Moorman, "Final Report Historical Background Information for the Pearl Harbor Naval Complex," May 2001 for additional information related to traditional land use associated with Ford Island.

Prior to 1778, Ford Island was likely uninhabited as a result of a lack of water. During this period the island supported short-term uses such as fishing, collecting pili grass (*Heteropogon contortus*), and possible seasonal cultivation of dryland crops such as gourds and sweet potatoes.[20] In the early 1800s, Moku 'Ume'ume (Ford Island) was owned by Don F. Francisco de Paula y Marin, a companion and interpreter for Kamehameha I.[21] As a result of Marin's activities, it was also called Rabbit Island.[22] In 1826, Lieutenant Hiram Paulding of the USS *Dolphin* may have been the first American naval officer to visit Ford Island. At this time, he documented his experiences in his journal, noting "After breakfast we sat off in our boat to visit a small island near the seashore, it was a half mile long, level, and overgrown with high weeds," and "an old Spaniard, by the name of Menini (Marin) who had settled at Omavoora (Honolulu), put one or more pairs of rabbits upon this small island and prevailed upon the chiefs to taboo them."[23]

In 1865, Caroline Jackson acquired Ford Island. Dr. Seth Porter Ford married Jackson, which led to the modern name of Ford Island. Ford died on November 19, 1866. Seth Ford, Jr., inherited Ford Island and owned the property from 1866 to 1891.[24] During this period, the island supported grazing.[25] By 1899, the John Papa 'Ī'ī Estate owned Ford Island. Irene 'Ī'ī (daughter of John 'Ī'ī) and her husband, Charles [Colby] A. Brown managed the estate.[26] During this period, the O'ahu Sugar Company (OSC) leased a portion of Ford Island from the 'Ī'ī Estate and planted an extensive acreage of sugarcane on the island.[27] Circa 1899, an artesian well was drilled on the island to facilitate large-scale cultivation of sugarcane.[28]

[18] Tara E. Moorman, "Final Report Historical Background Information for the Pearl Harbor Naval Complex," May 2001, 18-20.Document prepared by Ogden Environmental and Energy Services Co., Inc., Honolulu for Helber Hastert and Fee, Honolulu.
[19] Tara E. Moorman, "Final Report Historical Background Information for the Pearl Harbor Naval Complex," May 2001, 18-20.Document prepared by Ogden Environmental and Energy Services Co., Inc., Honolulu for Helber Hastert and Fee, Honolulu.
[20] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-15.
[21] "Naval Command History," January 1, 1945, 1. EV5 NAVFAC HI Reference Library Pearl Harbor, Hawai'i.
[22] Tara E. Moorman, "Final Report Historical Background Information for the Pearl Harbor Naval Complex," May 2001, 18-20.Document prepared by Ogden Environmental and Energy Services Co., Inc., Honolulu for Helber Hastert and Fee, Honolulu.
[23] "Naval Command History," January 1, 1945, 2-3. EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawai'i.
[24] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-5 – 2-7.
[25] *Draft Final Historic Context Report: Pearl Harbor National Historic Landmark, Pearl Harbor Naval Complex, Vol. 1*, The Louis Berger Group, Inc., Albany, New York, n.d. 3-17.
[26] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-5 – 2-7.
[27] Tara E. Moorman, "Final Report Historical Background Information for the Pearl Harbor Naval Complex," May 2001, 18-20.Document prepared by Ogden Environmental and Energy Services Co., Inc., Honolulu for Helber Hastert and Fee, Honolulu.
[28] *Historic Asset Management Process Volume II: Dataset (Pearl Harbor Naval Complex)* Binder 2 of 4, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, September 2011, 4-6.

By the late 1800s, Ford Island was well known for its *pili* grass, while later (sometime after 1778) it was known for the production of watermelon by Westerners (History 1).[29] A base map provided by the US Navy entitled "Pearl River and Lochs", from the USS Bennington Survey (1897) noted Ford Island was "…covered with algarroba trees and alluvial soil on coral."[30] Reportedly the trees supported raising livestock for provisioning visiting ships.[31] At this time, there were two boat landings—one located along the northwestern shore, directly across the channel from the tip of Pearl City Peninsula and the other, called Kāneana Landing, was situated in the middle of the southeastern shore.[32] A ferry landing had also been constructed along the southwestern shore by the late 1800s. The cable ferry was used to transport sugar cane from the island to the peninsula for processing.[33]



History 1: Map of Pearl Harbor showing "Ford's Island", 1885 (University of Hawai'i at Manoa, G4382 P4 [1885] M3).

Early Military Development on Ford Island, 1902-1939:

Early US Army and US Navy Devlopment Activities

In 1902, the US Government purchased a twenty-five-acre strip of land along the southeast shore of Ford Island for future use as a naval base (History 2).[34] As a result of resistance from land owners to sell their property for the purpose of the naval station, the land was condemned and purchased through the eminent

[29] Tara E. Moorman, "Final Report Historical Background Information for the Pearl Harbor Naval Complex," May 2001, 18-20.Document prepared by Ogden Environmental and Energy Services Co., Inc., Honolulu for Helber Hastert and Fee, Honolulu.
[30] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, Main Base/East Loch – Pre Military Survey, Figure 2.2-2.
[31] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-15.
[32] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-16.
[33] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-17.
[34] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-129.

domain process.[35] At this time, dredging of the channel to facilitate access for large water craft such as battleships into Pearl Harbor was initiated; however, work was limited to sand removal. Additional dredging was undertaken in 1903 but proved insufficient to create an accessible port.[36]

Remaining privately owned portions of Ford Island were under development during the early 1900s. A 1914 map of Ford Island showed the "US Naval Reservation" boundary as well as several improvements including two cane haul roads, irrigation ditches, a reservoir in the northeast corner, and a cluster of plantation buildings with a well on the west side of the island (History 3). The US Government purchased three parcels (Plats A, B and C) of land on Ford Island from the ʻĪʻī Estate on September 7, 1915.[37] When the parcels were purchased most of the island was in sugar cane cultivation.[38]

The following year, in 1916, the remainder of Ford Island was purchased by the US Government.[39] At that time, the island measured 304.733 acres.[40] The War Department subsequently determined that both the US Army and US Navy could share the island for use as an aviation installation. At this time, the US Navy already held approximately twenty-five acres of land on the southeast side of the island, so the US Army began the construction of their facilities on the northwest side of the island. The center of the island was retained for a joint-use by the US Army and US Navy as a landing field.

Improvements to the island were undertaken by the US Army in 1917 when Batteries Adair and Boyd were constructed on the northeast corner of Ford Island. (The guns were removed in 1925.) The batteries were built to defend O'ahu's harbors and forts. In 1918, the US Army air squadron relocated to Ford Island after construction of two seaplane hangars with ramps, a warehouse and a shop building had been built.[41] (The installation was officially named Luke Field in 1919.) On October 10, 1918, the Honolulu *Advertiser* described recent changes to Ford Island:

> All the great hangars for housing the US Army's planes on Ford Island have been completed, and the men are on duty….Ford Island has developed within six months from an area devoted almost exclusively to the cultivation of sugar cane into a large aviation station for the new US Army and US Navy.
>
> The men are temporarily occupying headquarters in one of the unoccupied hangars, their own barracks not being yet constructed. Part of the aviation equipment will occupy the area formerly occupied by the summer house of Mrs. Irene ʻĪʻī Holloway, which is one of the most beautiful waterside sites in the Islands. The running field has not been completed and for the present the

[35] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawaiʻi and NAVFAC Pacific, Pearl Harbor, Hawaiʻi, May 2011, 2-32.
[36] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawaiʻi and NAVFAC Pacific, Pearl Harbor, Hawaiʻi, May 2011, 2-32.
[37] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawaiʻi and NAVFAC Pacific, Pearl Harbor, Hawaiʻi, May 2011, 2-36 – 2-37.
[38] *Historic Context Study of Historic Military Family Housing in* Hawaiʻi, Mason Architects, Inc., August 2003, 5-49.
[39] *CNRH Oʻahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-129.
[40] Rick L. Smith, *Phase I Environmental Site Assessment, Ford Island Bungalows, Arizona Memorial, Ferry Reception Buildings, Pearl Harbor, Hawai'i,* Hawai'i International Environmental Services, Inc., Kailua, Hawai'i, November 8, 2004, 3-3.
[41] *CNRH Oʻahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-129.

> US Army's land plane makes its flights from Fort Kamehameha [now part of Hickam AFB].[42]

On January 31, 1919, the Honolulu *Advertiser* once again reported on early military history of Ford Island:

> While Honoluluans occasionally see an air machine flying over the city, they little realize what a vast aviation station has already risen on Ford Island. A few years ago the island was covered with sugar cane and coral, a group of cottages occupied by the ʻĪʻī Browns, set in a pleasant tropical locality, where the members of the Order of the Chiefs of Hawaiʻi have been initiated the past 20 years.
>
> Today there is a great landing field for land planes, a large steel and wooden hangar to house these machines, two huge concrete hangars for seaplanes and flying boats, a supply warehouse, a machine shop and photograph laboratory; while ground is being broken for a powerhouse which will supply current for lighting, power, and for hauling machines up from the water to the landing stage and for operating the workshop machinery.
>
> The officers are occupying the old cottages used by the Brown family but these are weather-beaten and hardly habitable. The one fine feature of the location is the big enclosed swimming pool.[43]

Circa 1917-1919, sugar cane cultivation ended on Ford Island and was replaced by military development.[44] During this period, the US Army's 4th and 6th Aero Squadrons began clearing sugar cane from the land.[45] Additionally, it is unclear how long the plantation-era buildings situated on the west side of Ford Island remained extant after the US Army began making improvements in the locale.[46] Between 1919 and 1922, the US Army built twenty-eight craftsman style residential buildings or units (at least five duplexes) along the northern portion of the western shore of Ford Island.[47] During the early 1920s, the US Army would build a couple dozen other facilities on Ford Island to support their aviation activities.

In October 1919, a "Special Board of Inspection of Naval Bases, etc., on the Pacific Coast" recommended, "that a first-class naval base, capable of taking care of the entire US Fleet in time of war, should be immediately developed at Pearl Harbor, as a strategic necessity." The board made several detailed recommendations, which included dredging a 1000 foot channel around Ford Island to a depth of forty feet, creation of an anchorage area north and west of Ford Island for eight capital ships and development of the whole waterfront associated with Pearl Harbor and Ford Island to encourage national

[42] "Naval Command History," January 1, 1945, 4-5. EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawaiʻi.
[43] "Naval Command History," January 1, 1945, 5-6. EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawaiʻi.
[44] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawaiʻi and NAVFAC Pacific, Pearl Harbor, Hawaiʻi, May 2011, 2-58.
[45] *Draft Final Historic Context Report: Pearl Harbor National Historic Landmark, Pearl Harbor Naval Complex, Vol. 1*, The Louis Berger Group, Inc., Albany, New York, n.d., 5-49.
[46] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawaiʻi and NAVFAC Pacific, Pearl Harbor, Hawaiʻi, May 2011, 2-59.
[47] *CNRH Oʻahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-129.

and territorial governments in development of Honolulu harbor.[48] Soon plans were underway to encircle Ford Island with concrete and stone quays to provide berth space for warships.[49]

CPO Bungalows and Associated Development

On December 19, 1919, the first US Navy aviators arrived in Hawai'i and established a temporary base at Pearl Harbor's US Navy Yard.[50] After several years of development on Ford Island by the US Army, US Navy planes were finally moved to the island in January 1923.[51] Construction of aviation facilities, clustered on the southern tip of the southeast side and housing in two areas of the northeast tip, by the US Navy would quickly follow.

On June 15, 1922, a drawing for the "Proposed Quarters for Married C.P. Officers at the Naval Air Station Ford Island" was finalized (History 4). Within the year, three Officers' Quarters were built in the North End neighborhood on the northern tip of the island. In October 1923, a location plan for the "Married C.P.O. Quarters, Ford Island" was prepared. Between 1923 and 1924, CPO bungalows 27 (unknown square footage), 28 (881 square feet), 29 (882 square feet), 30 (unknown square footage), 31 (865 square feet), and 32 (882 square feet) were built for non-commissioned officers by US Navy men on the southeastern shore of the island.[52] Subsequent development of the CPO bungalows site would occur in multiple phases (History 5-13).[53]

The board and batten bungalows had hipped roofs with extended eaves. The company of Lewers and Cooke who were the "leading building material establishment for Honolulu" for many decades, considered the board and batten construction technique to be structurally superior to the less expensive tongue and groove (T & G) single-wall houses. It is possible that this company provided the materials for the CPO bungalows; however, US Navy records show that station enlisted personnel built the buildings.[54] After their construction, all of the CPO bungalows associated with the site were modified during various renovations that were undertaken by the US Navy over the decades.[55] The most notable change included the construction of a rear addition on each building; however, other alterations included: removal of the metal ventilator at the roof ridge, removal of the original wood shingles, enclosure of front screen porches and incorporation into interior living space, addition of an exterior girt, either at sill, or mid-window

[48] "Command History: Pearl Harbor Naval Shipyard," compiled by Management Engineering Division, Management Planning and Review Department, July 1959, 7.
[49] "Naval Command History," January 1, 1945, 9-10. EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawai'i.
[50] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-74 – 2-75.
[51] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-129.
[52] *Historic Context Study of Historic Military Family Housing in* Hawai'i, Mason Architects, Inc., August 2003, 5-83.
[53] Multiple sources suggest different phases of construction associated with the CPO bungalows. See J. Michael Wenger, "Whitepaper No. 12—CPO Bungalow Project: Resources, Historical Background, and Documentation," *Confidential*, January 6, 2014 for additional information regarding six phases of construction in this locale.
[54] Polly Cosson and Ann Yoklavich, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)," Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, 6.
[55] *Historic Context Study of Historic Military Family Housing in* Hawai'i, Mason Architects, Inc., August 2003, 5-88.

height (except CPO 90 and 68), and the wooden front and side/rear steps and landings were replaced with concrete.[56]

US Navy maps from 1924 show several small-scale features in the CPO bungalow area including electric lights along main roads, including in the officer housing area as well as fire hydrants. A June 1924 CPO Neighborhood Map (portion of Drawing No. V-61) showed the loop road (later known as Belleau Woods Loop as first noted on a 1946 drawing) as an asphalt macadam road. The map also denoted that the buildings were still under construction. "Loose coral fill" was mapped on adjacent lands outside of the CPO bungalow area.[57] Also, although the utility lines are now buried, a short utility pole is still located between Bungalows 90 and 28.[58]

Development on Ford Island continued with the construction of nine 225,000-gallon reserve gasoline tanks along the southeastern shoreline of Ford Island in 1924.[59] These features were also called aboveground storage tanks (AST). Concrete barricades or fencing was installed around the tanks to provide additional security and safety.[60] Tanks 62 and 63 were located in close proximity to the CPO bungalows. A gasoline wharf was also built on fill land.[61] By 1925, approximately forty US Navy facilities had been constructed on the in the southern portion of the southeast side of Ford Island.[62]

Construction activities resumed within the existing CPO bungalow site with the construction of CPO bungalow 67 (1200 square feet) in 1928 (History 29).[63] The building was constructed south of CPO bungalow 27. Two years later, in 1931, CPO bungalow 69 was built near CPO bungalow 32. By 1932, CPO bungalow 68 had also been completed between CPO bungalows 32 and 69 (History 15, 16, and 19).[64] Sources suggest that these three buildings were unnumbered until 1936, when they appear on a map as buildings 67, 68 and 69.[65]

By 1932, additional facilities were needed on Ford Island to support both the land-based seaplanes and the large numbers of carrier-based planes that intermittently visited Hawai'i. Fifteen houses was built in

[56] *Final Environmental Condition of Property, World War II Valor in the Pacific National Monument, Chief Petty Officer Bungalows and U.S.S. Utah Memorial, Ford Island, Pearl Harbor Naval Complex, O'ahu, Hawai'i,"* Department of the US Navy, Naval Facilities Engineering Command, Pearl Harbor, Hawai'i, August 2009, 5-5
[57] Polly Cosson and Ann Yoklavich, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)," Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, 14.
[58] *Evaluation of Historic Structures: CPO Bungalows, USS Utah Memorial, USS Arizona Memorial, and Mooring* Quays, *WWII Valor in the Pacific National Monument, Pearl Harbor, O'ahu,* Mason Architects, June 2011, C-1.
[59] *Final Environmental Condition of Property, World War II Valor in the Pacific National Monument, Chief Petty Officer Bungalows and U.S.S. Utah Memorial, Ford Island, Pearl Harbor Naval Complex, O'ahu, Hawai'i,"* Department of the US Navy, Naval Facilities Engineering Command, Pearl Harbor, Hawai'i, August 2009, 5-5
[60] *Final Environmental Condition of Property, World War II Valor in the Pacific National Monument, Chief Petty Officer Bungalows and U.S.S. Utah Memorial, Ford Island, Pearl Harbor Naval Complex, O'ahu, Hawai'i,"* Department of the US Navy, Naval Facilities Engineering Command, Pearl Harbor, Hawai'i, August 2009, 5-5.
[61] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-107.
[62] *Historic Context Study of Historic Military Family Housing in* Hawai'i, Mason Architects, Inc., August 2003, 5-83.
[63] *Final Environmental Condition of Property, World War II Valor in the Pacific National Monument, Chief Petty Officer Bungalows and U.S.S. Utah Memorial, Ford Island, Pearl Harbor Naval Complex, O'ahu, Hawai'i,"* Department of the US Navy, Naval Facilities Engineering Command, Pearl Harbor, Hawai'i, August 2009, 5-5
[64] Dee Ruzicka, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility 68)," Historic American Buildings Survey, HABS No. HI-##, Mason Architects, Inc., Honolulu, Hawai'i, November 2010, 5.
[65] Dee Ruzicka, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility 68)," Historic American Buildings Survey, HABS No. HI-##, Mason Architects, Inc., Honolulu, Hawai'i, November 2010, 5.

northeastern part of Ford Island for married officers in 1936.[66] Additional housing was built in 1937 when nine two-story four-plex residential buildings were constructed adjacent to the CPO bungalows on newly reclaimed land that was developed using dredged materials.[67] At this time, Monkeypod trees were planted in the 1937 CPO housing area following the orthogonal layout of the buildings.[68] Also in 1937, CPO bungalow 68 and 69 (no longer extant) were moved several hundred feet west between gasoline storage tanks 62 and 63.[69] In 1938, CPO bungalow 90 (formerly facility 70) was constructed along Long Island Street south of CPO bungalow 69. The building was not renumbered to CPO bungalow 90 until circa 1940-1942.[70] (It was moved from its original location to a site adjacent to the former location of Bungalow 67 in 1943.[71]) Also in 1938, a combined schoolhouse and activity center known as the Kenneth Whiting Building (building 73) (4455 square feet) was built in proximity to the CPO bungalows.[72] Notably, by the late 1930s, US Navy family housing areas on Ford Island contained clotheslines associated with the buildings.[73] Today, several clotheslines remain with the CPO bungalow site.

Dredging and the Construction of Mooring Quays

As development by the US Army and US Navy continued throughout the 1920s space on Ford Island became more limited. While the runway situated in the middle of the island constrained development, additional acreage was added incrementally by filling in the shallow nearshore areas.

Between 1922 and 1936 dredging activities were undertaken around the east and north shorelines of Ford Island in an effort to create berthing areas deep enough for large ships. In 1922, the shoreline of Ford Island was irregular. Circa 1923-1924, reclaimed land was created as part of the fuel system construction. In this location, coral fill extended the shoreline in front of the five eastern-most fuel tanks, providing adequate water depth for the gasoline wharf.[74] Dredging operations expanded in 1936, and in 1937 about 2,000,000 cubic yards of the harbor's bottom were dredged out and work on the concrete moorings along Battleship Row began.[75] The shoreline was also further modified beginning in May 1940 with reports that a total of 13,000,000 cubic yards were dredged. The effort provided a turning channel around the

[66] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-127 – 5-129.
[67] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-130.
[68] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-103.
[69] Dee Ruzicka, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility 68)," Historic American Buildings Survey, HABS No. HI-##, Mason Architects, Inc., Honolulu, Hawai'i, November 2010, 5.
[70] Dee Ruzicka, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility 68)," Historic American Buildings Survey, HABS No. HI-##, Mason Architects, Inc., Honolulu, Hawai'i, November 2010, 5.
[71] *Evaluation of Historic Structures: CPO Bungalows, USS Utah Memorial, USS Arizona Memorial, and Mooring* Quays, *WWII Valor in the Pacific National Monument, Pearl Harbor, O'ahu,* Mason Architects, June 2011, C-1.
[72] *Final Environmental Condition of Property, World War II Valor in the Pacific National Monument, Chief Petty Officer Bungalows and U.S.S. Utah Memorial, Ford Island, Pearl Harbor Naval Complex, O'ahu, Hawai'i,"* Department of the US Navy, Naval Facilities Engineering Command, Pearl Harbor, Hawai'i, August 2009, 5-5
[73] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-109.
[74] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-100.
[75] "Command History: Pearl Harbor Naval Shipyard," compiled by Management Engineering Division, Management Planning and Review Department, July 1959, 11.

periphery of Ford Island and grew to include the deepening of the West Loch, Middle Loch, East Loch, and Magazine Loch. At this time, the channel to the sea was also deepened.[76] The shoreline has not been substantially altered since 1945.[77] Ultimately, as a result of these activities, the acreage of Ford Island increased to its present day 450 acres.[78]

The US Navy awarded three or more contracts for the construction of fleet moorings in the vicinity of Ford Island.[79] In December 1933, W.P. Thurston Co., Inc. was awarded the contract for construction of one aircraft carrier berth and five battleship berths along the southeast shore of Ford Island.[80] This resulted in the construction of six pairs of mooring quays or berths offshore on the southeast side of Ford Island between 1934 and 1935 (History 17 and 18). Technically these were known as "interrupted quays," and were characterized by pairs of hexagonal concrete pillars embedded in the harbor bottom. The quays included fenders and timbers situated at waterline level and bollards for the ships' lines topside.[81] During this period, most of the men called them "keys" and the statements of survivors often refer to them as keys, rather than as "quays."[82]

Plans originally included eight berths along Ford Island's southeast shore, including sixteen mooring platforms. Eventually, the plan was modified with three platforms being deleted and three platforms combined and repositioned into one aircraft carrier berth.[83] The configuration of the mooring platforms was as follows:

Mooring Platform 1: F2 S
Mooring Platform 2: combined into F2 N
Mooring Platform 3: combined into F 2 N
Mooring Platform 4: F3 S
Mooring Platform 5: F3 N
Mooring Platform 6: deleted from plan
Mooring Platform 7: deleted from plan
Mooring Platform 8: deleted from plan
Mooring Platform 9: F5 S
Mooring Platform 10: F5 N
Mooring Platform 11: F6 S (Type A)
Mooring Platform 12: F6 N (Type A)
Mooring Platform 13: F7 S (Type A)
Mooring Platform 14: F7 N (Type A)
Mooring Platform 15: F8 S (Type B)

[76] *Building the US Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946, Volume II, (*Washington: United States Government Printing Office) 1947, 129.
[77] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-130.
[78] Rick L. Smith, *Phase I Environmental Site Assessment, Ford Island Bungalows, Arizona Memorial, Ferry Reception Buildings, Pearl Harbor, Hawai'i,* Hawai'i International Environmental Services, Inc., Kailua, Hawai'i, November 8, 2004, 3-3.
[79] J. Michael Wenger, "Evaluation of Historical Resource Materials: Mooring Quay Project," March 18, 2013.
[80] J. Michael Wenger, "Evaluation of Historical Resource Materials: Mooring Quay Project," March 18, 2013.
[81] Samuel Eliot Morison, *History of United States Naval Operations in World War II: Volume 3: The Rising Sun in the Pacific 1931-April 1942,* (Urbana and Chicago: University of Illinois Press) 2001, 102. Originally printed in 1948.
[82] Vice Admiral Homer N. Wallin, *Pearl Harbor: Why, How, Fleet Salvage and Final* Appraisal, Washington D.C.: United States Government Printing Office, Naval History Division, 1968, 138.
[83] J. Michael Wenger, "Evaluation of Historical Resource Materials: Mooring Quay Project," March 18, 2013.

Mooring Platform 16: F8 S2 (Type B)[84]

Specifications outlined in the contract indicated that two types of mooring platforms be constructed on the southeast shoreline of Ford Island. Mooring platforms 9 to 14 were to be of the Type "A" construction, while mooring platforms 4 to 5 and 15 to 16 were to be Type "B".[85] See below for characteristics associated with both types:

> The Type "A" platform plan is a quasi-hexagon shape consisting of reinforced concrete exterior walls and a grid of interior reinforced concrete walls that form 10 compartments or cells within the plan. Each cell has a drain in the center of the bottom slab. The plan shows 35 piles, most of which are angled. One bollard cleat, three double bitt cleats, and four horned cleated are mounted on the top of solid concrete piers inset from the exterior walls.
>
> The Type "B" platform plan is a quasi-octagon shape consisting of a concrete shell exterior wall with a grid of interior reinforced concrete walls that form 18 compartments or cells within the plan. Each cell has a drain in the center of the bottom slab. The plan shows 53 piles, most of which are angled. As with the Type A construction, one bollard cleat, three double bitt cleats, and four horned cleated are mounted on the top of solid concrete piers inset from the exterior walls."[86]

While not specified in the contract, Historian Michael Wenger noted that Type "C" mooring platforms were also built for berth F2 and for a berth near the Fuel Pier that was later deleted. The mooring platforms or quays that are managed by the National Park Service represent Type "A" and Type "B" designs. Despite the differences in design, common characteristics of the mooring platforms or quays included fender systems, filling (coral sand and crushed rock), paving of platforms, and mooring fittings.[87]

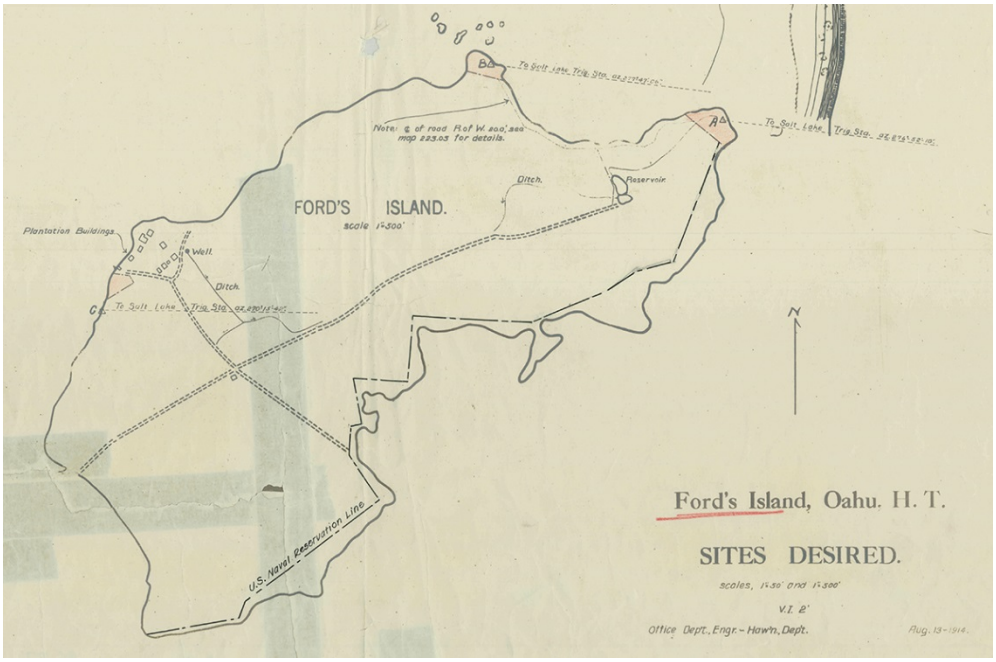
It is also important to note that while none of the contracts specified painting the platforms, historic photos suggest that the platforms or portions of the platforms were painted white with berth designations painted in black.[88] Other sources suggest that at the time of the attack it is "very likely that the quays were not painted.[89] While additional research is necessary, a photo of mooring quay F 2 during the December 7, 1941 attack shows the berth designation painted on the platform. Additionally, light colored paint may be evident on a portion of the quay in direct association with the berth number.

[84] J. Michael Wenger, "Evaluation of Historical Resource Materials: Mooring Quay Project," March 18, 2013 and Sonya Cooper, "Vanishing Treasures Trip Report: Valor in the Pacific National Monument," Structural Assessment & Evaluation of Mooring Quays, March 4, 2016, 3-5.
[85] J. Michael Wenger, "Evaluation of Historical Resource Materials: Mooring Quay Project," March 18, 2013.
[86] Sonya Cooper, "Vanishing Treasures Trip Report: Valor in the Pacific National Monument," Structural Assessment & Evaluation of Mooring Quays, March 4, 2016, 3-5.
[87] J. Michael Wenger, "Evaluation of Historical Resource Materials: Mooring Quay Project," March 18, 2013.
[88] J. Michael Wenger, "Evaluation of Historical Resource Materials: Mooring Quay Project," March 18, 2013.
[89] *Evaluation of Historic Structures: CPO Bungalows, USS Utah Memorial, USS Arizona Memorial, and Mooring* Quays, *WWII Valor in the Pacific National Monument, Pearl Harbor, O'ahu,* Mason Architects, June 2011, A-1.

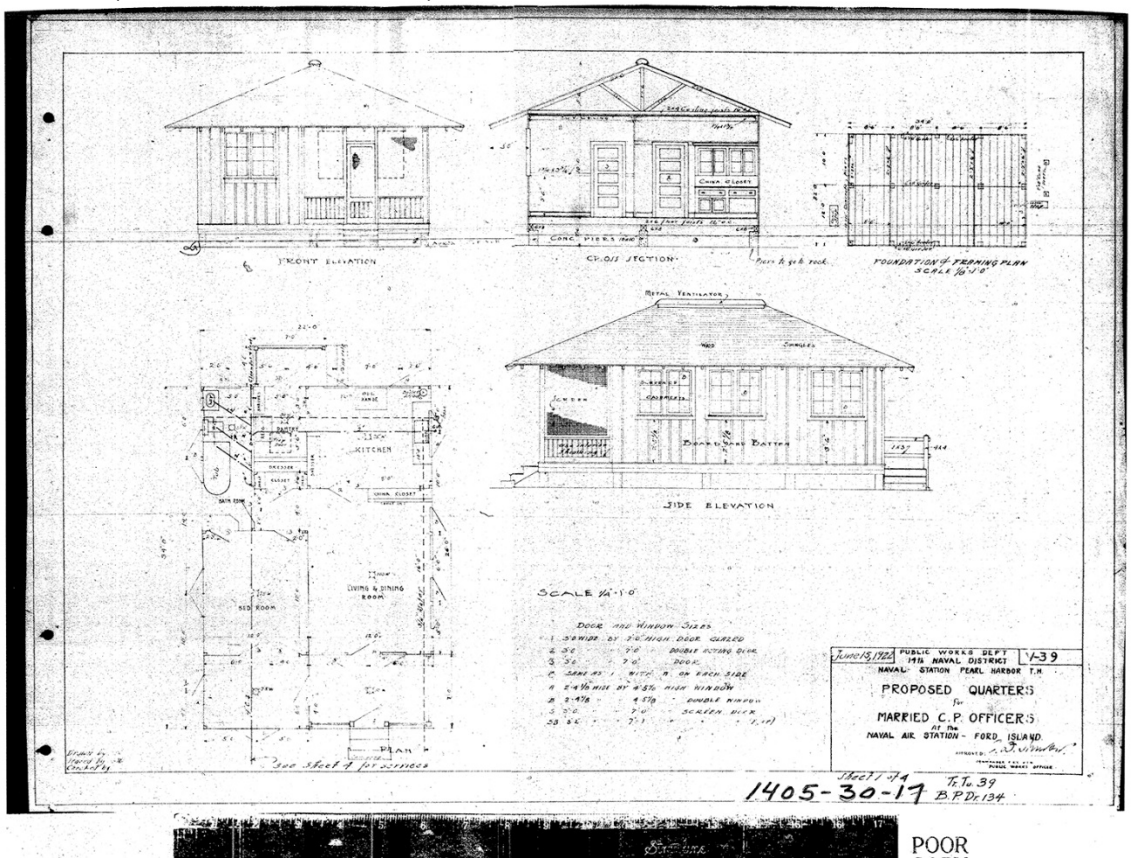
By the late 1920s it was determined that Ford Island was too small to accommodate the aviation needs of both the US Army and US Navy.[90] By 1928, a new site had been selected for an US Army airfield.[91] On October 26, 1935, President Roosevelt issued Executive order 7215, which transferred full control of Ford Island to the US Navy.[92] Ultimately, US Army facilities, which constituted approximately one-third of the island were relocated to Hickam Field on October 31, 1939.[93] In 1939, Ford Island was the US Navy's only aviation facility in Hawai'i.[94] At this time, the 330-acre island was flat and "entirely covered with pavement and buildings," which included an landing strip at its center and fleet mooring around the shoreline (History 20-25).[95]

History 2: Portion of a map of O'ahu, Hawai'i from the "Hawai'i Territory Survey" prepared by Walter E. Wall, showing Ford Island, 1902 (University of Hawai'i at Manoa Library).

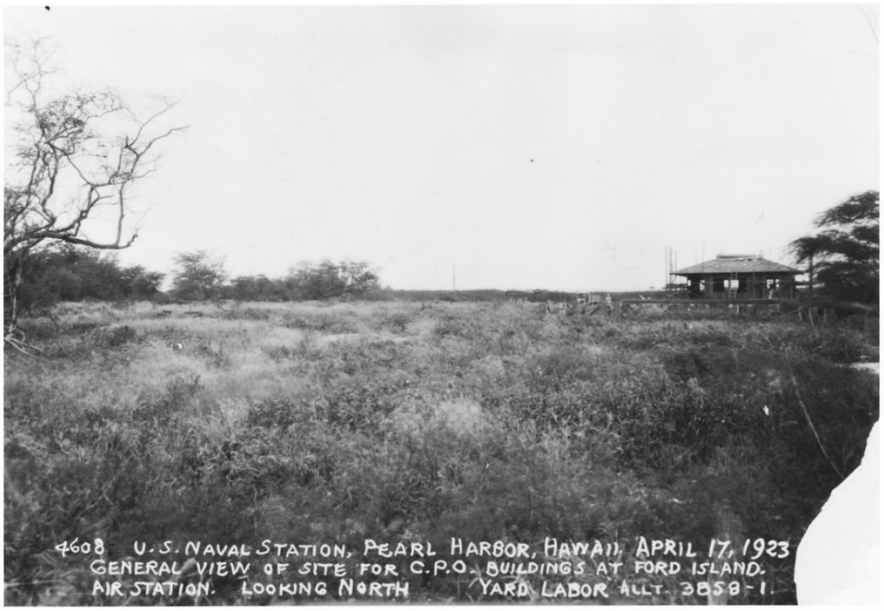
[90] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-130.
[91] *Historic Context Study of Historic Military Family Housing in* Hawai'i, Mason Architects, Inc., August 2003, 5-64, 5-65.
[92] *Draft Final Historic Context Report:Pearl Harbor National Historic Landmark, Pearl Harbor Naval Complex, Vol. 1*, The Louis Berger Group, Inc., Albany, New York, n.d., 7-56.
[93] *Building the US Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946, Volume II, (*Washington: United States Government Printing Office) 1947, 137-138.
[94] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-127 – 5-129.
[95] *Building the US Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946, Volume II, (*Washington: United States Government Printing Office) 1947, 137-138.



History 3: Map "Ford's Island, O'ahu, H.T., Sites Desired," prepared by the Corps of Engineers, August 13, 1914 (NARA, RG 77, 12000302).

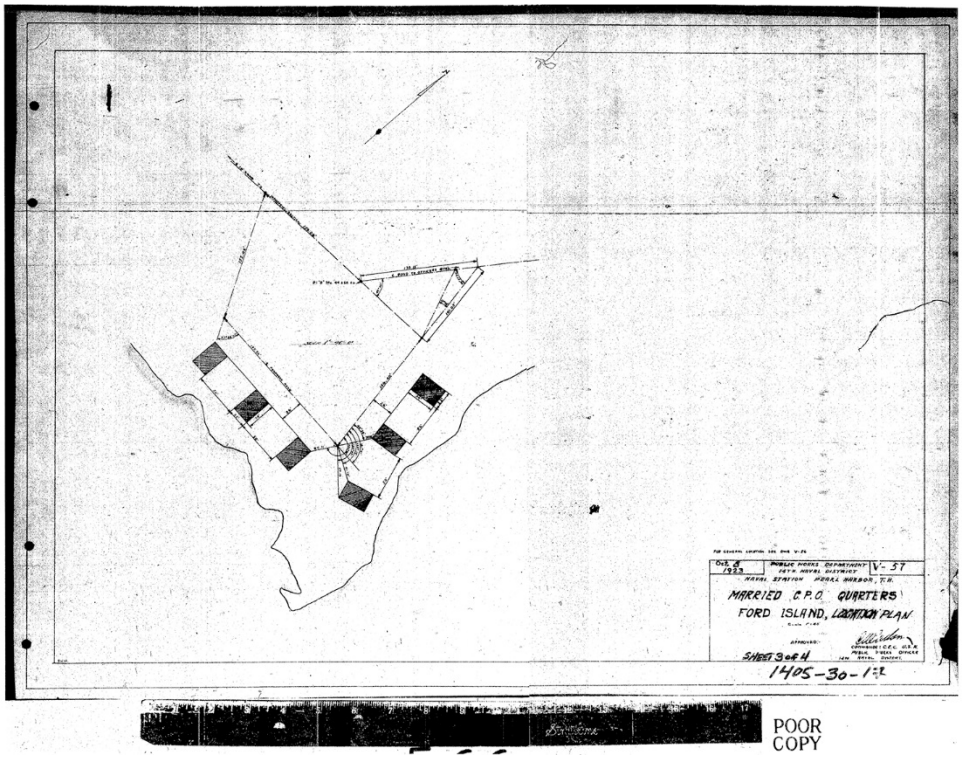


History 4: Drawing for the "Proposed Quarters for Married C.P. Officers at the Naval Air Station Ford Island," June 15, 1922 (Drawing 1405-30-17, Sheet 1 of 4, Microfilm Series 'Ī'Ī, NARA 'Ī'Ī).

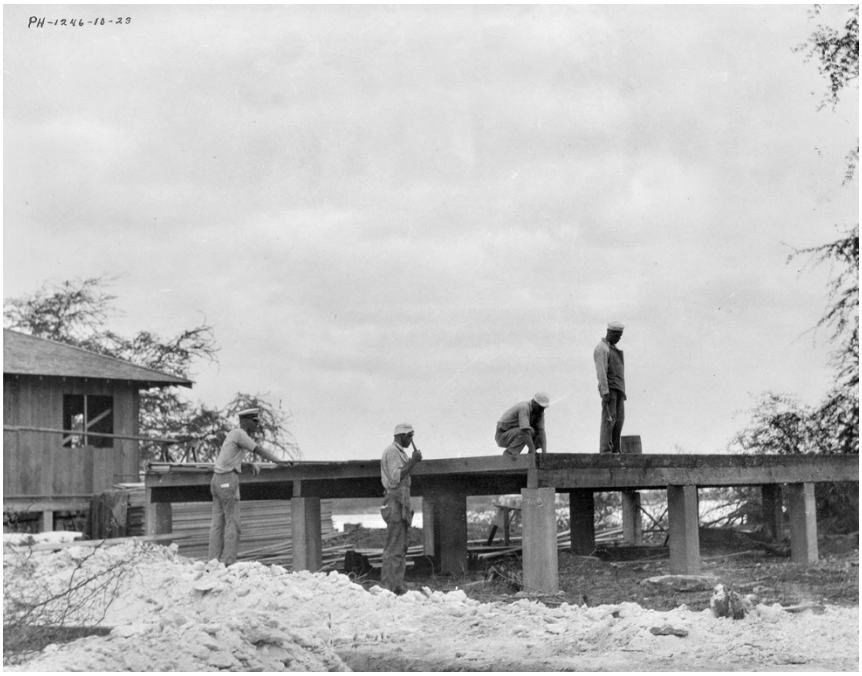


History 5: Photograph looking north showing the location and early construction activities associated with the CPO buildings on Ford Island, April 17, 1923 (14th Naval District Command Photos, Pearl Harbor National Memorial archives, PHOG_NO 4608).

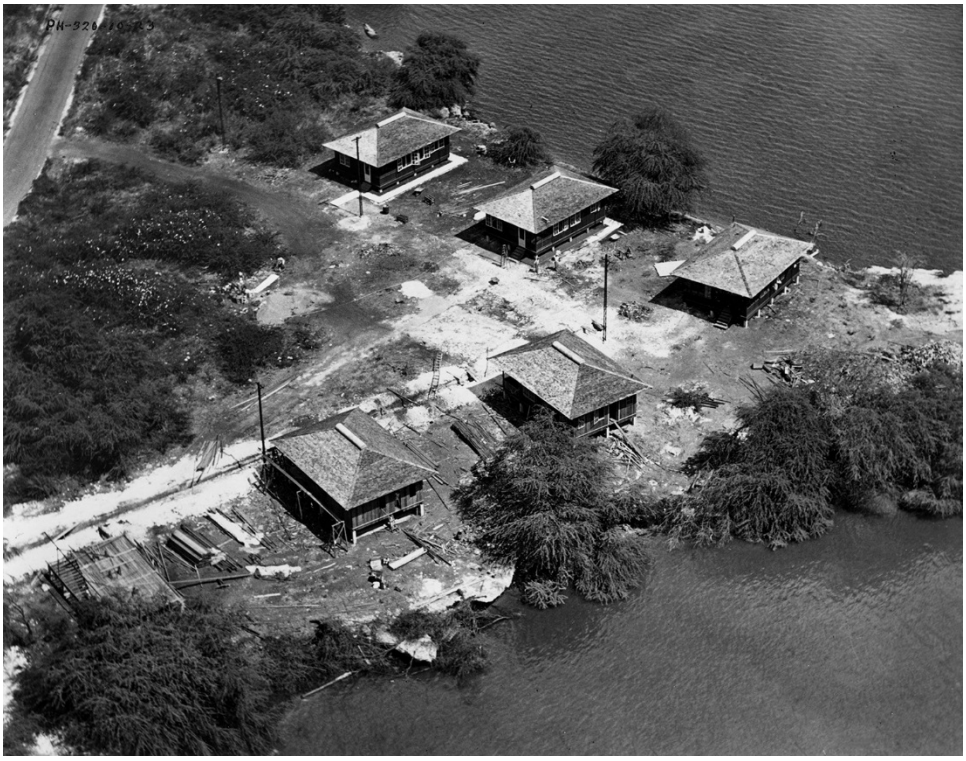
History 6: Photograph looking northeast of CPO bungalows 32 and 31 (left to right), October 4, 1923 (NARA ʻĪʻĪ, 71CA-154B-5-PH3095).



History 7: Location plan for the "Married C.P.O. Quarters, Ford Island," October 8, 1923 (Drawing 1405-30-17, Sheet 3 of 4, RG71, Microfilm Series ʻĪʻĪ, NARA ʻĪʻĪ).

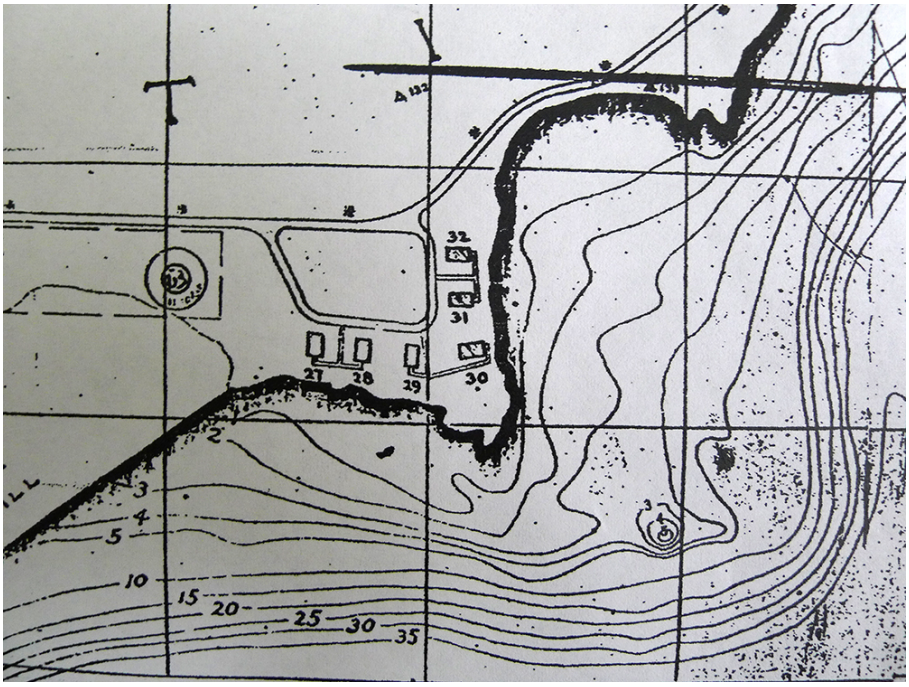


History 8: Photograph looking southeast of the CPO bungalows under construction by navy men, October 16, 1923 (NARA ʻĪʻĪ, 71CA-154B-8-PH1246).



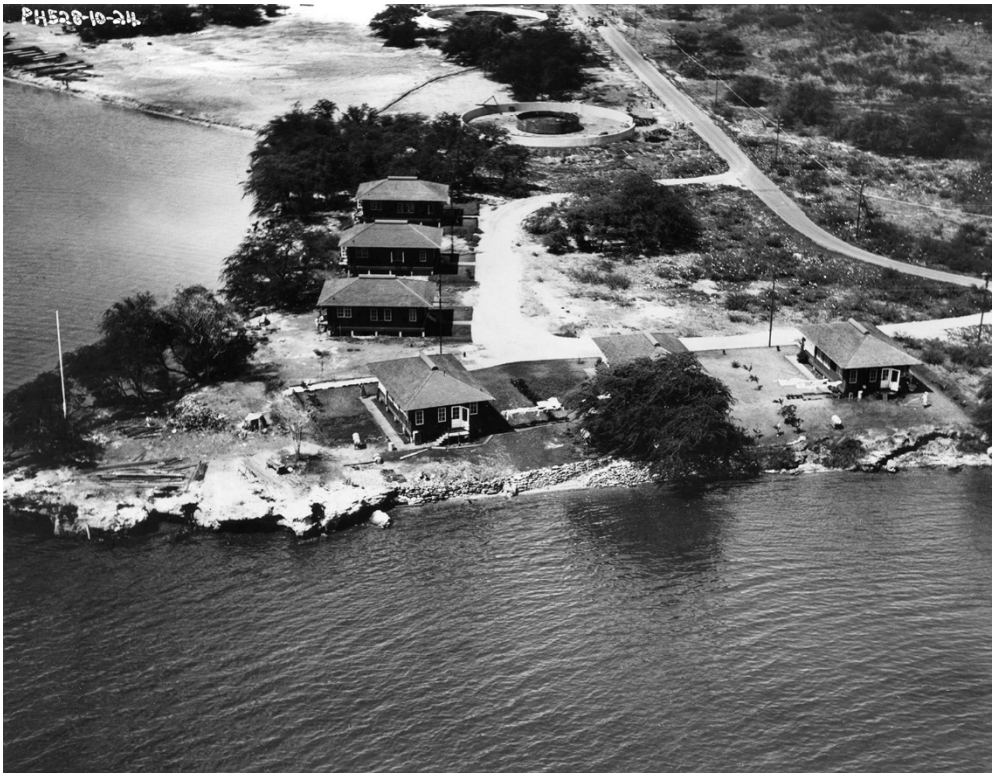
History 9: Photograph looking north of the CPO bungalows under construction, October 17, 1923 (NARA ʻĪʻĪ, 71CA-154B-4-PH320).

History 10: Aerial photograph of the shoreline and access road to the CPO bungalows on Ford Island, November 1923 (14th Naval District Command Photos, Pearl Harbor National Memorial archives, P.H. 346-23).

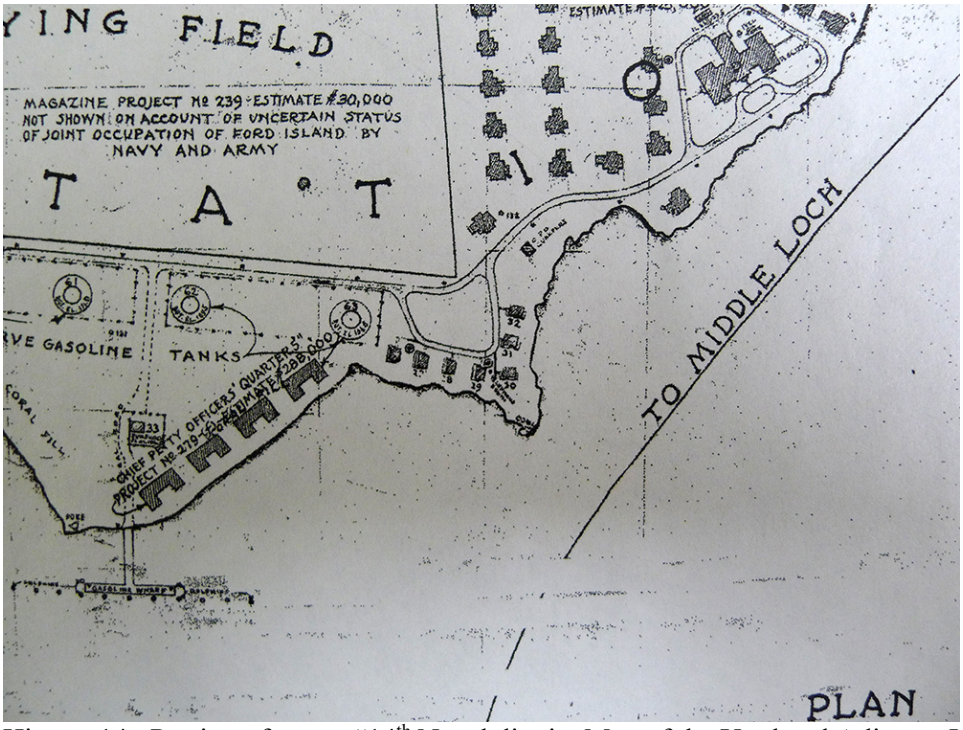


History 11: Portion of a map showing improvments to Naval Air Station Ford Island near the CPO bungalows, June 30, 1924. Symbology on the map suggests that the buildings were still under construction and that the loop road was asphalt macadam *(Ford Island Past & Present: A picture story of the United States Navy on Ford Island from 1923 up to the present day*. Fleet Intelligence Center, Pacific, March 1969. Document located at the EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawai‘i).

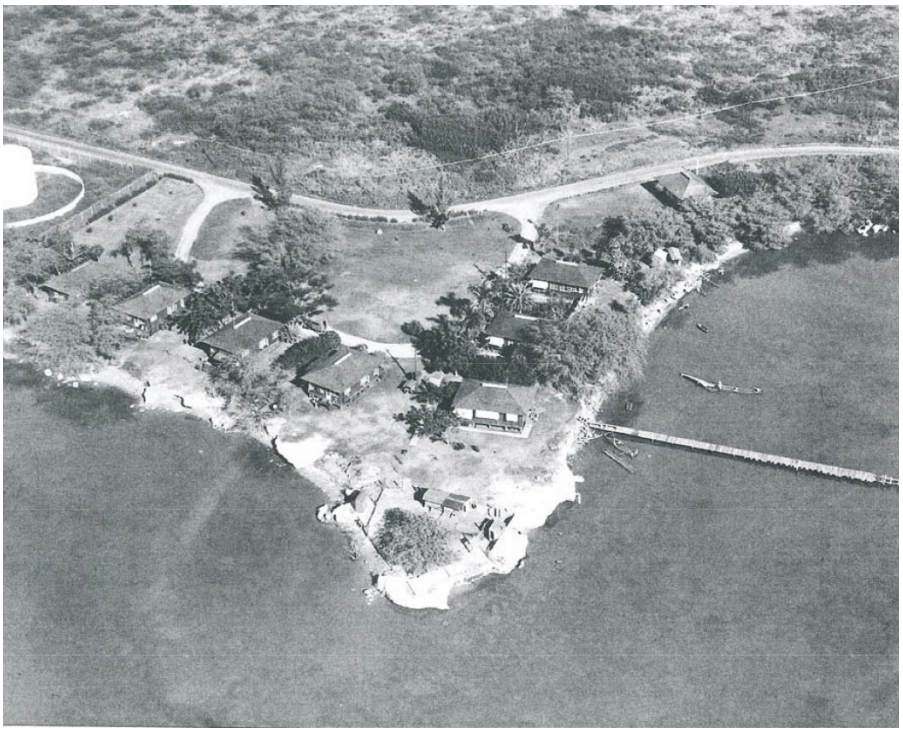
History 12: Photograph looking southeast of the CPO bungalows, July 10, 1924 (NARA ‘Ī‘Ī, 71CA-152A-9-PH458).



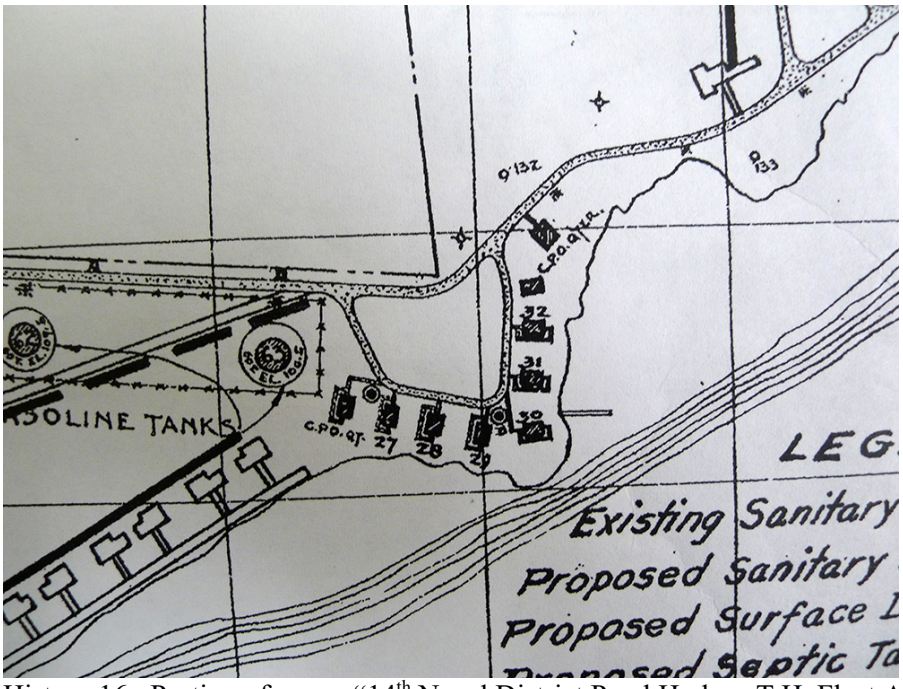
History 13: Photograph looking west of the CPO bungalows, September 7, 1924 (NARA ʻĪʻĪ, 71CA-154B-1-PH5287).



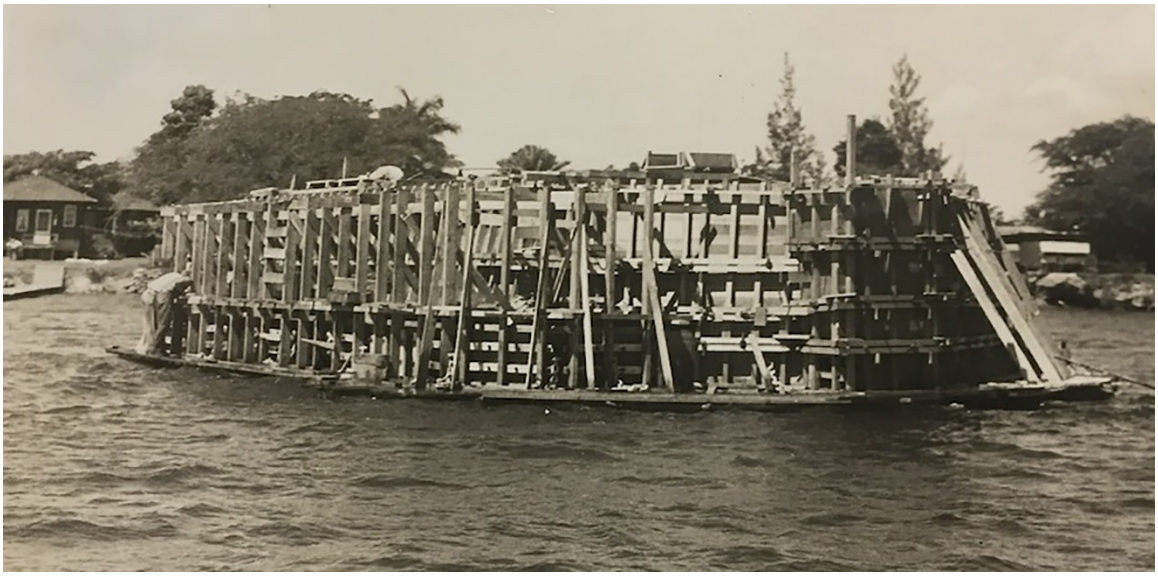
History 14: Portion of a map "14th Naval district Map of the Yard and Adjacent Units Showing Developments to June 30, 1929," with the CPO bungalows located at the center (Pearl Harbor National Memorial archives).



History 15: Photograph of the CPO bungalows on Ford Island taken between June 1931 and June 1932. Note CPO bungalow 69 is extant at upper right; however, CPO bungalow 68 had not yet been constructed between CPO bungalow 32 or 69 (NARA RG-71-CB box 102, folder C, no photograph number).

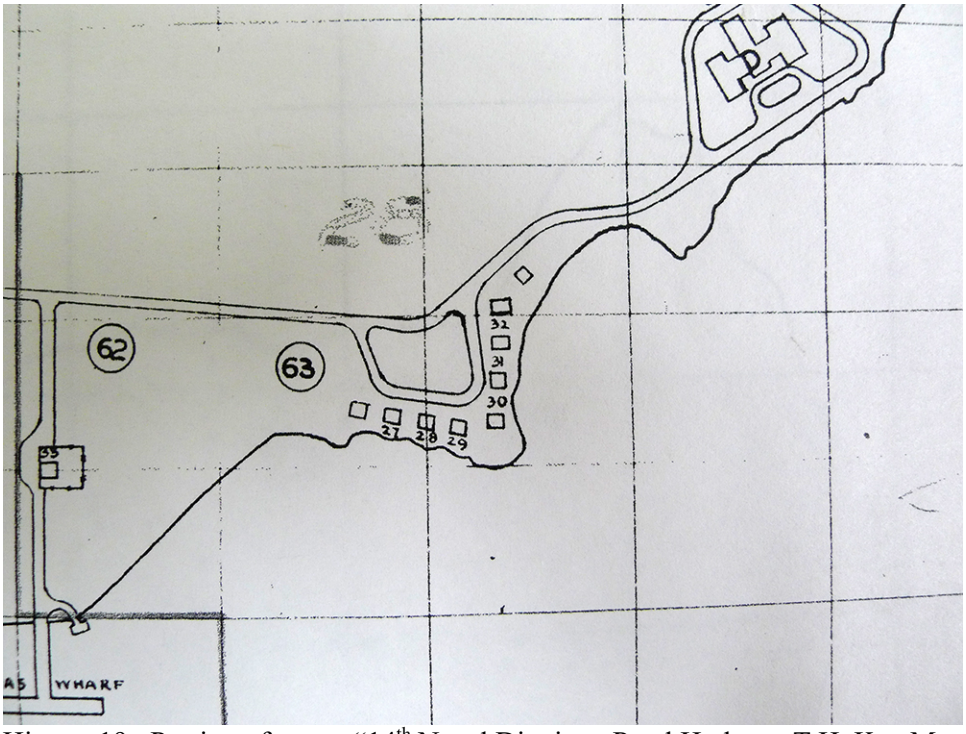


History 16: Portion of a map "14th Naval District Pearl Harbor, T.H. Fleet Air Base, Ford Island, Showing Developments to June 30, 1932," with the CPO bungalows at the center (Pearl Harbor National Memorial archives).



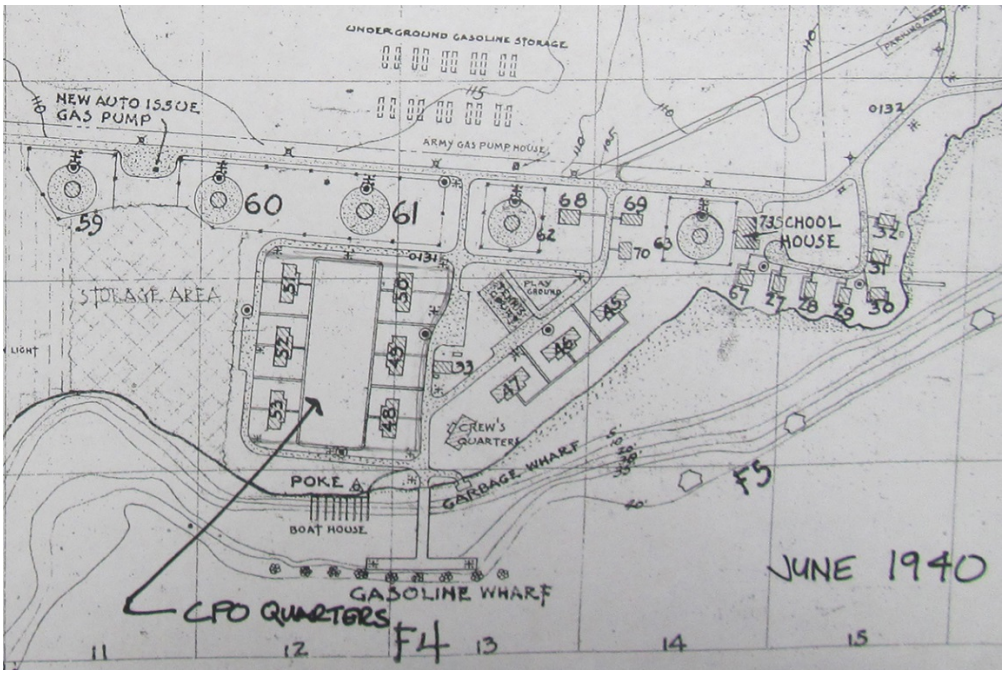
History 17: Photograph "Fourteenth Naval District, Pearl Harbor, T.H. Fleet Moorings (Ford Island), Mooring No. 12 [mooring quay 6], looking Northwesterly," September 17, 1934. Note CPO bungalows in background (14th Naval District Photos, Pearl Harbor National Memorial, #11198).

History 18: Photograph "Fourteenth Naval District, Pearl Harbor, T.H. Fleet Moorings (Ford Island), Mooring No. 10 [mooring quay 5], looking Northerly," Novmeber 13, 1934. Note CPO bungalows in background (14th Naval District Photos, Pearl Harbor National Memorial, #11314).



History 19: Portion of a map "14th Naval District – Pearl Harbor – T.H. Key Map, 1934," showing the CPO bungalows at the center (Pearl Harbor National Memorial archives).

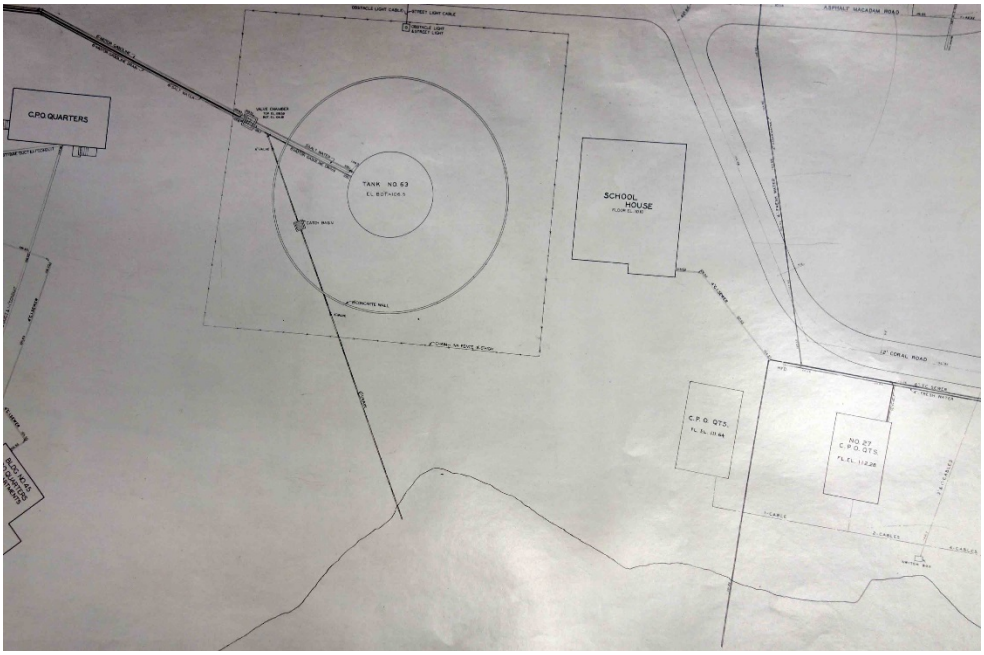
History 20: Aerial photograph of Ford Island taken at 17,200 feet altitude, May 3, 1940 (Naval History and Heritage Command, 80-G-411117).



History 21: Portion of a map showing development associated with the CPO bungalows, June 30, 1940 (Pearl Harbor National Memorial archives).

History 22: Aerial photograph of Ford Island, January 30, 1941 (14th Naval District Command Photos, Pearl Harbor National Memorial archives, TEMP_NO 845).

History 23: Aerial photograph of the Naval Operating Base, Pearl Harbor looking southwest, October 30, 1941 (Naval History and Heritage Command, 80-G-182874).



History 24: Portion of an untitled plan showing the utilities and road types in the CPO Bungalows Neighborhood (EV5 NAVFAC HI Reference Library).

History 25: Aerial photograph of Ford Island, November 10, 1941 (Naval History and Heritage Command, 80-G-279385).

World War II, 1940-1945:

Pearl Harbor was attacked by Japan on December 7, 1941. After the attack on Pearl Harbor, the airplane revolutionized naval warfare in the Pacific, essentially rendering battleships obsolete. Ultimately, the impact of aviation during World War II would pave the way for an explosion in commercial aviation that would transform tourism into a major support of Hawai'i's economy.[96]

December 7, 1941

On the morning of December 7, 1941, shortly before 8:00 a.m., US Navy families occupying the CPO bungalows on Ford Island were getting ready to start a new day. When they heard the roar of aircraft engines, many supected nothing out of the ordinary. Nearby, the berths along Battleship Row were occupied by USS *Oklahoma* and USS *Maryland* (F5 S and F5 N), USS *West Virginia* and USS *Tennessee* (F6 S and F6 N), and the USS *Arizona* and repair ship USS *Vestal* (F7 S and F7 N).

The air attack on Pearl Harbor by the Japanese began at 7:55 a.m. Japanese dive-bombers first targeted Hanger 6 at Naval Air Station Pearl Harbor before attacking the battleships. Japanese horizontal bombers flying at 10,000 feet also dropped bombs on the battleships (History 26-32).

[96] H. Brett Melendy, "The Competition for Trans-Pacific Air Routes to Hawai'i, 1945-1959," *Hawai'ian Journal of* History, vol. 37 (2003), 202.

During the attack, many families occupying homes on Ford Island sought safety at the Rear Adm. Patrick N. L. Bellinger's home (Quarters K), which was a structure built on top of Battery Adair, an ex-US Army casemented gun emplacement.[97] At the time of the attack, Charlotte Coe lived with her family in a bungalow located in the North End Neighborhood. The first explosion woke Charlotte from a deep sleep. She recalled her father saying, "Get up! "The war's started." As her family retreated to the old gun emplacement, she, like so many others on Ford Island saw the Japanese planes with red circles under its wing fly overhead. Prior to the attack the children played in the bunker, which they had called "the dungeon." Reportedly, explosion of the USS *Arizona* rocked the walls and floors inside the shelter. Soon after, survivors from damaged battleships began making their way ashore and into the bunker. Many of the survivors were coated in oil and some had been strafed and burned.[98]

Also, soon after the attack oil-soaked sailors swam ashore from the destroyed battleship and ended up in the yards of the CPO bungalows. Some survivors described taking clothes off the clotheslines.[99] One account describes the scene:

> By this time the waters lapping at Ford Island swarmed with rescue activity. Amid explosions, strafing, and blazing oil, able-bodied survivors helped their buddies off the burning battleships and into waiting launches, barges, or anything they could muster. These plied back and forth to Ford Island with wounded, burned, and shocked officers and men…Countless others dived from their ships, swam ashore, and scrambled onto the island, soaked with oil, barely clothed, many with varying degrees of burns and wounds. [100]

Another survivor, Don Erwin McDonald, recalled the following events associated with the attack:

> I was asleep [on the USS *Arizona*] when the attack came.
>
> We left the ship and got onto the quay – which the ship was tied to – and jumped into the water which was covered with oil and fire.
>
> While we were swimming we could feel the explosions in the water – it felt like it was enough to tear your flesh off.
>
> I towed Cpl. Nightingale until we got to the hydraulic dredge line that ran out from Ford island. It was above the water on pilings, and he could walk ashore from there. By the time I got ashore on Ford Island – it was about 200 yards or so from where the battleships were – I could see the *Arizona* had settled and was burning fiercely. I also saw the *Oklahoma* and the *Utah* roll over.

[97] Daniel A. Martinez, "Significance Statement CPO Bungalows, Naval Air Station Pearl Harbor," National Park Service, June 2, 2016.
[98] Mark Wortman, "The Children of Pearl Harbor: Military personnel weren't the only people attacked on December 7, 1941," *Smithsonian Magazine* < https://www.smithsonianmag.com/history/children-pearl-harbor-180961290/>, December 5, 2016.
[99] "CPO Quarters," Historic Hawai'i Foundation website < https://historicHawai'i.org/ford-island-background/cpo-quarters/> accessed May 4, 2017.
[100] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-123 – 129.

> All most of us had on was our shorts. We went to a nearby officers' quarters, where we borrowed some of their clothing. We were given rifles and spent the rest of the attack sitting under the trees shooting at the Japanese aircraft. The rest of the day was very busy.[101]

Ultimately, as a result of the Japanese attack on Pearl Harbor, 2,403 Americans were killed and 1,178 were wounded. Five of the eight battleships had been sunk, while the remaining three battleships had been damaged. Eighteen of the ninety-six vessels at Pearl Harbor had been either sunk or seriously damaged. Despite the damages, repairs began almost immediately to resuscitate the Pacific Fleet.[102]

Louise Kinsman

At the time of the attack, Louise Kinsman and her family were in their home along Battleship Row. Louise Kinsman moved to Ford Island in December 1940. Her father was a Chief Petty Officer in the US Navy. Their family had been selected to live in one of the CPO bungalows on Ford Island. Louise recalled that she and her family lived in CPO bungalow 31.[103] Subsequent correspondence suggests that another family, CBM (PA) John and Cota Burnfin, may have lived in Quarters 31 at the time of the attack, while the Kinsman's lived nearby.[104]
Louise had vivid memories where she was and what she was doing during the attack as well as the events after the attack.[105] She recalled that she was getting ready for Sunday school class at the Kenneth Whiting building when she felt a tremor and thought "What are they doing dredging on Sunday?" [106] A few minutes later, her mother informed her that the station was on fire. While fleeing to their vehicle she saw a Japanese plane flying overhead.[107] After the USS *Arizona* had exploded, the family drove past their home while on their way to the air raid shelter near the Admiral's house. She could not see the bungalow through the thick smoke but could see fire engines in the back yard.[108] After the attack, she noticed that her cologne on top a chest of drawers was broken, remarking "Well you know what happened when the *Arizona* blew up, the house jumped too. It smelled really good when we went back." [109] She also reported that there were tons of shrapnel in the house after they returned.[110]

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[101] "Don Erwin McDonald," Oral History WWII Valor in the Pacific National Monument archives.
[102] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-123 – 129.
[103] Oral History, Interviewer: Daniel Martinez, VALR Chief Historian and Interviewee: Louis Bernhardt Kinsman, December 6, 2011.
[104] National Park Service, "Correspondence from Mike Wenger to VALR staff: Daniel Martinez and Scot Pawlowski," August 18, 2014.
[105] Oral History, Interviewer: Daniel Martinez, VALR Chief Historian and Interviewee: Louis Bernhardt Kinsman, December 6, 2011, 7.
[106] Oral History, Interviewer: Daniel Martinez, VALR Chief Historian and Interviewee: Louis Bernhardt Kinsman, December 6, 2011, 23-24.
[107] Oral History, Interviewer: Daniel Martinez, VALR Chief Historian and Interviewee: Louis Bernhardt Kinsman, December 6, 2011, 28.
[108] Oral History, Interviewer: Daniel Martinez, VALR Chief Historian and Interviewee: Louis Bernhardt Kinsman, December 6, 2011, 32.
[109] Oral History, Interviewer: Daniel Martinez, VALR Chief Historian and Interviewee: Louis Bernhardt Kinsman, December 6, 2011, 8.
[110] Oral History, Interviewer: Daniel Martinez, VALR Chief Historian and Interviewee: Louis Bernhardt Kinsman, December 6, 2011.

After the Attack

Following the attack, newspaper headlines across the world, including the *Honolulu Advertiser*, reported on the events at Pearl Harbor. On December 8, 1941, Franklin Delano Roosevelt (FDR) responded to the attack with these words:

> Yesterday, December 7, 1941 – a date which will live in infamy – the United States of America was suddenly and deliberately attacked by naval and air forces of the Empire of Japan…The attack yesterday on the Hawai'ian Islands has caused severe damage to American naval and military forces. Very many American lives have been lost…Always we will remember the character of the onslaught against us. No matter how long it may take us to overcome this premeditated invasion, the American people in their righteous might will win through to absolute victory.[111]

The CPO bungalows served as a witness to the attack on Ford Island. Damage resulting from the December 7, 1941 attack in the CPO bungalow area included the presence of fragments from explosions of nearby ships, particularly the USS *Arizona*, which were blown over the northeasterly end of the island, but caused no serious material damage.[112] A memo from a first lieutenant after the attack noted that around the station's south side there were several houses that had been hit by shrapnel, and blazing objects from the explosion associated with the USS *Arizona.*[113] Evidence of three delayed-action bombs, which had targeted the ships moored at F6, was also found near the CPO quarters and school house. Luckily, the bombs exploded without causing any damage, dissipating the explosive force in the porous coral formation. Results from the District Bomb Disposal Officer's investigation suggested that they were armor piercing bombs.[114] According to National Park Service historian Daniel Martinez, archeological evidence suggests that a group of five bombs fell wide of their targets, with several of the bombs impacting the ground approximately seventy-five yards (225 feet) northwest of the CPO bungalows.[115] Additionally, "minor damage to station quarters, furniture and the like, was caused by the billeting and treatment therein of casualties coming ashore from ships through oil, fire-covered waters."[116] After Thomas Oliver Powell abandoned the USS *Oklahoma* he jumped down to a mooring quay and eventually into the water and swam to Ford Island. "Just about the time I reached Ford Island the *Arizona* blew up. I ran to and went under a house where I remained for approximately one hour."[117]

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111 Bill Dickinson and Gary Cummins, "USS *Arizona*: The Management Experience," in *Submerged Cultural Resources Study, USS Arizona Memorial and Pearl Harbor National Historic Landmark,* Daniel J. Lenihan, ed., Southwest Cultural Resources Center Professional Papers, Santa Fe Mexico, 1989, Second Edition 1990, 169.
112 *Ford Island Past & Present: A picture story of the United States Navy on Ford Island from 1923 up to the present day*, Fleet Intelligence Center, Pacific, March 1969. EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawai'i.
113 Memo from First Lieutenant to Commanding Officer "Air Raid Attack by Japanese – Report for Report on," December 16, 1941, 3. NAS Attack Reports, 1941, EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawai'i.
114 *Ford Island Past & Present: A picture story of the United States Navy on Ford Island from 1923 up to the present day*, Fleet Intelligence Center, Pacific, March 1969. EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawai'i.
115 Daniel A. Martinez, "Significance Statement CPO Bungalows, Naval Air Station Pearl Harbor," National Park Service, June 2, 2016.
116 *Ford Island Past & Present: A picture story of the United States Navy on Ford Island from 1923 up to the present day*, Fleet Intelligence Center, Pacific, March 1969. EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawai'i.
117 "Thomas Oliver Powell," Oral History WWII Valor in the Pacific National Monument archives.

Fortunately, the buildings only suffered only minor damage as a result of their close proximity to the explosions and subsequent fires along Battleship Row. At the time of the attack, the USS *Arizona* and was moored to the northeast, upwind.[118] Several reports from individuals on the scene noted that a minor fire occurred in one of the CPO bungalows in the early morning of December 8 as a result of floating embers from the burning USS *Arizona*.[119] As a result of the attack, the sunken hull of the USS *Arizona* hull had crushed the twelve inch main water line, which caused a severe shortage of water on Ford Island. At this time, the danger from fire was serious.[120] The shortage hindered fighting fires as well as for administering medical attention; however, the fire in the CPO bungalow was quickly extinguished.[121] A memo from Captain James Shoemaker reported his role in putting out the fire, noting that he "Attempted to sleep on a cot in my office, but was called about midnight because of a fire in the rear of the enlisted quarters near Berth Fox-6, caused by embers from *Arizona* (which burned for three days.) Fire was minor, easily extinguished. Established a 24-hour watch with pumper, in this area, until *Arizona*'s fire died out."[122] Reportedly, the CPO quarters that started on fire was situated closest to a bomb strike that occurred in the center court area directly across the street.[123]

Earlier in the day there were also other reports of fires in proximity to the CPO bungalows. Ensign G.M. Rice reported on December 7, 1941:

> At about 0830 we could hear bombs dropping again and there was a lot of firing from ships in the harbor. We could not see what was going on outside. At about 0900 Ensign Cosgrove and I took a Clark cab and trailer loaded with fire extinguishers and buckets of sand to the vicinity of the Kenneth Whiting School. There was a building on fire across the playground from the school and a ship was on fire in front of the old BOQ. The fire department was attempting to extinguish the blaze on the building. Enlisted men were swimming ashore from the ship in the harbor. About this time the ships near the Kenneth Whiting School started firing at a group of planes flying at about 20,000 feet coming in from the north. The shells seemed to be bursting about 5000 feet below the planes.[124]

Ensign D.A. Singleton also reported on the threat of fire near the aboveground storage tanks (ASTs), which could have resulted in a catastrophic explosion in the area. It is also significant to note that the ASTs survived the attack with no damage.

> Preparations were in progress to start the salt water pumps to provide a

[118] *Historic Context Study of Historic Military Family Housing in* Hawai'i, Mason Architects, Inc., August 2003, 5-85.
[119] *Historic Context Study of Historic Military Family Housing in* Hawai'i, Mason Architects, Inc., August 2003, 5-85.
[120] Memo from Commanding Officer to Commandant, Fourteenth Naval District, "Air Raid Attack by Japanese on 7 December, 1941, report on," n.d. NAS Attack Reports, 1941, EV5 NAVFAC HI Reference Library Pearl Harbor, Hawai'i.
[121] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-123 – 129.
[122] Memo from Captain James M. Shoemaker, U.S. US Navy, "Japanese Air Raid on 7 December, Statement on," December 22, 1941, 3. NAS Attack Reports, 1941, EV5 NAVFAC HI Reference Library Pearl Harbor, Hawai'i.
[123] Polly Cosson and Ann Yoklavich, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)," Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, 6.
[124] Memo from Ensign G.M. Rice to Commanding Officer, "Air raid attack by Japanese on Ford Island," December 14, 1941. NAS Attack Reports, 1941, EV5 NAVFAC HI Reference Library Pearl Harbor, Hawai'i.

> spray on the above ground tanks when the Supply Officer appeared with transportation to the tank farm area. Water valves to the tanks were opened and some fuel division personnel were assigned to assist in fighting a grass fire around tank #63. Four tanks trucks were parked in an area dangerously close to the burning USS *Arizona* and a grass fire under one of the trucks imperiled [sic] the surrounding area. These trucks were moved to a location more distant from the torpedoed battleships.[125]

Notably, eight battleships were damaged or destroyed as a result of the attack, including the USS *Arizona*, USS *Oklahoma* and the USS *Utah*. The USS *Tennessee* was wedged between the mooring quays and the crippled USS *West Virginia*. The USS *Maryland* was directly in front of the USS *Tennessee* and the USS *Arizona* was behind. Trapped, and unable to move from its berth, during the attack the USS *Tennessee* was able to force the drifting oil fires from its upwind neighbor, the USS *Arizona,* by turning her screws at five knots and churning water to keep the fire back.[126] Days after the attack, the "forwardmost of *Tennessee*'s two concrete mooring quays" were partially demolished using dynamite until enough of the structure had been removed to get some water between the quay and the hull.[127] By December 14, a week after the attack, approximately sixty percent of the quay had been removed, and there were four to six feet of water between the side of the vessel and the quay—nearly enough to tow the *Tennessee* clear.[128]

After the attack Pearl Harbor survivor Oscar Tully recalled is experiences on the USS *Tennessee*,

> No further attack came and now we had to find a way to extricate our ship from between the *West Virginia* and the cement quays. Since the *West Virginia* could not be moved, we had to concentrate on the quays. The quays, often called keys, were constructed of cement, built like a large rectangle and filled with sand and supported by pilings. Between the quay and the ship's hull was a buffer supported by pilings. Between the quay and the ship's hull was a buffer supported with heavy springs to protect the ship's side from the cement. The *Tennessee* had been forced in so tightly against the quay that both the buffer and the springs had been ground into the cement. Our ship was tied to two of the quays, one forward and one aft.
>
> The first thing to be done was to remove all of the sand from within the cement box, then demolition crews came in and blew up the quays, thus releasing us from the pressure of the *West Virginia*. Within one week we were free to move from our berth. Since the *Oklahoma* had rolled away from the Maryland, she was the first battleship that was able to move from her berth. Once the quays were removed, we were able to pass through the space that the Maryland had vacated, then go to the dock and take on fuel

[125] Memo from Ensign D.A. Singleton to Commanding Officer, "Japanese air attack Sunday, Dec. 7, 1941 – report on," December 14, 1941. NAS Attack Reports, 1941, EV5 NAVFAC HI Reference Library Pearl Harbor, Hawai'i.
[126] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-123 – 129. This was confirmed through the USS "Felix August Grieshaber," Oral History WWII Valor in the Pacific National Monument archives.
[127] Douglas E. Campbell, Ph.D., *Volume I: U.S. US Navy, U.S. Marine Corps and U.S. Coast Guard Aircraft Lost During World War II – Listed by Ship* Attached, 2011, 228-229.
[128] Daniel Madsen, *Resurrection: Salvaging the Battle Fleet at Pearl Harbor,* (Naval Institute Press: Annapolis, Maryland) 2003, 57.

> and supplies. So, about one week after the attack we were ready to head for the open seas.[129]

There are many other survivor accounts from the USS *Tennessee* that describe the events associated with the attack and subsequent removal of the ship. Henry Herbert Evans noted, that as a result of explosion of the USS *Arizona* he fell in the water and ended up on Ford Island. Eventually he walked back to the *Tennessee* on a pipeline that went to the quay.[130] Also while on board the USS *Tennessee*, Alvin Hubert Christensen recalled,

> …at that time the *Arizona* was hit. It rose out of the water from the explosion and then settled into the water. Oil rose to the surface and started to burn. Since the drift of the water in the harbor was from the *Arizona* to the *Tennessee*, our fantail caught on fire from the numerous layers of paint. Our fantail got so hot that the officer's quarters were on fire.
>
> Since the ship was not seriously damaged, we were able to get away from the quay where we were tired up by blasting it apart, and had tugs pull us out into the stream. We tied up across the bay at a dock where we took on fuel and supplies. We were able to get under way about the 20th of December and we left Pearl Harbor. We headed westward for about two days and then headed northeasterly for Bremerton, Washington. Got to Bremerton on December 30, 1941.[131]

Also as a result of the attack, several buildings and structures were damaged on Ford Island, including the seaplane parking area and Hangar 6.[132] Damages were repaired and wreckage was cleared from the landing field and hangar area. Mildred Bundy, a stenographer in the administration building at Pearl Harbor recalled her impression of Ford Island after the attack:

> Aside from what I saw at the naval hospital, I did not witness the real damage at Pearl Harbor for a week or two. Then I had occasion to go to Ford Island which is in the midst of the harbor and where the ships were based. Despite all I had been hearing, I was shocked at what I saw. I felt as though I were looking at a scene of children's toy ships and planes where a ruthless giant had wantonly taken a hammer, smashing everything in sight. Of course I did not see the worst when people were being pulled from the harbor out of the burning oil. [133]

Subsequently, numerous other improvements were made on the island including, but were not limited to the construction of revetments, personnel shelters, a bombproof command center, and the installation of

[129] "Oscar Tully" Oral History, WWII Valor in the Pacific National Monument archives.
[130] "Henry Herbert Evans," Oral History WWII Valor in the Pacific National Monument archives.
[131] "Alvin Hubert Christensen," Oral History WWII Valor in the Pacific National Monument archives.
[132] *Building the US Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps, Volume* II (United States Government Printing Office, Washington D.C.) 1947, 136-138.
[133] Mildred V. Budny, "I Wish I Weren't Going to Have This Baby: A US Navy Wife Remembers Pearl Harbor," *Hawai'ian Journal of History*, vol. 36 (2002), 155.

splinter-proofing on one of the old hangars that was converted into an emergency barracks.[134] A new sixteen-inch water main was laid across the channel in an effort to repair damages that occurred during the attack. Also, forty-eight 25,000-gallon fuel tanks were built underground, and the existing surface tanks were splinter-proofed.[135] By December 1943, the majority of the initial construction had been completed with attention directed toward the extension and improvement of existing installations.[136] In 1944, a T-wharf was built to replace two former mooring quays (F5 S and F5 N), which was accessed by a new road, that was named Cowpens Street.[137]

Salvage Operations

In the aftermath of the Pearl Harbor attack, the US Navy undertook repair and salvage work and succeeded in raising all of sunken vessels with the exception of USS *Arizona* and USS *Utah*. In 1942, a new battleship berth was constructed on the remains of the USS *Arizona*. In the years following their construction, the steel and concrete quays were used as landings by the US Navy who raised and lowered the US flag that was flying from a pole affixed to the battleship's mainmast and also for access associated with memorial services.[138] Of the vessels raised, all were salvaged and returned to duty with the exception of USS *Oklahoma.*[139] During this period, workers raised the USS *California*, USS *West Virginia*, and refloated the USS *Oklahoma*. Salvage was also completed in association with the USS *Arizona*. During these operations the mooring quays served as moorings for salvage ships and barges and legs for ship to shore bridges and cross ship platforms (History 36-38).[140]

On May 5, 1942, the foremast of the USS *Arizona* was cut away and removed, while the mainmast was removed before August 23. Other features that were removed included the stern aircraft crane as well as the conning tower.[141] On December 1, 1942, the USS *Arizona* was decommissioned. By October 1943, the last salvage work had been completed on the USS *Arizona*. When the work was completed the ship had been stripped down to the main deck.[142] Also, during this period, cables and winches were installed on Ford Island in an effort to salvage the USS *Oklahoma* and USS *Utah*.

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[134] *Building the US Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps, Volume* II (United States Government Printing Office, Washington D.C.) 1947, 136-138.
[135] *Building the US Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps, Volume* II (United States Government Printing Office, Washington D.C.) 1947, 136-138.
[136] *Building the US Navy's Bases in World War II: History of the Bureau of Yards and Docks and the Civil Engineer Corps, Volume* II (United States Government Printing Office, Washington D.C.) 1947, 136-138.
[137] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-200.
[138] James P. Delgado, "USS *Arizona* (BB-39) Wreck," Draft National Register of Historic Places Registration Form, July 9, 1988. Nomination associated with the Maritime Heritage of the United States NHL Study—ShiNPSecks.
[139] James P. Delgado, "USS *Arizona* (BB-39) Wreck," Draft National Register of Historic Places Registration Form, July 9, 1988. Nomination associated with the Maritime Heritage of the United States NHL Study—ShiNPSecks.
[140] Draft National Register of Historic Places Amendment Form for the "Battleship Mooring Quays (Battleship Row), prepared by John F. De Virgilio, Pearl Harbor History Associates, May 10, 1993.
[141] Daniel Martinez, "Historical Record," in *Submerged Cultural Resources Study, USS Arizona Memorial and Pearl Harbor National Historic Landmark,* Daniel J. Lenihan, ed., Southwest Cultural Resources Center Professional Papers, Santa Fe Mexico, 1989, Second Edition 1990, 35.
[142] Daniel Martinez, "Historical Record," in *Submerged Cultural Resources Study, USS Arizona Memorial and Pearl Harbor National Historic Landmark,* Daniel J. Lenihan, ed., Southwest Cultural Resources Center Professional Papers, Santa Fe Mexico, 1989, Second Edition 1990, 35.

As early as May 1942, the US Navy indicated a desire to salvage the USS *Oklahoma*. In cooperation with the Pacific Bridge Company, the US Navy began making plans to salvage the 35,000-ton sunken battleship.[143] The CPO Bungalow Neighborhood would play an important role in the continued salvage and recovery efforts on the USS *Oklahoma*, which involved an elaborate system of winches and cables that were set up adjacent to the houses.[144] Additionally, existing mooring quays also played a significant role in post attack salvage. Winching activities commenced on March 8, 1943.[145] In all, twenty-one electric winches were anchored in concrete foundations on Ford Island, which were operated in unison.[146] At this time it was noted that, "In order to install these winches on Ford Island, two or three of the enlisted men's quarters will have to be temporarily moved clear of their present sites to allow sufficient space for the installation of concrete deadmen as winch anchorages."[147]

A salvage diary dating from March 1, 1942 through 15 November 15, 1943 summarized salvage operations associated with the USS *Oklahoma* and the USS *Arizona* along the shore of Ford Island. As early as December 23, 1942, the diary reported reduction of the height of mooring quay F5 S by the Pacific Bridge Company. By January 6, 1943 plans were also underway to reduce the height of mooring quay F5 N. The work was completed on mooring quay F5 S by January 13, 1943 and by January 24, 1943 on F5 N. Other activities included the construction of wood platforms over quays F5 S and F5 N and the installation of supports for flood lights on Ford Island. During salvage operations, scrap metal and underwater wreckage from the sunken battleships was temporarily placed the mooring quays before it was picked up for disposal. Amongst the many other activities, temporary wooden quays were constructed near the wreckage of the USS *Arizona* to support the salvage operations, while a temporary floating walkway was constructed from F5 S to the USS *Oklahoma*. [148]

After extensive salvage operations, some eighteen months later, in November 1943, the USS *Oklahoma* had been righted. At the time of the attack, torpedoes hit the battleship, which opened a 130-foot gash in the port side, causing her to list and finally roll over until her masts struck the harbor bottom.[149] In an effort to remove men trapped inside the capsized hull, openings were hastily cut in the exposed bottom. Later divers patched the damage to the ship and was able to right it and float it into a drydock. The battleship was eventually decommissioned and sold for scrap. The buyers negotiated a contract with the Seattle-based Puget Sound Tug & Barge Co. for the ship to be delivered to San Francisco. While being towed the ship sunk approximately 540 miles from O'ahu on May 17, 1947.[150]

Modifications to the CPO Bungalow Neighborhood

Following the attack, a Japanese invasion was seen as an imminent threat. As a result, the CPO bungalows were painted to camouflage the buildings, trenches were dug, and above ground storage tank

[143] Vice Admiral Homer N. Wallin, *Pearl Harbor: Why, How, Fleet Salvage and Final* Appraisal, Washington D.C.: United States Government Printing Office, Naval History Division, 1968, 357.
[144] *Historic Context Study of Historic Military Family Housing in* Hawai'i, Mason Architects, Inc., August 2003, 5-85.
[145] Dee Ruzicka, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility 68)," Historic American Buildings Survey, HABS No. HI-##, Mason Architects, Inc., Honolulu, Hawai'i, November 2010, 5.
[146] Vice Admiral Homer N. Wallin, *Pearl Harbor: Why, How, Fleet Salvage and Final* Appraisal, Washington D.C.: United States Government Printing Office, Naval History Division, 1968, 254.
[147] Vice Admiral Homer N. Wallin, *Pearl Harbor: Why, How, Fleet Salvage and Final* Appraisal, Washington D.C.: United States Government Printing Office, Naval History Division, 1968, 357.
[148] "Salvage Diary from 1 March – 1942 through 15 November, 1943" Industrial Department War Diary Collection, National Archives and Records Administration (NARA), San Bruno, California and *USS Arizona* Memorial, National Park Service.
[149] Grahame F. Shrader, "The *Oklahoma*'s Last Voyage," *Pearl Harbor-Gram*, July 1972.
[150] Grahame F. Shrader, "The *Oklahoma*'s Last Voyage," *Pearl Harbor-Gram*, July 1972.

63 "was cut out of the gas system and filled with water."[151] Circa 1942, CPO bungalow 27 and 67 were demolished. The buildings were removed in August 1942 to facilitate recovery efforts associated with salvage of the USS *Oklahoma* as mentioned above. Prior to the demolition of CPO bungalow 67, the building served as an annex to the adjacent school (building 73) for a least one year. Between 1940 and 1942, building 202 (galley/mess hall) was built in the central lawn area associated with the CPO bungalows.[152] Circa 1943 and 1945, the F5 berth was converted from mooring quays to a pier and gasoline receiving. This action resulted in the need to relocate CPO bungalows 69 and 90. Also, circa 1943-1945, CPO bungalow 90 (formerly facility 70) was moved from its original location to the site of former CPO bungalow 67. During the same period, CPO bungalow 69 was moved from its original location to the site of former CPO bungalow 27.[153] Also, CPO bungalow 30 was relocated approximately 1,200 feet northeast to its present location at the northeast end of Langley Avenue in the North End or Knob Hill (also spelled Nob Hill) neighborhood of Ford Island circa 1943-1945. After World War II, operations at Naval Air Station (NAS) Pearl Harbor declined, and many of the facilities were vacant or mothballed; however, the CPO bungalows continued to function as residential housing (History 39).

[151] "Naval Command History," January 1, 1945, 16-17. EV5 NAVFAC HI Reference Library, Pearl Harbor, Hawai'i.
[152] *Final Environmental Condition of Property, World War II Valor in the Pacific National Monument, Chief Petty Officer Bungalows and U.S.S. Utah Memorial, Ford Island, Pearl Harbor Naval Complex, O'ahu, Hawai'i,"* Department of the US Navy, Naval Facilities Engineering Command, Pearl Harbor, Hawai'i, August 2009, 5-5
[153] *Historic Context Study of Historic Military Family Housing in* Hawai'i, Mason Architects, Inc., August 2003, 5-85.

SOUVENIR EDITION

The Honolulu Advertiser

Hawaii's Territorial Newspaper

SPECIAL EXTRA

HONOLULU, HAWAII, U.S.A. SUNDAY, DECEMBER 7, 1941

JAPANESE BOMB PEARL HARBOR!

Hickam, Wheeler, Kaneohe Hit

MORE THAN 2,000 DIE IN SNEAK AIR ATTACK

Scores of low-flying Japanese planes swooped down on Oahu from the north 20 minutes after dawn today in a surprise attack, raining bombs and terror on Pearl Harbor and other military installations.

When it was over, the huge U.S. Pacific Fleet lay crippled at anchor and military air fields were heavily damaged.

The air raid by planes with the Rising Sun emblem of Japan clearly visible on their wingtips left more than 2,000 American soldiers, sailors and Marines dead or missing and more than 1,000 grievously injured.

The attackers poured their fury of bombs and torpedoes primarily on military facilities.

In Honolulu, bomb or artillery fragments rained down on civilian populations, leveling two housing areas more than two miles apart, and blasting up lots of houses far from the military bases. A bomb or errant shell fell near Iolani Palace, crashing a cruiser on the Palace grounds.

Dozens of civilians are believed dead due to enemy action, explosions, fires and fragments in the wake of the attack.

President Roosevelt announced the attack on the nation, and is expected to ask for a declaration of war on Japan tomorrow in an address to a joint session of Congress. Earlier today, the Territory of Hawaii was put under martial law.

Tonight, a tense, blacked-out Hawaii braces for further attack or even an invasion of the islands. The whereabouts of the Japanese fleet that is believed to have launched this morning's raids remain unknown, officials say.

Battleships ravaged

The Japanese warplanes spent their greatest fury on the big ships berthed around Ford Island.

A huge armor-piercing bomb blew up the USS Arizona, enveloping its bow in a ball of flames. The battleship sank in less than nine minutes, entombing nearly 1,000 sailors and Marines in a watery grave. Another 200 were lost on deck.

Torpedoes ripped through the USS Oklahoma, rolling her over and imprisoning more men within.

The battleships California and West Virginia, wrapped in flames, sank at their moorings. The target ship Utah capsized with many of its crewmen still aboard.

Harbor horror chamber

Within minutes, the ferry-filled harbor was turned into a watery horror chamber of broken and burned bodies.

Most of the warring planes of attack and many jumped from their ships and swam to boats or nearby shores to shout death.

Navy boat crews searched the waters around the burning ships and made countless trips (See Back Page, Col.1)

ROUTE OF ATTACKING FORCES

FLASH BULLETIN

Japan declares a state of war

United Press reported that Tokyo today has declared that a state of war exists between Japan and British and United States Forces in the Pacific. Japanese forces also attacked in Malaya, the Philippines, Hong Kong, Midway, Wake and Guam, according to news service reports.

Five U.S. Navy planes shot down

HONOLULU — Anti-aircraft batteries opened fire on a squadron of six U.S. Navy planes approaching Ford Island just before 9 a.m., shooting down five of them. At least three of the six Navy pilots are dead. The planes, launched off the carrier USS Enterprise, were landing after searching in vain for the Japanese fleet.

Stimson orders Army into uniform

WASHINGTON — Secretary of War Henry L. Stimson tonight ordered the entire U.S. Army into uniform — 1,600,000 men, including thousands of officers and men on duty in administrative posts who have been allowed civilian clothes.

'When I Came to, the Ship Was a Mass of Flames...'

Eyewitness Accounts of Brutal Bombing From Around Oahu

Officers were eating breakfast aboard the USS Arizona when a short signal on the ship's air raid alarm sounded.

"As I was running forward on the starboard side of the quarterdeck . . . I was apparently knocked out by the blast of a bomb," said Lt. Cmdr. S.G. Fuqua, the senior surviving officer.

The bomb was one of eight that hit the 29-year-old battleship.

"When I came to, and got up off the deck, the ship was a mass of flames amidships on the boat deck," he said.

Fuqua said he tried to extinguish flames in the gun turrets, but found the water mains had no water.

Severely wounded men were taken from the battered decks and sent to hospitals before Fuqua ordered all hands to abandon ship at 9 a.m.

Harrowing injuries

Wounded victims poured into the Army's Tripler General Hospital. Corridors were soon littered with the wounded and dying, many left on the floor.

The injuries came from shrapnel wounds suffered as bombs fell, direct hits from machine-gun strafing by enemy planes, and out-of-control aircraft, fire. Chunks of metal were lodged in necks, in chests, through legs.

Because of a severe shortage of bed sheets, bandages, anesthesia and other medical supplies like amputating saws, surgeons made do with what they could for the first part of the day. They lifted stretchers, their relatives when orderlies weren't available, held broken bones together on the way to surgery tables there were no splints, and, in one instance, held open a vessel being catheterized with a finger.

Abandon ship

Aboard the USS Utah, the flag was being raised as the first planes were spotted.

"Immediately thereafter, the air was filled with planes . . . clearly distinguished with Rising Sun insignia on the fuselage and red wing tips. . . flying low . . . and dropping aerial torpedoes and bombs," said Sid Smith, Utah vessel commander.

Smith said the battleship was hit underwater and began to list. After a second underwater hit, he realized the ship would capsize and ordered all hands to abandon ship.

Fire all too real

Francis Ordonhan was playing football earlier for Leahi's (See Back Page, Col 1.)

Blood Donors Are Urgently Needed

An urgent call for blood to be used in transfusions has been made by Queen's Hospital.

Any persons willing to donate blood is asked to make his way to the hospital and go to the fourth floor.

Martial Law Is Declared for Territory

Civilians Arrested

Faced with the prospect of invasion and sabotage, Gov. Joseph B. Poindexter today declared the Territory of Hawaii to be under martial law.

Censorship is in place, a blackout and curfew have been imposed, and all citizens are commanded to obey orders of military officials.

Scores suspected enemy agents or sympathizers have already been arrested and detained under martial law rules.

Lt. Gen. Walter C. Short, commanding general of the Hawaiian Department, urged Poindexter to declare the state of emergency during a meeting in the governor's office at Iolani Palace shortly after noon.

The governor, after a radio telephone consultation with President Roosevelt, agreed.

Short became military gov- (See Back Page, Col. 6)

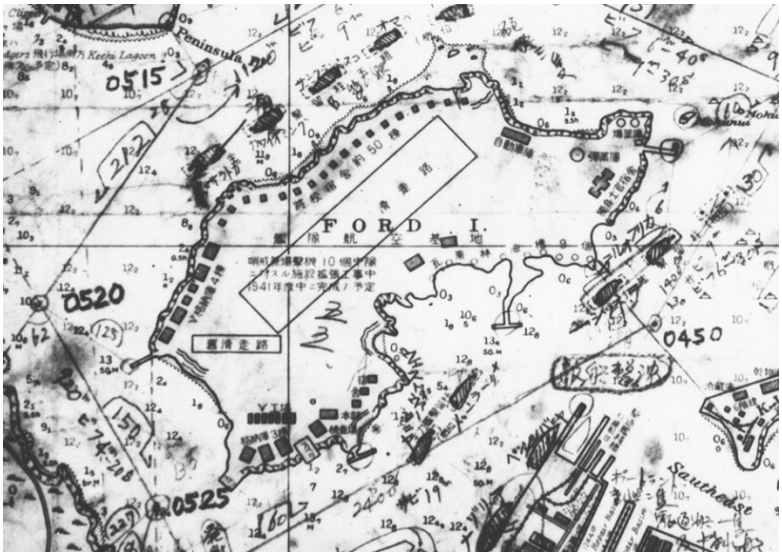
Honolulu Advertiser 12/7/41, pg. 1,2,11,12
No. 121 1-e

History 26: Image showing "Japanese Bomb Pearl Harbor" headline in a souvenir edition special extra of the *Honolulu Advertiser*, 1941 (University of Hawai'i at Manoa, HI News).

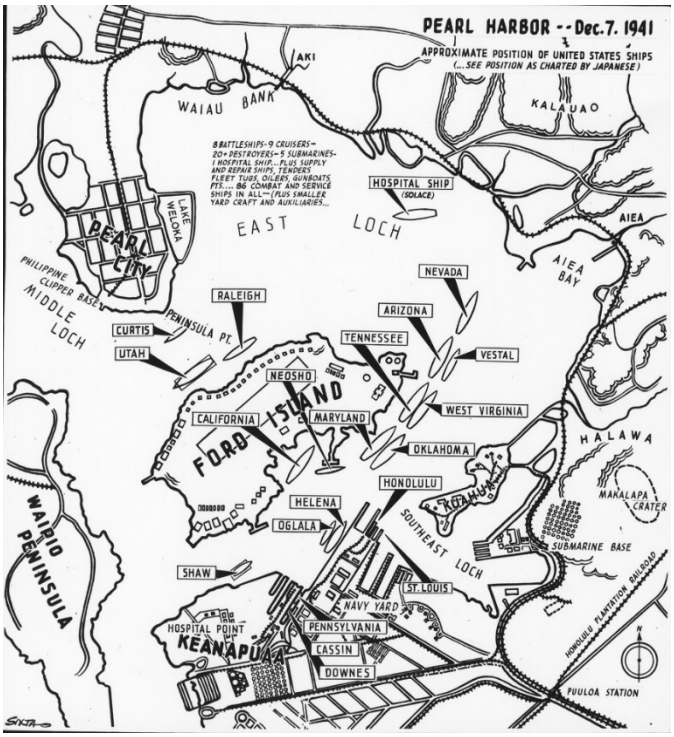
History 27: Photograph looking toward the USS *Arizona* shortly after the Japanese attack on Pearl Harbor, December 7, 1941. Note in the foreground is the USS *Calfornia* and mooring quay F2 (Naval History and Heritage Command, 80-G-32640).

History 28: Photograph of ships along Battleship Row following the Japanese attack on Pearl Harbor, December 10, 1941 (NARA, RG 80, 12009105, 80-G-387565).

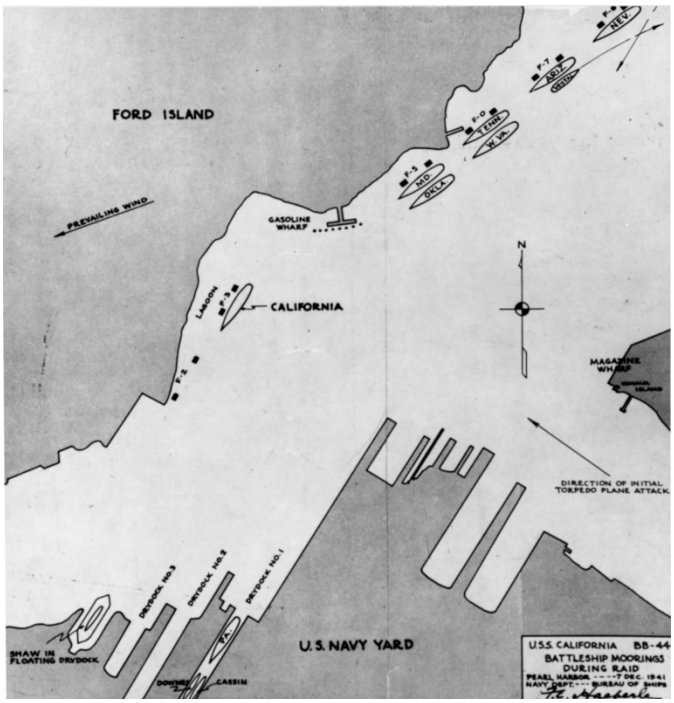
History 29: Photograph of the remains of the USS *Arizona* in Pearl Harbor. The photo was taken on December 10, 1941, three days after the attack. Note fire damage to the mooring quays situated on the left side of the photograph (Naval Historical Foundation, Forrestral Collection, 195. US Naval History and Heritage Command Photograph, NH84004).



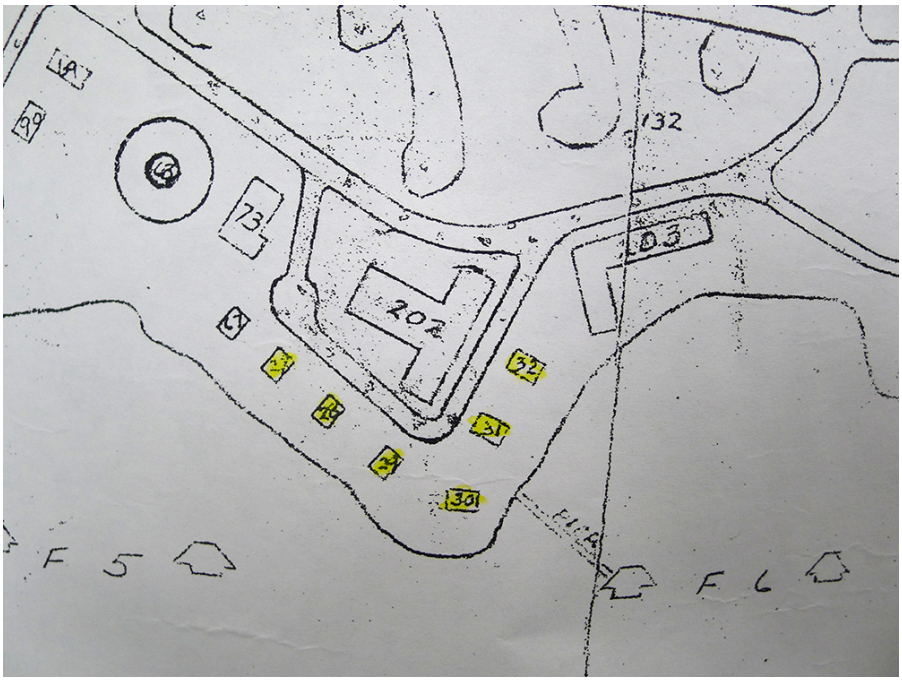
History 30: Portion of a photograph of a Japanese Chart showing Ford Island that was captured from Japanese Submarine, (NARA, RG 80, 12009111, 80-G-413507).



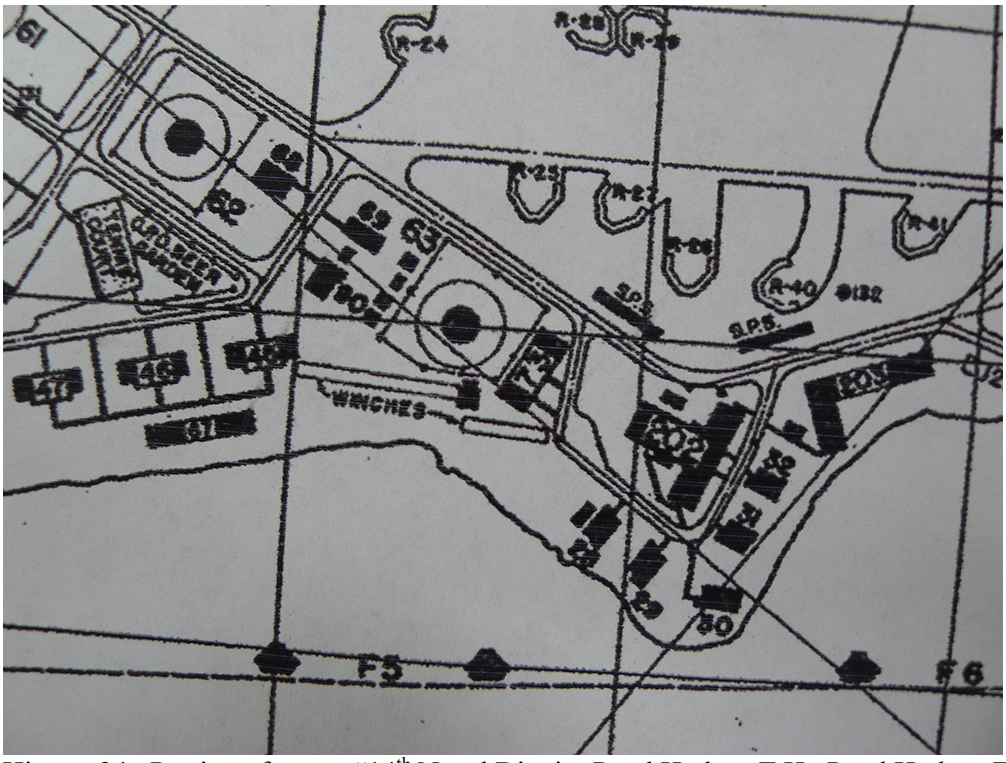
History 31: Photograph of Pearl Harbor showing where the battleships were moored on Battleship Row at the time of the Japanese attack (NARA, RG 80, 12009088, 80-G-47105).



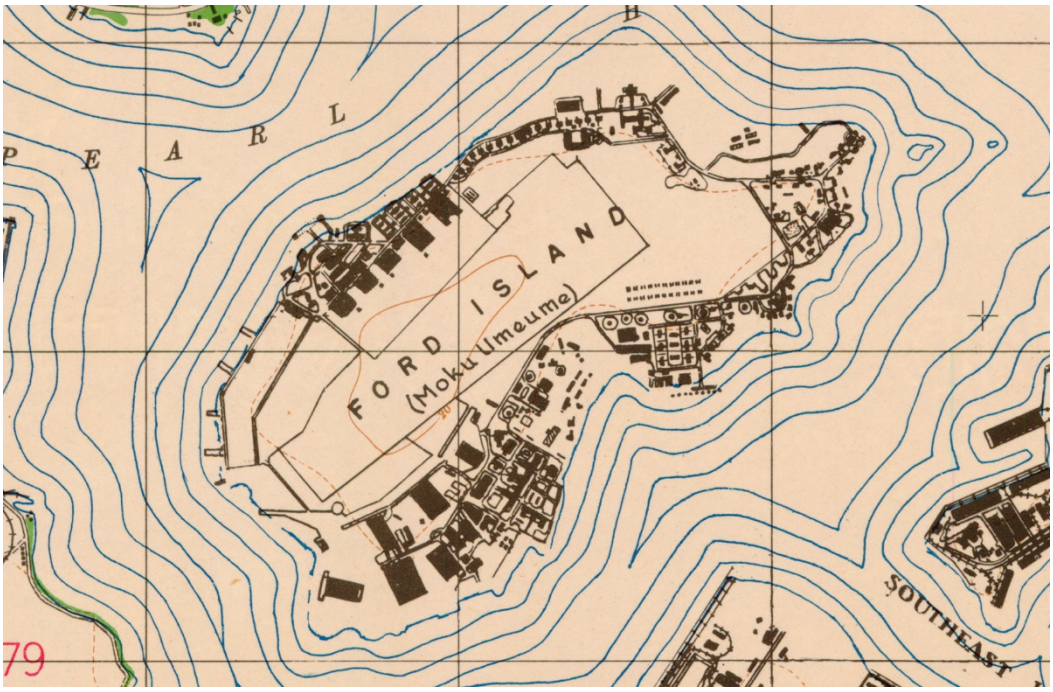
History 32: Map showing battleship moorings and positions in Pearl Harbor and on Battleship Row on Ford Island at the the time of the Japanse attack. Note map also show direction of the prevailing winds as well as the direction of the initial torpedo plane attack (Naval History and Heritage Command, NH 83108).



History 33: Portion of a map "Naval Air Station, Pearl Harbor, T.H., Ford Island Conditions as of June 1st, 1942," showing the CPO bungalows (Pearl Harbor National Memorial archives).



History 34: Portion of a map "14th Naval District-Pearl Harbor, T.H., Pearl Harbor, T.H, showing conditions on June 30, 1943," with the CPO bungalows at right (Pearl Harbor National Memorial archives).

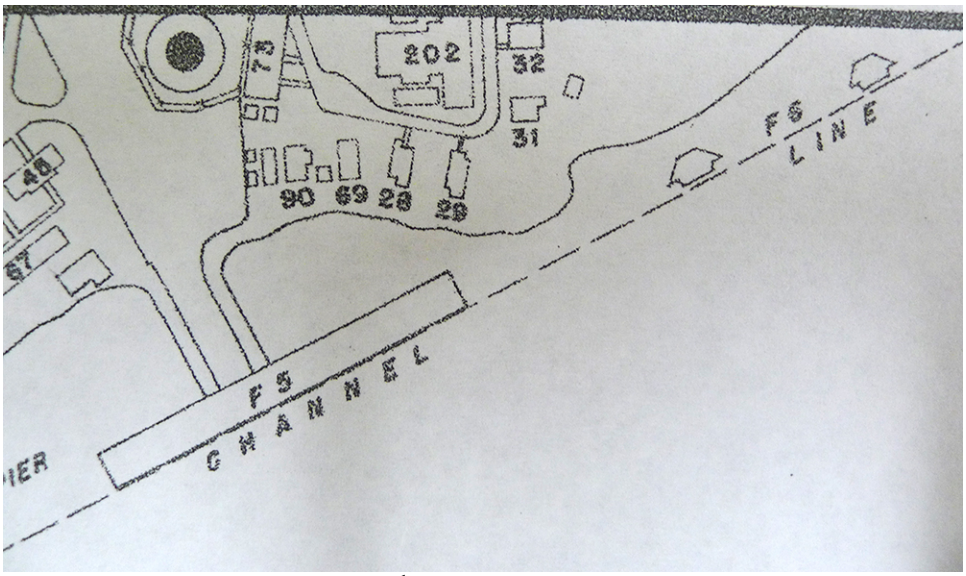


History 35: A portion of a USGS map showing Ford Island, 1943 (United States Geological Survey (USGS).

History 36: Photograph of US Navy righting operations associated with the USS *Oklahoma*, March 1943. Note proximity of winches and anchors to CPO bungalow 28 (NARA 80-G0410533).

History 37: Salvage operations assoicated with the USS *Oklahoma* on Ford Island, April 20, 1943. Note CPO bungalows in middleground at right (Naval Hisotry and Heritage Command, S-082-D(5(.01)).

History 38: Aerial photograph of the USS *Oklahoma* in 10 degree position during righting operations, June 18, 1943. Note galley and mess hall building (202) at left and school building (73) at right (14th Naval District Command Photos, Pearl Harbor National Memorial archives, P.H. 119145).



History 39: Portion of a map "14th Naval District US Naval Base, Pearl Harbor, T.H., Naval Shipyard, Marine Res. Submarine Base & Naval Supply Depot, Showing Conditions as of June 30, 1945 and Revised to Nov. 30, 1945," with the CPO bungalows at the center (Pearl Harbor National Memorial archives, printed from the National Archives 'Ī'Ī CD, scanned from RG71, file # 1400-3-140).

Early Cold War Development, 1946-1965:

After World War II ended, the pace of work at Naval Air Station Ford Island and at Pearl Harbor slowed down as the workload declined. At Pearl Harbor, activities were focused on the demobilization of troops, material, and equipment. Generally, the residential areas on Ford Island experienced relatively little change after World War II ended. Notably, the Ford Island neighborhoods remained desirable housing areas, despite dependence on ferry service for access to and from the island until the bridge was completed in the late 1990s (History 40).[154]

Despite the general decline of operations, between 1946 and 1949, several buildings on Ford Island were reused to test and refurbish aircraft turbine engines that were used during the war.[155] During this period, minor modifications were made to the CPO bungalows, which were identified on a drawing entitled "Bldgs. 31 & 32 Alterations and Repairs" (History 41). Among other alterations, the drawings showed an triangular addition to existing walk on side of the bungalows near the rear entrance. Today, the sidewalk additions associated with CPO bungalows 31 and 32 are still extant.

Memorialization Activities

In the late 1940s, there was a Pearl Harbor-wide effort to memorialize the December 7, 1941 attack.

[154] *Historic Context Study of Historic Military Family Housing in* Hawai'i, Mason Architects, Inc., August 2003, 5-68.
[155] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-245 – 2-246.

At this time, several ideas were proposed for the development of a memorial to honor those who were involved in the Pacific War and as well as the Pearl Harbor attack.[156] A total of fourteen memorial markers were installed in 1947—eight of which were located on Ford Island. Today, seven of the markers remain.[157] The art deco style marker for the USS *West Virginia* and USS *Tennessee* was designed by the Public Works Center, 14th Naval District and was installed in 1947.[158] Near the memorial marker, a pair of double bit cleat bollards were set into a poured concrete base. Their date of construction remains unknown; however, they were likely constructed in association with the mooring quays along Battleship Row during the period of significance.[159]

Memorialization activities continued at Pearl Harbor and Ford Island during subsequent years. On May 17, 1949, the Hawai'i Legislature established Pacific War Memorial Commission (PWMC).[160] The agency was authorized to plan and raise funds for the erection of war memorials in the territory.[161] In March 1950, Admiral Arthur W. Radford, the Commander in Chief Pacific Fleet, initiated the practice of displaying the flag over the sunken remains of USS *Arizona*.[162] At this time, a flagpole was installed on the protruding base of the hull's rear mast. Later that year, a wooden platform was built over the amidships area. On the ninth anniversary of the December 7, 1941 attack, a commemorative metal plaque was installed at the base of the flagpole and another welded to the deck of the wreck.[163] By August 1956, flag raising ceremonies on board of the deck were halted due to the weakening hull of the ship from rust.[164]

Ongoing construction and development activities were undertaken within the boundaries of the site during the late 1940s and 1950s. Circa 1947-1948, the row of aboveground storage tanks along Lexington Boulevard were removed.[165] (Storage tank 63 was located within the boundaries of the CPO bungalows site.) Before 1952, facility S304 (transformer substation) was constructed in proximity to the CPO bungalows.[166] Also, by 1953 fill material had been added to the north side of the CPO bungalows and was labeled "Public Works Storage Area" on maps (History 42 and 43). During this period, sometime between 1950 and 1953, the CPO bungalows (including CPO bungalow 68) were re-designated as

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156 Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 5-6.
157 *Evaluation of Historic Structures: CPO Bungalows, USS Utah Memorial, USS Arizona Memorial, and Mooring* Quays, *WWII Valor in the Pacific National Monument, Pearl Harbor, O'ahu,* Mason Architects, June 2011, A-16.
158 National Park Service. *Rehabilitation of Chief Petty Officers Bungalows on Ford Island Environmental Assessment,* WWII Valor in the Pacific National Monument, Pearl Harbor, O'ahu, Hawai'i, March 2012, 32.
159 National Park Service. *Rehabilitation of Chief Petty Officers Bungalows on Ford Island Environmental Assessment,* WWII Valor in the Pacific National Monument, Pearl Harbor, O'ahu, Hawai'i, March 2012, 32.
160 Captain G.P. Peed, *Arizona Memorial Shoreside Facility Study,* "Highlights Pacific War Memorial Commission, U.S.S. *Arizona* Memorial, War Memorial of the Pacific, Pearl Harbor, Hawai'i," United States Navy, 1973, Appendix E-6.
161 Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 7.
162 Historic Context Pearl Harbor Naval Complex, Chapter 3: From the Bayonet Constitution to the Eve of Revolution, 10-100. (Jeff Dodge files, Hart NR Documents)
163Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 9.
164 Captain G.P. Peed, *Arizona Memorial Shoreside Facility Study,* "Highlights Pacific War Memorial Commission, U.S.S. *Arizona* Memorial, War Memorial of the Pacific, Pearl Harbor, Hawai'i," United States Navy, 1973, Appendix E-6.
165 *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-277.
166 *Final Environmental Condition of Property, World War II Valor in the Pacific National Monument, Chief Petty Officer Bungalows and U.S.S. Utah Memorial, Ford Island, Pearl Harbor Naval Complex, O'ahu, Hawai'i,"* Department of the US Navy, Naval Facilities Engineering Command, Pearl Harbor, Hawai'i, August 2009, 5-5

enlisted men's quarters.[167]Additionally, by 1953 CPO bungalow 30, had been relocated to its present site on Langley Avenue. Notably, the building was used in the 1965 John Wayne film *In Harm's Way*.[168]

By 1950, most air activities on Ford Island were relocated to Naval Air Station Barbers Point; however; operations on Ford Island increased due to US involvement with the Korean War.[169] At this time, many of the military activities on Ford Island were associated with intelligence and specialized training that required physical separation or isolation from O'ahu. Also, around 1950, two small memorials were erected on and near the remains of the USS *Utah*. The memorials included a plaque mounted on the wharf north of the ship's remains, and another plaque on the wreck's superstructure deck. The first plaque read: "Near this spot, at Berth Fox 11, on the morning of 7 December 1941, the USS *Utah* was struck on the portside with what is believed to have been three aerial torpedoes and was sunk. She was subsequently rolled over to clear the channel but was left on the bottom." The second plaque read: "In Memory – Officers and Men – USS *Utah* – Lost in Action – 7 December 1941.[170]

Cold War activities helped shaped the development and continued use of Ford Island by the US Navy after World War II. In May 1955, the Fleet Intelligence Center, Pacific (FICPAC) was established on Ford Island and continued operations onsite until 1974.[171] During this period, military construction funding was severely limited after the end of World War II and through the 1950s.[172] These funding constraints resulted in the utilization of existing buildings on Ford Island that had been constructed during World War II or earlier (History 45).[173]

USS Arizona Memorial

Memorialization of Pearl Harbor and Ford Island gained momentum in 1957 when John Burns introduced House Report 5809, which would provide the "necessary authority for the US Navy to build the memorial, to accept funds from the PWMC, and to give the commission incidental assistance during the fundraising drive."[174] On August 13, 1957, House Report 84-1125 authorized appropriation for use toward construction of USS *Arizona* Memorial at Pearl Harbor. In January 1958, Senate Report 85-1229

[167] Dee Ruzicka, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility 68)," Historic American Buildings Survey, HABS No. HI-##, Mason Architects, Inc., Honolulu, Hawai'i, November 2010, 6.
[168] Polly Cosson and Ann Yoklavich, "U.S. Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)," Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, 7.
[169] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-245 – 2-246.
[170] "USS *Utah* Memorial at Pearl Harbor," Naval History and Heritage Command website <https://www.history.navy.mil/our-collections/photography/wars-and-events/world-war-ii/pearl-harbor-raid/remembrance-of--a-date-which-will-live-in-infamy-/uss-*Utah*-memorial-at-pearl-harbor.html> accessed May 4, 2017.
[171] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-245 – 2-246.
[172] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-280.
[173] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-279.
[174] Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 16.

authorized construction of USS *Arizona* Memorial at Pearl Harbor.[175] A few months later, on March 15, 1958, the measure was signed into law (Public Law 85-344) (History 44).[176]

Soon after, in August 1958, Alfred Preis of the firm Johnson & Perkins, Preis Associates was selected to design the USS *Arizona* Memorial. The partnership was awarded the commission in August 1959. Born and raised in Vienna, Austria, Alfred Preis fled his homeland in 1939 in the face of the German annexation of Austria. He immigrated to the United States and eventually settled in Honolulu, Hawai'i. After the Pearl Harbor attack he and his wife were detained for three months at the Sand Island detention facility. Less than ten years after the attack, Preis had development a preliminary design for a memorial at the USS *Arizona.* Conceived as early as 1950, the design included construction of a rock wall on the shore of Ford Island and a floating frame on the hull of the USS *Arizona*.[177] According to historian Michael Slackman, Preis' first design proposal was rejected and so "Preis offered a second concept calling for a bridge which, in accordance with the US Navy's original specification, spanned the sunken battleship. That idea received a more positive reaction. It envisioned a catenary span over the *Arizona* and, in contrast to the first proposal, created an open and soaring effect."[178] Ultimately, the design, which was almost a flat, parabolic shape was intended to represent "American optimism prior to the war, its decline after December 7, and its rise through the war years," while the memorial's twenty-openings symbolized a twenty-one-gun salute (History 46 and 47). [179]

In October 1960, the Walker-Moody Construction Company won the contract to build the USS *Arizona* Memorial.[180] In 1961, after several years of fundraising, Congressional proposals to authorize the use of federal funds for the construction of the USS *Arizona* Memorial were reintroduced by Representative Daniel Inouye. The proposal cleared both the House and Senate and was signed into law (Public Law 87-201) on September 6, 1961.[181]

Construction of the USS *Arizona* Memorial began in 1961 with the aid of both private donations as well as federal funds (History 48).[182] In order to construct the memorial over the remains of the USS *Arizona*, a section of the boat deck, which was comprised of the overhead of a galley and a few bulkheads was cut away.[183] Initially this had been the area that supported the flag and platform that was installed in the 1950s. Eventually, the portion of the USS *Arizona* that was removed was sent to Waipio Point where it remains today.[184] The USS *Arizona* Memorial was dedicated on Memorial Day 1962 to pay tribute to the

[175] "Summary," USS *Arizona* Memorial, Hawai'i, LANDS files.
[176] Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 21.
[177] Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 43.
[178] Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 44.
[179] Historic Context Pearl Harbor Naval Complex, Chapter 3: From the Bayonet Constitution to the Eve of Revolution, 10-100. (Jeff Dodge files, Hart NR Documents)
[180] Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 45.
[181]Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 31.
[182] National Park Service, *Environmental Assessment for the Project to Replace the Failing Visitor Center at the USS Arizona* Memorial, U.S. Department of the Interior, February 2007, 2.
[183] National Park Service, *Resources Management Plan: USS Arizona* Memorial, Honolulu, Hawai'i, February 1996, 32.
[184] Daniel Martinez, "Historical Record," in *Submerged Cultural Resources Study, USS Arizona Memorial and Pearl Harbor National Historic Landmark,* Daniel J. Lenihan, ed., Southwest Cultural Resources Center Professional Papers, Santa Fe Mexico, 1989, Second Edition 1990, 35.

1,177 crewmen who lost their lives with the sinking ship (History 49). The 184-foot long structure was slightly peaked at each end with a sag in the enter. Bridges "float" over the sunken hull of the ship without touching the historic wreckage. The memorial structure, which spans the mid-portion of the sunken battleship is composed of three main sections, which include the entry and assembly rooms; a central area designated for ceremonies and general observation; and the shrine room, where the names of servicemen killed on the USS *Arizona* are engraved on marble slabs on the wall.[185]

As part of the 1961 design for the USS *Arizona* Memorial, a planting plan was prepared for mooring quays F7 S and F7 N. The design included the following recommendations for plant materials and planting/spacing:

F7 S

- 52 Scaevola Frutescens (Beach Naupaka) 1 Gallon Can Stock at 3'– 0" Apart
- 3 Messerschmida Argentea (Tree Heliotrope) 5 Gallon Can Stock at 12'-0" Apart
- 23 Bougainvillea Spectablis Variety "Crimson Lake" 1 Gall Stock Can with 2'-0" Runners, Plant 5'-0" Apart

F7 N

- 48 Scaevola Frutescens (Beach Naupaka) 1 Gallon Can Stock at 3'– 0" Apart
- 3 Messerschmida Argentea (Tree Heliotrope) 5 Gallon Can Stock at 12'-0" Apart
- 25 Bougainvillea Spectablis Variety "Crimson Lake" 1 Gall Stock Can with 2'-0" Runners, Plant 5'-0" Apart[186]

It is unclear whether or not the planting plan was implemented. A historic aerial photograph from 1963 reveals a thick cover of vegetation within the central portion of mooring quay F7 N; however, it is possible that the vegetation had not been intentionally planted, but rather, had naturalized within the interior of the mooring quay. It should be noted that the 1963 photograph shows no other improvements to the mooring quay, such as the addition of white paint to the exterior of the structure. Additional research should be conducted to confirm if the planting plan was implemented, and if so, when it was abandonded.

Continued Military Operations

Beginning in 1962, facilities on Ford Island were associated with NASA's man-in-space program. Also in 1962, NAS Ford Island was placed on maintenance status and operations were moved to NAS Barbers Point.[187] The change occurred in part because of a restructuring of naval air stations in Hawai'i that had occurred in 1949 as well as due to a technological shift in aircraft design, which meant that planes could not land on the short runway at Ford Island.[188] By June 1962, four of the 1937 CPO four-plex units located at the northern end of Ford Island had been removed.[189] These units were not associated with the CPO bungalows site, but rather in the North End neighborhood of Ford Island.

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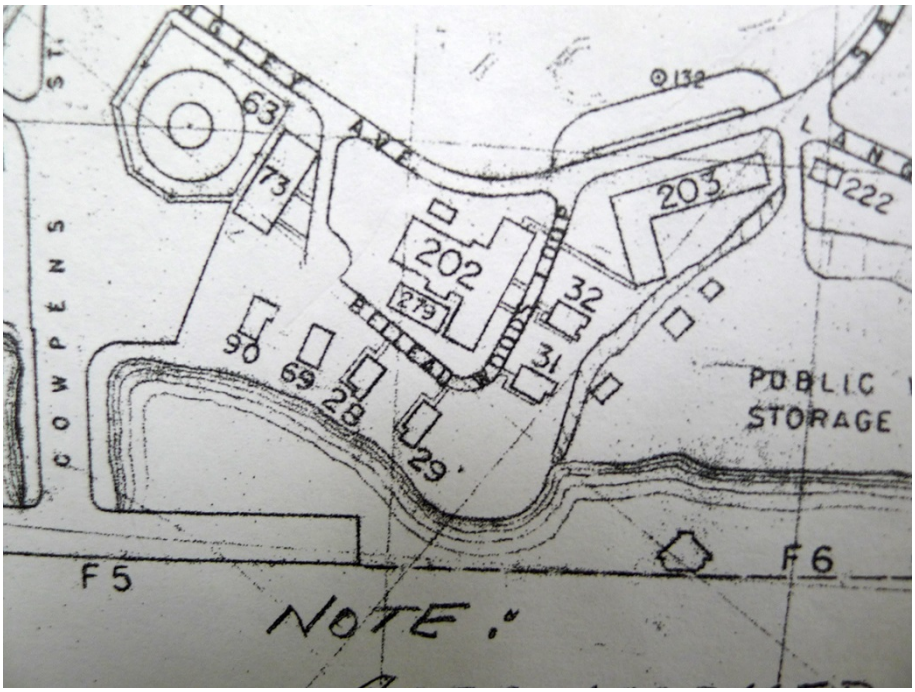
[185] *Exhibition Artifact Maintenance Manual, World War II Valor in the Pacific National Monument.* U.S. Department of the Interior, 2010, 5.
[186] Portion of a drawing showing the U.S.S. *Arizona* Memorial planting plan for mooring quays F7S and F7N, 1961 (National Park Service).
[187] *Draft Final Historic Context Report: Pearl Harbor National Historic Landmark, Pearl Harbor Naval Complex, Vol. 1*, The Louis Berger Group, Inc., Albany, New York, n.d., 10-96.
[188] *Draft Final Historic Context Report: Pearl Harbor National Historic Landmark, Pearl Harbor Naval Complex, Vol. 1*, The Louis Berger Group, Inc., Albany, New York, n.d., 10-96.
[189] *Draft Final Historic Context Report: Pearl Harbor National Historic Landmark, Pearl Harbor Naval Complex, Vol. 1*, The Louis Berger Group, Inc., Albany, New York, n.d., 10-89.

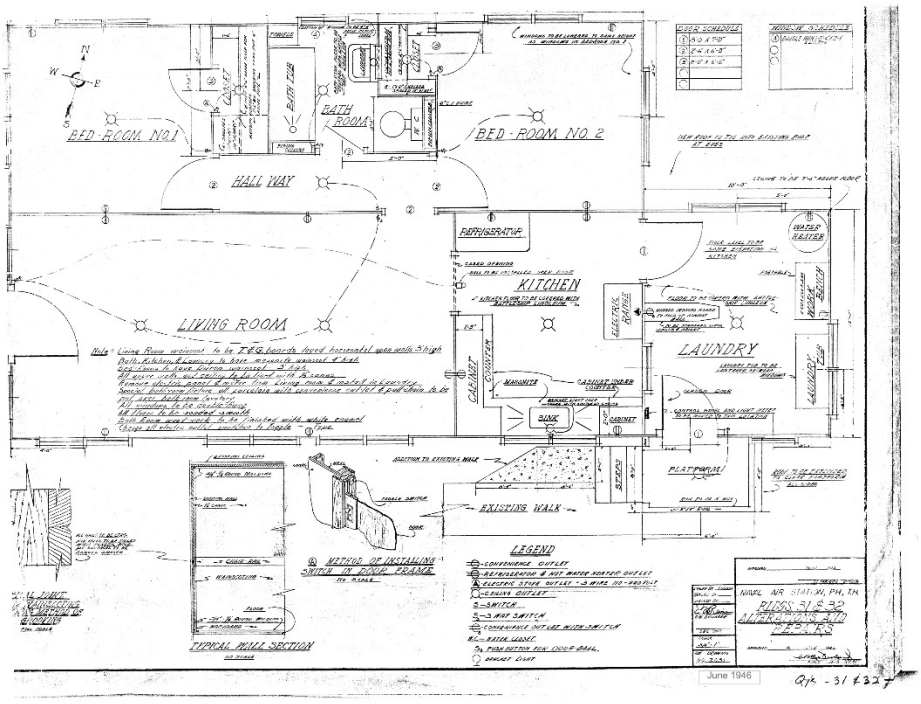
In 1963, Ford Island was selected as the location for a Polaris submarine training facility and several buildings were remodeled to accommodate the Fleet Ballistic Missile (FBM) Submarine Training Center, which remained active on Ford Island through the duration of the Cold War.[190] While there was no new construction or development associated with these activities located within the site boundaries, the CPO bungalows continued to be utilized during this period, which inevitably supported Cold War-related mission operations.

Subsequent memorialization activities associated with the USS *Utah* were initiated in 1963 as a result of the efforts of Senator Frank E. Moss (D., Utah). Moss introduced legislation to have a flag erected over the hull of the USS *Utah* at Pearl Harbor but was unsuccessful for several years.[191] The following year, the historical significance of the US Naval Base Pearl Harbor was confirmed when it was designated a National Historic Landmark (NHL) on January 29, 1964.

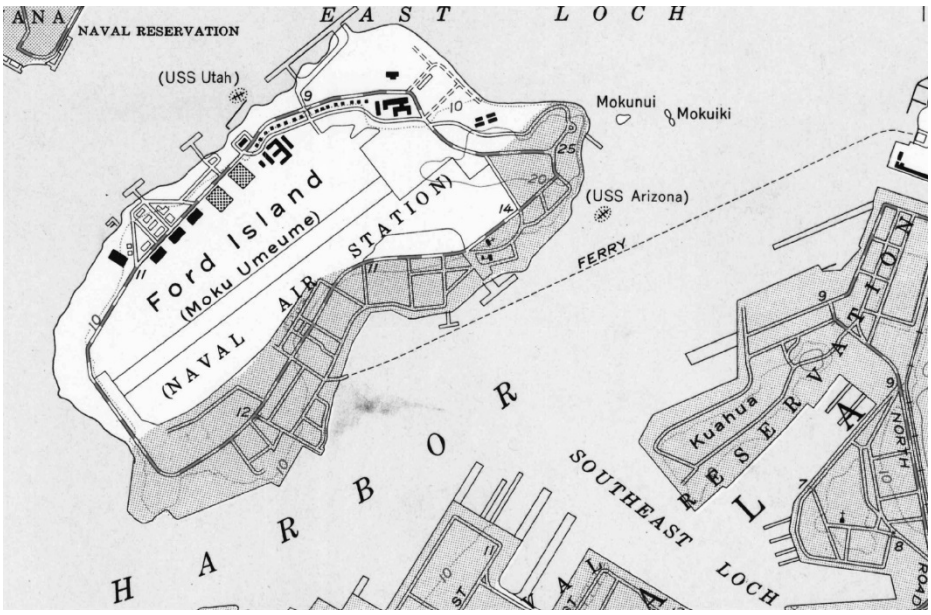


History 40: Portion of a map "Naval Air Station, P.H., T.H., Naval Air Station Pearl Harbor (Ford Island) Conditions as of January 1st, 1946," showing the CPO bungalows at the center (Pearl Harbor National Memorial archives).

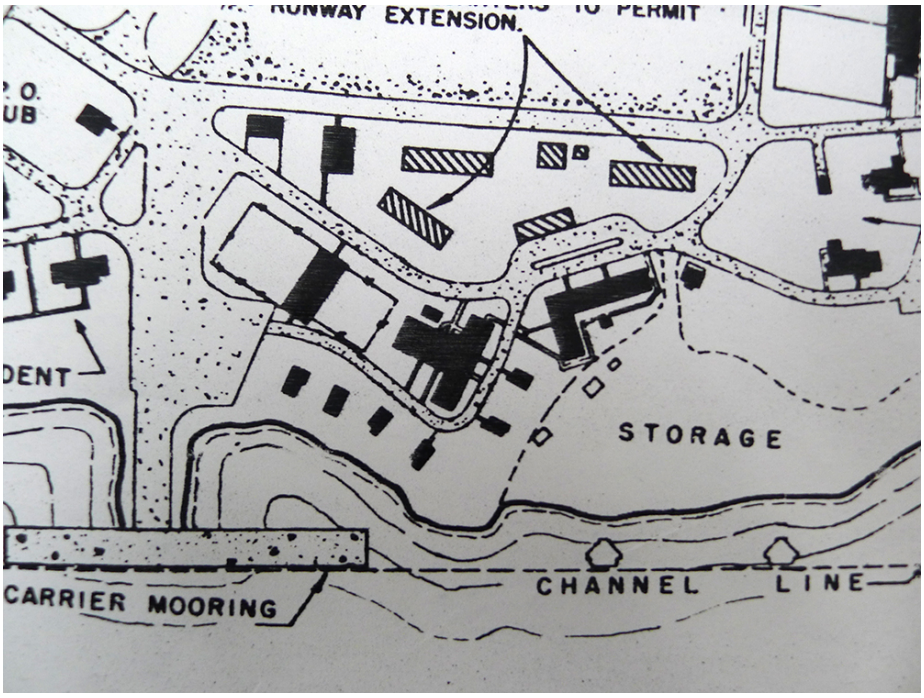
[190] *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report Final*, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, May 2011, 2-245 – 2-246.
[191] "Bill Introduced for USS *Utah*," *Pearl Harbor-Gram*, April 1967.



History 41: US Navy Public Works drawing (No. 2031) showing alterations and repairs to CPO bungalows 31 and 32, June 4, 1946. Note triangular "addition to existing walk" is still extant today (US Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 31) HABS No. HI-442, July 2005, 7).

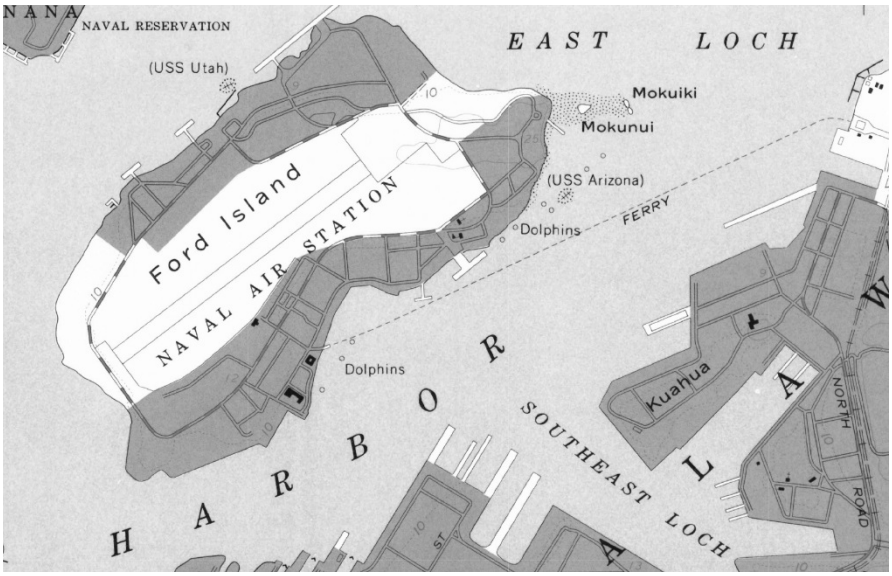


History 42: USGS map of Ford Island, 1953 (United States Geological Survey).



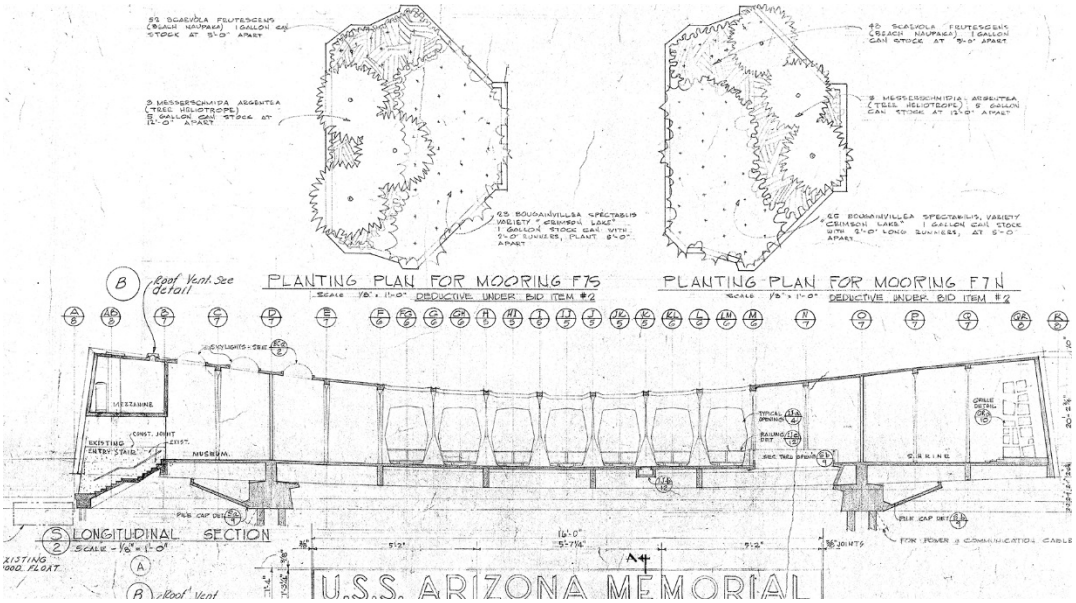
History 43: Portion of a map "Pearl Harbor Region Master Shore Station Development Plan, Ford Island Complex," showing the CPO bungalows, signed January 21, 1957 (Pearl Harbor National Memorial archives).

History 44: The USS *Bennington* passing the remains of the USS *Arizona* on Memorial Day 1958. The crew is in formation on the flight deck in tribute to the USS *Arizona*'s crewmen who lost their lives on December 7, 1941 (Naval History and Heritage Command, USN 1036055).



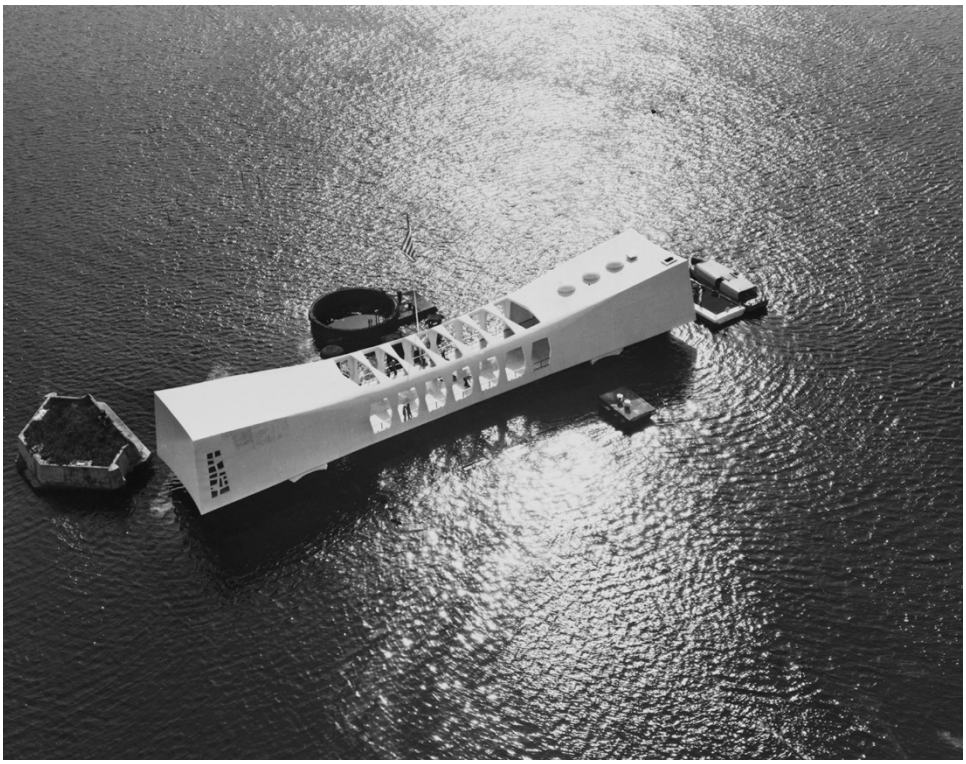
History 45: USGS map of Ford Island, 1959 (United States Geological Survey).

History 46: Photograph of the USS *Arizona*, mooring quays and associated improvments, circa 1950-1959. (Courtesy of the Hawai‘i State Archives Digital Collections, Call number: PP-51-5-023).



History 47: Portion of a drawing showing the USS *Arizona* Memorial planting plan for mooring quays F7S and F7N, 1961 (National Park Service).

History 48: Photograph of the USS *Arizona* Memorial under construction, ca. 1961 (Courtesy of the Hawai‘i State Archives Digital Collections, Call number: PP-51-6-013).



History 49: Photograph of the USS *Arizona* Memorial, August 21, 1963 (Naval History and Heritage Command, USN 1088057).

US Navy Ownership and Use, 1965-2007:

Despite continued naval operations on Ford Island, the trend of removing buildings that no longer met mission requirements continued during the late 1960s and 1970s (History 50-54).[192] CPO bungalow 69 had been removed from the housing area by 1967 and the nine four-plex residential buildings that were located adjacent to the CPO bungalows had been demolished by 1978. While residential buildings were being removed on Ford Island, several drawings illustrate that improvements were made to the CPO bungalows during this period. Drawings include an electrical rehabilitation plan for the bungalows from 1967, a roof repair and painting plan for the bungalows from 1972 and 1977 as well as drawings from 1981 that show repairs for electrical, kitchen, plumbing, exterior elevations, lighting fixture, mechanical plans.

In 1970, Congress passed a bill for construction of a memorial over the USS *Utah*, which still laid on her side in shallow water on the northwest side of Ford Island.[193] Plans included construction of a landing dock, associated white concrete platform and a forty-foot-high flagpole "…where each day our flag will fly, just as we honor the men of the USS *Arizona* by raising the colors over her memorial at dawn each

[192] Historic Context Pearl Harbor Naval Complex, Chapter 3: From the Bayonet Constitution to the Eve of Revolution, 10-100. (Jeff Dodge files, Hart NR Documents). Also see: House Report 91-1527 for S 583, Date: September 29, 1970, Description: Report to authorize USS *Utah* Memorial. Senate Report 91-1010, Date: July 9, 1970, Description: Report to authorize USS *Utah* Memorial. Public Law 91-456, Date: October 15, 1970, Description: Authorized flying of American flag over remains of USS *Utah* in honor of men entombed inside.
[193] "Funds Sought for USS *Utah* Memorial," *Pearl Harbor-Gram*, July 1971.

morning and lowering them at sundown."[194] The land-based USS *Utah* Memorial was dedicated at a ceremony honoring the 54 crewmen entombed in the wreckage of the USS *Utah* on May 27, 1972.[195]

In an effort to enhance visitor services at Pearl Harbor, the US Navy began planning for the construction of a new museum-theater visitor complex on the mainland in the late 1970s. The design for the complex was awarded to the architectural firm of Chapman, Cobeen, Desai, Sakata, while the construction contract was awarded to S & M Sakamoto.[196] A site was selected approximately fifty yards from Kamehameha Highway, which had formerly served as a former Fleet Postal Center parking area.[197] Ground was broken for the museum-theater visitor complex on October 19, 1978. The large-scale development project provided much-needed amenities to the ever-growing numbers of visitors who came to the site to see the USS *Arizona* Memorial. As construction neared completion, on March 21, 1980, the US Navy and National Park Service executed a use agreement that formally permitted the National Park Service to manage the visitor center and adjacent grounds that were situated on US Navy property at that time. [198] On September 9, 1980, the USS *Arizona* Memorial was established as a unit of National Park System that was administered through a cooperative agreement with the US Navy.

Documentation and Memorialization Activities

Little changed in the Bungalow Neighborhood during the 1980s (History 55-58). Documentation and memorialization activities continued at Pearl Harbor throughout the 1980s. In effort to identify the USS *Vestal's* location in Battleship Row at the time of the Japanese attack on Pearl Harbor, survivors participating in a USS *Vestal* reunion voted unanimously that the name of the USS *Vestal* should be painted on mooring quay F7.[199] At that time, the names of the battleships that were moored on Battleship Row on December 7, 1941 had been painted on the concrete mooring quays lining Ford Island. Since the USS *Vestal* was not a battleship, its name was not originally displayed on the mooring quays; however the Superintendent of the USS *Arizona* Memorial was in support the proposition as it was "…in keeping with the policy where two ships, if moored side-by-side on December 7, are listed on the two adjoining quays."[200] After many months of correspondence with Congressmen, the Department of the Interior, the Naval Historical Center, and Commander, Naval Station, Pearl Harbor, USS *Vestal* (AR-4) was painted on mooring quay F7 N in anticipation of planned memorial services on December 7, 1982. [201]

In 1983, the NPS Submerged Cultural Resources Unit (SCRU) began the process of mapping and photo-documenting the remains of the USS *Arizona* in its final resting place in Pearl Harbor. Additional mapping operations were undertaken by the SCRU in 1984, which illustrated how little was known about the ship's remains.[202] Subsequent archeological surveys of the wreck were conducted in 1986 and 1987. While most of the superstructure, masts, and armament associated with the USS *Arizona* were salvaged

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194 "Funds Sought for USS *Utah* Memorial," *Pearl Harbor-Gram*, July 1971.
195 "Stars and Stripes Flies Over USS *Utah*," *Pearl Harbor-Gram*, July 1972.
196 Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 67-68.
197 "Geotechnical Peer Review, Expand Restroom Facilities, USS *Arizona* Memorial Park, Hawai'i, Final Report," NPS Indefinite Quantity Contract No. 1443200002024, Task Order no. T2000022409. Prepared by URS Corporation, San Francisco, California, July 2003, 4.
198 Michael Slackman, *The USS Arizona Memorial and Visitor Center: An Administrative and Legislative History,"* National Park Service, October 4, 1982, 69-70.
199 "Quay Honoring *USS Vestal* Dedicated in Pearl Harbor," *Pearl Harbor-Gram*, January-April, 1983, 13-14.
200 "Correspondence regarding USS *Vestal* mooring quay," *Pearl Harbor-Gram*, January-April, 1983, 13.
201 "Quay Honoring *USS Vestal* Dedicated in Pearl Harbor," *Pearl Harbor-Gram*, January-April, 1983, 13-14.
202 Daniel J. Lenihan, ed., *Submerged Cultural Resources Study, USS Arizona Memorial and Pearl Harbor National Historic Landmark,* Southwest Cultural Resources Center Professional Papers, Santa Fe Mexico, 1989, Second Edition 1990, 1.

during war years, the underwater surveys were able to develop detailed planview and elevation maps of the ship.[203] In 1988, Pearl Harbor was surveyed for other remains of the attack, including mooring quays and plane crash sites.[204] As documentation and improvement efforts continued, both of the sunken hulls of the USS *Arizona* and the USS *Utah* were declared National Historic Landmarks on May 5, 1989. By 1996, survey efforts had been completed for approximately ninety percent of the exterior hull of the USS *Arizona*, while none of the interior spaces had been surveyed.[205] Two years later, in 1998, the NPS Submerged Resources Center (SRC) and USS *Arizona* Memorial (USAR), as well as several partners, initiated a comprehensive research program targeted toward understanding the nature and rate of a range of natural processes affecting USS *Arizona's* deterioration.[206]

A *Study/Survey of Historically Significant US Army Family Housing* Quarters*, Installation Report, Pearl Harbor Naval Base, Hawai'i* was prepared by Mariani and Associates in 1987. The report indicated that CPO bungalow 28 was in poor condition and was suffering from a major termite infestation in the walls and also likely in the frame structure. At the time, the report noted that, "The quarters occupies a beautiful site having excellent light and ventilation, and a wonderful view of the USS *Arizona* Memorial. This simple structure has very little architectural merit. Further, it does not meet the minimum net square footage for US Army family housing and it is our recommendation that it be removed from the family housing inventory. Another alternative is that because of the quarters' inefficient and substandard plan, their poor condition and minimal historic value, consideration should be given to demolition."[207] Similar description and conclusions were also noted for CPO bungalows 29, 31, 32. The same study found that the condition of CPO bungalow 68 was fair and recommended that it be utilized as bachelor officer's quarters.[208] The study determined that CPO bungalow 90 was in good condition, but did not meet housing standards.[209] Ultimately, the CPO bungalows were in continuous residential use until the 1990s when they were vacated and decommissioned.[210]

Between 1989 and 1990, several improvements were made to the moorings associated with the USS *Arizona* Memorial. Funded by the National Park Service, the Chesapeake Division, Naval Facilities Engineering Command designed and installed an upgraded mooring and transfer ramp for the floating dock associated with the USS *Arizona* Memorial. The work was completed in two phases. Phase I included the installation of the mooring chains and anchors and was completed in July 1989. The second phase of the project included attaching the mooring chains to the floating dock, removal of worn mooring

[203] Susan J. Wells and Robert J. Hommon, *An Archeological Survey Plan for the Pacific Islands Cluster, Pacific West Region, National Park Service,* U.S. Department of the Interior, National Park Service, Western Archeological and Conservation Center, Publications in Anthropology 76, 2000, 23.
[204] Daniel J. Lenihan, ed., *Submerged Cultural Resources Study, USS Arizona Memorial and Pearl Harbor National Historic Landmark,* Southwest Cultural Resources Center Professional Papers, Santa Fe Mexico, 1989, Second Edition 1990, 6.
[205] National Park Service, *Resources Management Plan: USS Arizona* Memorial, Honolulu, Hawai'i, February 1996, 8.
[206] Long-Term Management Strategies for USS *Arizona*, A Submerged Cultural Resource in Pearl Harbor, 3.
[207] *Study/Survey of Historically Significant US Army Family Housing* Quarters*, Installation Report, Pearl Harbor Naval Base, Hawai'i*, Mariani and Associates, Washington, D.C., December 1987, 93.
[208] *Study/Survey of Historically Significant US Army Family Housing* Quarters*, Installation Report, Pearl Harbor Naval Base, Hawai'i*, Mariani and Associates, Washington, D.C., December 1987, 159.
[209] *Study/Survey of Historically Significant US Army Family Housing* Quarters*, Installation Report, Pearl Harbor Naval Base, Hawai'i*, Mariani and Associates, Washington, D.C., December 1987, 169.
[210] National Park Service. *Rehabilitation of Chief Petty Officers Bungalows on Ford Island Environmental Assessment,* WWII Valor in the Pacific National Monument, Pearl Harbor, O'ahu, Hawai'i, March 2012, 9.

chain and timber dolphins, replacement of the transfer ramp, and miscellaneous repairs to the floating dock.[211]

Ford Island Development

By the end of the 1990s, Ford Island was on the cusp of several significant changes, which included the opening of the Ford Island bridge as well as the introduction of the USS *Missouri* Memorial (History 59-64). Ultimately, these changes, combined with closure of the airfield, brought new opportunities for land uses and activities on the island.[212] In anticipation of the completion of the new bridge, the Commander, Naval Base Pearl Harbor (now Commander, US Navy Region Hawai'i) initiated a planning effort to better understand the long-range needs of the US Navy at Pearl Harbor and the role of Ford Island to accommodate those needs. These efforts resulted in the completion of a Concept Plan for Ford Island in 1997. The plan identified inclusion of both mission operations and support uses, which included offices, waterfront operations, family housing, bachelor housing, recreation, and community support.[213] In 1998, the nearly one-mile-long Admiral Clarey Bridge was completed. The fixed/floating structure measures 4,700 feet in length and includes a floating pontoon section that can retract to allow vessels to pass through.[214] The new structure connects Ford Island to Kamehameha Highway at the eastbound Salt Lake Boulevard intersection and replaced an existing ferry system. For decades, the ferry system shuttled supplies and passengers from O'ahu to Ford Island. At the time of closing, two ferries were operating nearly twenty-two hours a day and the crossing took twelve minutes.[215] Also, in 1998, the USS *Missouri* arrived at its new berth at F5S and F5N.[216] Today, the USS *Missouri* remains in this location and provides opportunities for visitors to tour the battleship. Also, notably, the battleship is prominently within the viewshed of the CPO bungalow site.

These changes were associated with a larger planning effort that was formalized in 1999 with passage of the Ford Island Development Legislation (10 USC. Section 2814). According to the 2008 *Integrated Cultural Resources Management Plan* (ICRMP), the legislation authorized the "...US Navy to accept in-kind consideration, such as property support services, the rehabilitation of real property, and the construction of improvements at Ford Island as consideration for the sale or lease of other US Navy property in Hawai'i."[217] In June 2003, the US Navy and Ford Island Properties entered into the Ford Island Master Development Plan (MDP). The plan included numerous island-wide infrastructure improvements as well as housing development, and adaptive reuse of the historic theater (FAC. 89) as a

[211] Terri Regin, Steve Buckeridge, Brian deLumeau and Thomas Fulton, "Project Documentation Report for the Installation of Mooring and Repairs for the USS *Arizona* Memorial Floating Dock," Ocean Engineering and Construction Project Office, Chesapeake Division, Naval Facilities Engineering Command, July 1990, 1.
[212] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-134.
[213] *Historic Asset Management Process Volume II: Dataset (Pearl Harbor Naval Complex)* Binder 2 of 4, TEC Inc. – Joint Venture, Honolulu, Hawai'i and NAVFAC Pacific, Pearl Harbor, Hawai'i, September 2011, 1-13.
[214] National Park Service. *Rehabilitation of Chief Petty Officers Bungalows on Ford Island Environmental Assessment,* WWII Valor in the Pacific National Monument, Pearl Harbor, O'ahu, Hawai'i, March 2012, 10.
[215] Gregg K. Kakesako, "Farewell to Ford Isle ferries," *Honolulu Star-Bulletin*, April 13, 1998.
[216] According to a Draft National Register of Historic Places Amendment Form for the "Battleship Mooring Quays (Battleship Row), prepared by John F. De Virgilio, Pearl Harbor History Associates, May 10, 1993: "Since 1992, quay F-5 is longer visible from the channel along battleship row. Although hidden from view, the old F-5 pier still exists. A new mooring pier build for the USS *Missouri* (now mothballed) has been built around and partially over the old F-5 berth."
[217] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-134.

conference center for lands leased by Ford Island Properties.[218] Additionally, as part of this effort, Commander, US Navy Region Hawai'i implemented several development and construction projects on lands retained by the US Navy on Ford Island. These include construction of public-private venture housing projects, restoration and reuse of historic hangars 37 and 39 and the control tower (currently not open) by the Pearl Harbor Aviation Museum, and reuse of hangars by National Oceanic and Atmospheric Administration (NOAA).[219]

Limited work occurred in the Bungalow Neighborhood in the 2000s (History 65-68). After many years of work, memorialization and documentation activities continued at Pearl Harbor into the 2000s. In 2002, Helber Hastert & Fee prepared the CNRH *Pearl Harbor Naval Complex Integrated Cultural Resource Management Plan* (ICRMP). An "Officer's Quarters Condition Assessment for the USS *Arizona* Memorial" was also completed in 2002. The assessment noted that the CPO bungalows had around five layers of paint and that the original color appears to have been a "plantation style green."[220] A Phase I Environmental Site Assessment was prepared in 2004, which reported that CPO bungalow 29 was in extremely poor condition. It noted that the "general problems associated with this building were exacerbated when a fire was set in the roof as fire-fighter training. The large breach in the roof has allowed the interior to be further damaged by the elements."[221]

The National Park Service CPO bungalow "Condition Assessment Update" prepared in 2009 noted that, "It appears that between the 2002 condition assessment report and 2009, only limited maintenance was performed to the CPO bungalows by the US Navy. Plywood was placed over doors and windows for security; following a structural collapse on the southeast corner of CPO #32, a security fence was installed as a safety measure to prevent unauthorized access; and as part of an overall naval station "cleanup", CPO #68 was painted and a temporary roof installed. No other work appears to have been undertaken on CPOs #31, 29, 28 or 90."[222]

In 2005, Helber Hastert & Fee prepared *The Design Guidelines & Evaluation Criteria for Memorials*. The guidelines were developed consistent with the *CNRH Integrated Cultural Resources Management Plan (ICRMP)* (2002).[223] Initial plans developed recommendations for a Ford Island Memorial Park as well as construction of the Ford Island Interpretive Trail.[224] While plans for Ford Island Memorial Park were never implemented, discussions continue today (2018) regarding the construction of the Ford Island Interpretive Trail. Also in 2005, Historic American Building Survey (HABS) documentation was completed for the CPO bungalows. Documentation included large format photos as well as written historical and descriptive data for CPO bungalows 28, 29, 31, 32, 68 and 90.

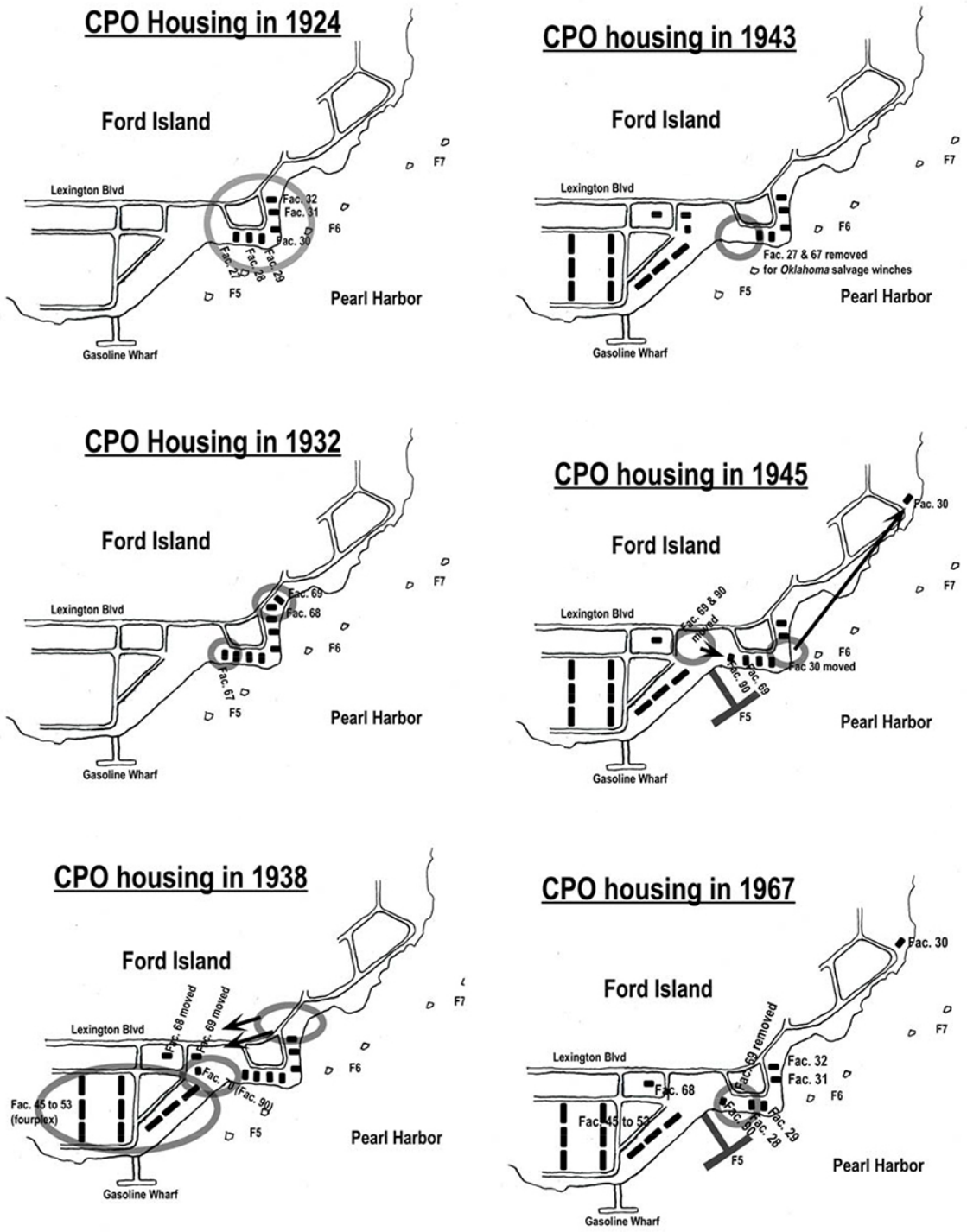
In 2006, the National Defense Authorization Act for Fiscal Year 2006, Section 1017, authorized appropriations associated with establishment of the USS *Oklahoma* Memorial and other memorials at

[218] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-134.
[219] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-134.
[220] "Officers Quarters Condition Assessment for the U.S.S. *Arizona* Memorial," Pearl Harbor, Hawai'i, September 19-20, 2002.
[221] Rick L. Smith, *Phase I Environmental Site Assessment, Ford Island Bungalows, Arizona Memorial, Ferry Reception Buildings, Pearl Harbor, Hawai'i,* Hawai'i International Environmental Services, Inc., Kailua, Hawai'i, November 8, 2004, 4-2.
[222] National Park Service, CPO bungalow "Condition Assessment Update," 2009.
[223] Helber Hastert & Fee, Planners, *Pearl Harbor Naval Complex: Design Guidelines & Evaluation Criteria for Memorials*. Prepared for Commander, US Navy Region Hawai'i, April 2005, II-1.
[224] Helber Hastert & Fee, Planners, *Pearl Harbor Naval Complex: Design Guidelines & Evaluation Criteria for Memorials*. Prepared for Commander, US Navy Region Hawai'i, April 2005, III-1,4.

Pearl Harbor (Public Law 109-163). The site for the memorial was selected by the Secretary of the US Navy in consultation with the Secretary of the Interior. After the site was selected, the Secretary of the Interior authorized the USS *Oklahoma* Memorial Foundation to construct a memorial.[225] Ground was broken by fifteen USS *Oklahoma* survivors as well Secretary of the Department of the Interior, Dirk Kempthorne, and the Governor of Oklahoma, Brad Henry, on December 7, 2006 (History 69). The memorial was completed in 2007 and is composed of white marble columns and black granite slabs etched with quotes from USS *Oklahoma* survivors. Each column is engraved with the name of a of crew member who died during the attack. The columns are arranged in a "V" shape to resemble crew members manning the rails.[226] Collectively, the memorial honors the 429 servicemen on board USS *Oklahoma* who lost their lives on December 7, 1941.[227] Today, the Secretary of the Interior administers the USS *Oklahoma* Memorial as part of the USS *Arizona* Memorial, "…in accordance with the laws and regulations applicable to land administered by the National Park Service and any agreement between the Secretary of the Interior and the Secretary of the US Navy. The Secretary of the US Navy shall retain administrative jurisdiction over the land where the USS *Oklahoma* Memorial is established."[228]

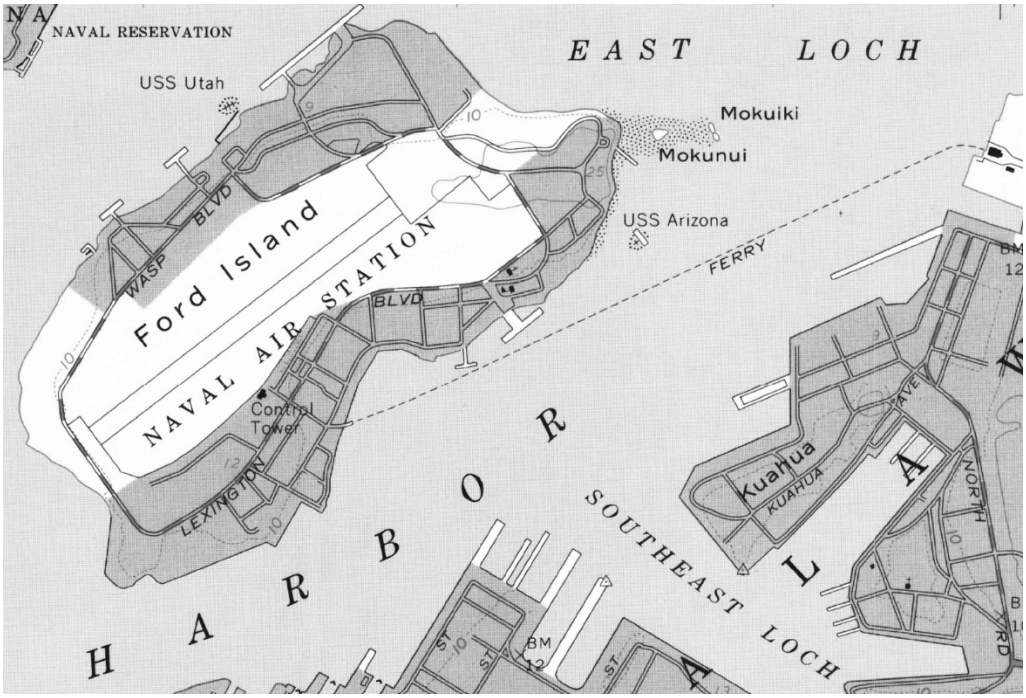
In 2008, the Commander, US Navy Region Hawai'i (CNRH) *O'ahu Integrated Cultural Resources Management Plan (ICRMP)* was prepared by Helber Hastert & Fee. The document "provides a framework for all planning and facilities development at Ford Island to ensure and assist CNRH in making appropriate decisions for preservation of the island's history and cultural resources while facilitating changes, as required to support the Region's mission."[229]

[225] The National Defense Authorization Act for Fiscal Year 2006, Section 1017, "Establishment of the USS *Oklahoma* Memorial and Other Memorials at Pearl Harbor."
[226] "*Oklahoma* Memorial Recognizes 429 Lost Sailors and Marines," *Pearl Harbor-Gram*, November 2008, 16.
[227] "*Oklahoma* Memorial Recognizes 429 Lost Sailors and Marines," *Pearl Harbor-Gram*, November 2008, 16.
[228] National Park Service, *Foundation Document World War II Valor in the Pacific National Monument, Pearl Harbor Hawai'i*, September 2015, 9.
[229] *CNRH O'ahu Integrated Cultural Resources Management Plan (ICRMP)*, Helber Hastert & Fee, Planners, Inc., October 2008, 5-127 – 5-132.



History 50: Graphic showing the evolution of CPO housing on Ford Island, 1924-1967 (Dee Ruzicka, "US Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility 68)." Historic American Buildings Survey, HABS No. HI-##, Mason Architects, Inc., Honolulu, Hawai'i, November 2010).

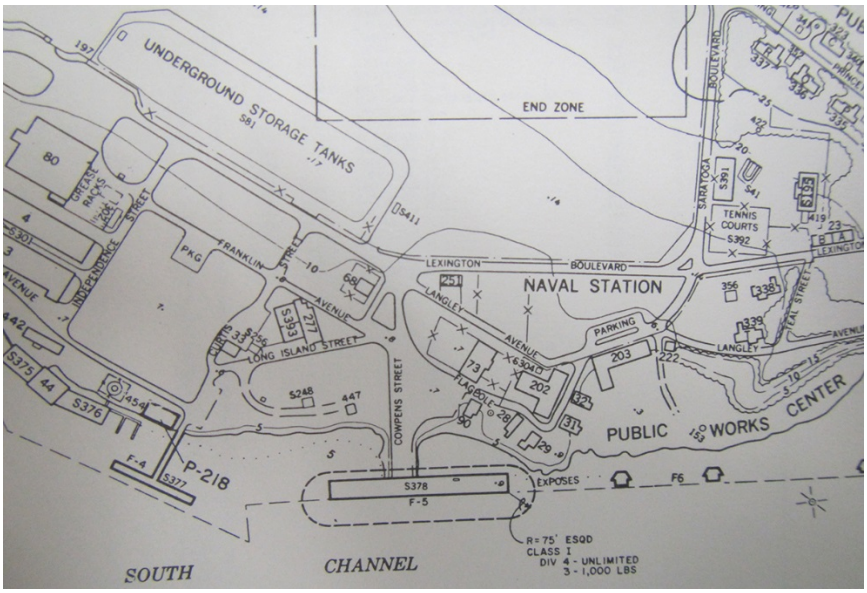
History 51: Aerial photograph of Ford Island, 1968 (United States Geological Survey).



History 52: USGS map of Ford Island, 1968 (United States Geological Survey).

History 53: Ford Island Sewage System General Plan, April 26, 1968 (Portion of a map "14th Naval District US Naval Base, Pearl Harbor, T.H., Naval Shipyard, Marine Res. Submarine Base EV5 NAVFAC HI Reference Library).

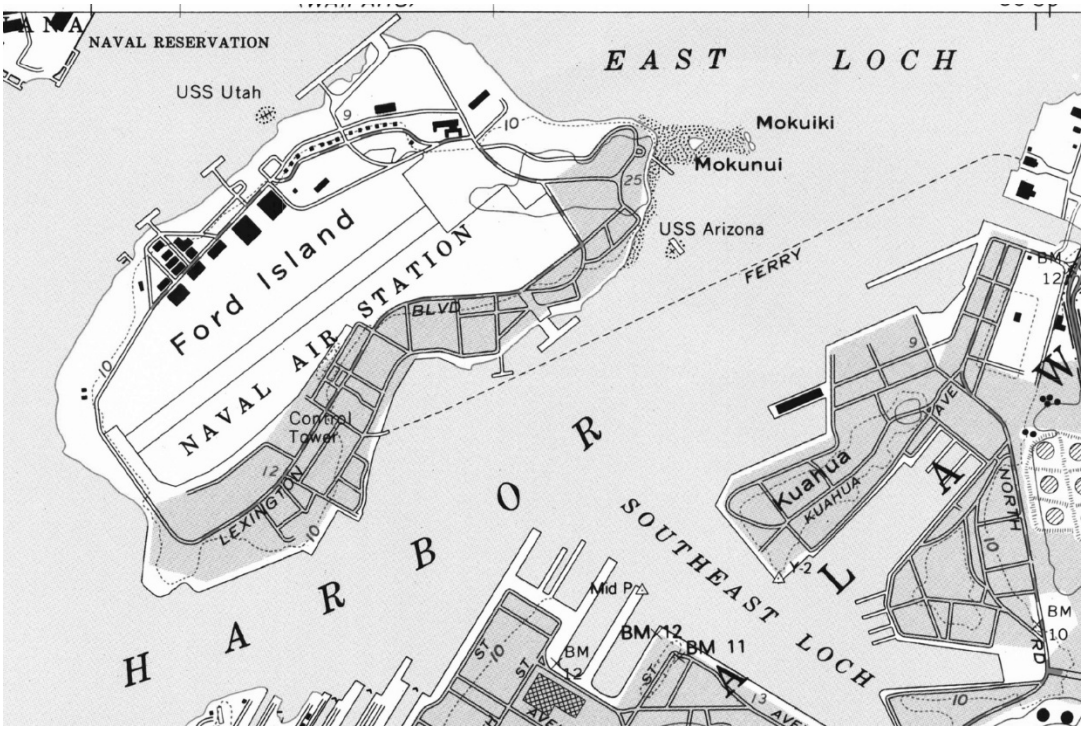
History 54: Aerial photograph of Ford Island, 1977 (United States Geological Survey).



History 55: Portion of a map showing development associated with the CPO bungalows, 1982 (General Development Map, Index of Structures, US Naval Facilities Pearl Harbor, Hawai'i, Ford Island, approved January 5, 1981 and revised to reflect current status as of September 30, 1982 (EV5 NAVFAC HI Reference Library).

History 56: Oblique aerial photograph of Ford Island, April 15, 1983 (NARA, RG 330, 6517421, 330-CFD-DN-SC-01-03975).

History 57: January 19, 1986 aerial photo (EV5 NAVFAC HI Reference Library).



History 58: USGS map of Ford Island, 1983 (United States Geological Survey).

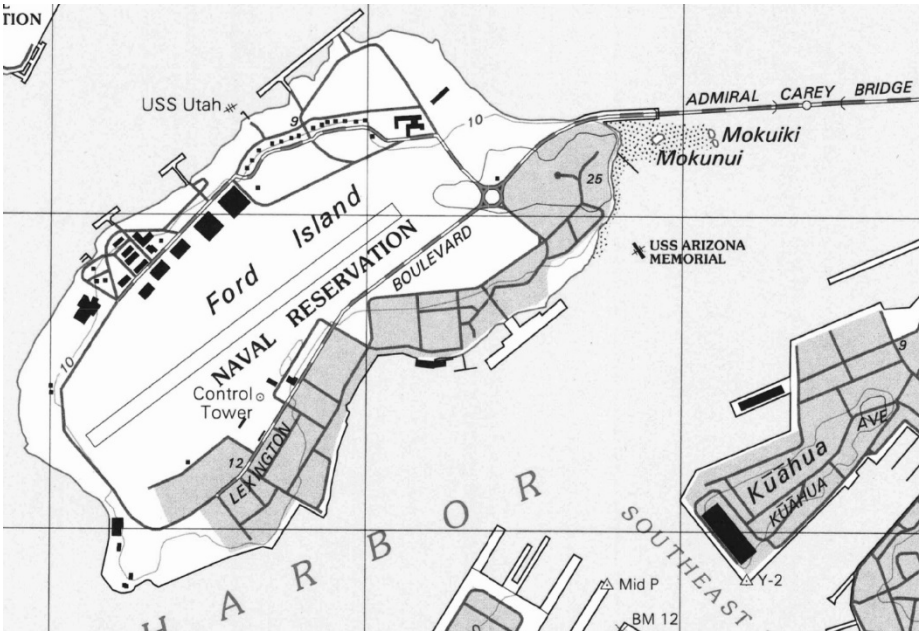
History 59: Aerial photograph of the USS *Arizona* Memorial, mooring quays and Ford Island, September 7, 1990 (NARA, RG 330, 6452270, 330-CFD-DN-SC-90-11973).

History 60: Aerial photograph of the USS *Arizona* Memorial with mooring quays, June 1, 1991 (NARA, 6483692, DNSC9304706).

History 61: Aerial photograph of Ford Island, 1992 (United States Geological Survey).

History 62: Photograph of the USS *Arizona* Memorial with Ford Island and the CPO bungalows in the background, June 22, 1998. Note USS *Missouri* is approaching its new berth at F5S and F5N (NARA, RG 330, 6670145, 330-CFD-DN-SD-06-10358).

History 63: Photograph of the streetscape assoicated with the CPO bungalows, 1998 (Polly Cosson and Ann Yoklavich, "US Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)." Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, HI-440-1).

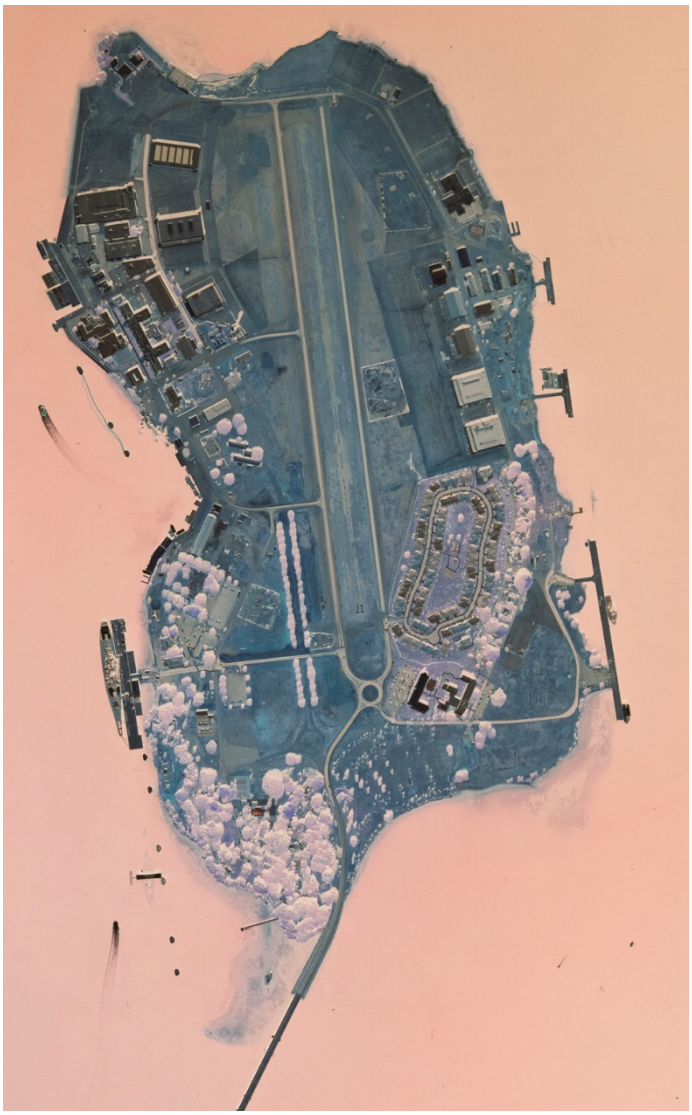


History 64: USGS map of Ford Island, 1999. Note alignment of the Admiral Clarey Bridge (United States Geological Survey).

History 65: Photograph of the open space and trees associated with the CPO bungalows, January 2001 (Polly Cosson and Ann Yoklavich, "US Naval Base, Pearl Harbor, Chief Petty Officer's Quarters (Facility No. 28)." Historic American Buildings Survey, HABS No. HI-440, Mason Architects, Inc., Honolulu, Hawai'i, July 2005, HI-440-2).

History 66: Aerial photograph of Ford Island, 2004 (United States Geological Survey).

History 67: Aerial photograph of Ford Island showing completion of the Ford Island Bridge, 2005 (United States Geological Survey).



History 68: Aerial photograph of Ford Island, 2006. Note tree concentration of tree canopies on the northern end of the island (United States Geological Survey).

History 69: Fifteen USS *Oklahoma* survivors break ground for the USS *Oklahoma* Memorial, December 7, 2006 (NARA, RG 330, 6704096, DN-SD-07-35512).

National Park Service Management, 2008-Present

Pearl Harbor National Memorial was established by Presidential Proclamation 8327 issued by George W. Bush on December 5, 2008. The monument honors several aspects of engagement in World War II and encompasses nine historic sites located in Hawai‘i, Alaska and California. Sites in Hawai‘i that are administered by the NPS include the USS *Arizona* Memorial, USS *Utah* Memorial, USS *Oklahoma* Memorial, Chief Petty Officer bungalows on Ford Island (History 71), north and south mooring quays F6, F7, and F8, which formed part of Battleship Row in Pearl Harbor, and the Pearl Harbor Visitor Center in Hawai‘i. In part, Presidential Proclamation 8327 stated that the USS *Arizona* and USS *Utah* vessels would not be designated as part of the national monument, but instead would be retained by the Department of Defense (through the Department of US Navy) as the final resting place for those entombed there.[230] Sites in Alaska and administered by the US Fish and Wildlife Service include the Battlefield remnants on Attu Island, a Japanese occupation site on Kiska Island and the crash site of a B-24D Liberator bomber on Atka Island. Sites in California and administered by the National Park Service include the Tule Lake Segregation Center and a Prisoner of War camp.[231]

After the National Park Service acquired the CPO bungalows on Ford Island from the US Navy, several actions were undertaken at the site in an effort to promote visitor safety, make site improvements, and arrest deterioration of contributing resources. By 2012, the National Park Service had installed a fence to

[230] National Park Service, *Foundation Document World War II Valor in the Pacific National Monument, Pearl Harbor Hawai‘i*, September 2015, 10.
[231] National Park Service. *Rehabilitation of Chief Petty Officers Bungalows on Ford Island Environmental Assessment,* WWII Valor in the Pacific National Monument, Pearl Harbor, O‘ahu, Hawai‘i, March 2012, 11.

temporarily limit visitor access to the *USS Tennessee* and *USS West Virginia* memorial.[232] While the installation date of the fence is unknown; it was likely installed between 2008 and 2012. The measure was taken due to hazards associated with coastal erosion, which had resulted in the undercutting of the unstable coral shoreline.[233] Also, circa 2009-2010, a project was undertaken to install down lighting for the USS *Oklahoma* memorial flags.[234]

Stabilization activities were undertaken on the CPO bungalows by the National Park Service between 2009 and 2012. Emergency stabilization was completed on the CPO bungalows by the Historic Preservation Training Center (HPTC) in 2009 (History 70). The project work consisted of four primary work components. The first component included the extermination and fumigation of termites. The second component was a HPTC day-labor project that included emergency stabilization of the six extant CPO bungalows. The work was limited to emergency actions needed to make the buildings structurally sound and able to shed water. More specifically, these activities included reestablishing building access, temporary structural supports including interior and exterior bracing at CPO bungalow 32 and CPO bungalow 31 to prevent further collapse, ventilation, interior/exterior cleanup, closing roof holes at CPO bungalow 29 and trimming overgrown vegetation.[235] Termite remediation was the third component of the project, while the last component focused on the development of an updated condition assessment and future work recommendations for the bungalows. Ultimately, the scope of work for emergency stabilization included: reestablishing building access, temporary structural supports including interior and exterior bracing at CPO bungalow 32 and CPO bungalow 31 to prevent further collapse, ventilation, interior/exterior cleanup, closing roof holes at CPO bungalow 29 and trimming overgrown vegetation. The stabilization effort was limited to what could be accomplished by a four-person crew in two weeks."[236] See HPTC Field Report #1 FY-09 for additional detail regarding specific emergency task that were completed.[237] By 2012, the NPS had completed many initial repairs to the CPO bungalows, particularly CPO bungalows 29 and 90.[238]

Beginning June 1, 2010, the NPS and the US Navy worked together to allow the general public access to Monument areas on Ford Island. The operational agreement noted that access may be restricted at times in cases of threats to national security or in cases of emergency, as determined by the Joint Base Commander or the Superintendent.[239]

Meanwhile, large-scale construction activities associated with the Pearl Harbor Visitor Center were in progress on Pearl Harbor. Groundbreaking for the project occurred in the spring of 2009 and included several survivors from Aloha Chapter #1 as well as the National Pearl Harbor Survivors Association President and Vice President. The Keynote Speaker was Senator Daniel E. Inouye.[240] The project was

[232] Laurin Huffman, "Issues on Ford Island: Historic Structures under the care of World War II Valor in the Pacific National Monument," Trip Report, September 2012.
[233] Notes from the Chief Petty Officer Bungalows Preservation and Management Plan Section 106 Meeting, June 21, 2010.
[234] PEPC 27979, "Down light flags at USS *Utah* and USS *Oklahoma* memorials."
[235] National Park Service, CPO bungalow "Condition Assessment Update," 2009.
[236] National Park Service, CPO bungalow "Condition Assessment Update," 2009.
[237] National Park Service, "Historic Preservation Training Center (HPTC) Field Report #1 FY-09," World War II Valor in the Pacific National Monument, PMIS 148801: Emergency Stabilization Repairs to 6 Pre-WW2 Bungalows, October 7, 2009.
[238] National Park Service, "Incident Review of Adverse Effect to CPO Bungalow #28, World War II Valor in the Pacific National Monument, Final Report, July 25, 2016, 1-2.
[239] "Operational Agreement for WWII Valor in the Pacific National Monument between Commander, US Navy Region Hawai'i and the National Park Service United States Department of the Interior," 2012, 15.
[240] "Survivors Turn the First Dirt at Official Groundbreaking of the New Pearl Harbor Memorial Museum & Visitors Center," *Pearl Harbor-Gram*, February 2009, 14.

completed in several phases. Phase I of the project included the construction of several facilities, including the new entrance and ticket counter.[241] The new visitor center was dedicated on December 7, 2010, which was the 69th Anniversary Pearl Harbor Day Commemoration.[242] Base Pearl Harbor-Hickam. Several buildings, including exhibit galleries and the theater were completed at a later date as part of Phase ʻĪʻĪ of the project.[243] Also in 2010, the Naval Station (NAVSTA) Pearl Harbor joined Hickam Air Force Base to form Joint Base Pearl Harbor-Hickam. This change consolidated military operations and provided development opportunities for land use on Ford Island as well as in other locations by the US Navy and Air Force.

In addition to stabilization activities associated with the CPO bungalows, the National Park Service was also engaged in the preservation and maintenance of other resources, including the historic vegetation associated with the site. A "Ford Island *Oklahoma* Memorial Tree Assessment" was prepared by Steve Nimz and Associates Inc. in 2011. The report provided an inventory of trees located within the site boundaries as well as stabilization and future treatment recommendations. Several of the recommendations were implemented by the National Park Service, which included the removal of dead and/or diseased trees and pruning.

In 2011, Mason Architects completed an *Evaluation of Historic Structures: CPO Bungalows, USS Utah Memorial, USS Arizona Memorial, and Mooring* Quays, *WWII Valor in the Pacific National Monument, Pearl Harbor, Oʻahu.* The report noted that modifications to the restrooms associated with the USS *Arizona* Memorial were completed in 2011. Improvements included a new accessible toilet room and onsite wastewater system.[244] The following year, in 2012, the National Park Service began planning efforts associated with rehabilitation of the CPO bungalows on Ford Island. In January 2012, the NPS executed a Programmatic Agreement (PA) with the Hawaiʻi State Historic Preservation Division (SHPD) and the Advisory Council on Historic Preservation (ACHP). Two months later, in March 2012, the National Park Service released its "Rehabilitation of Chief Petty Officers Bungalows on Ford Island: Environmental Assessment."[245] The project was initiated in November 2015. During rehabilitation of CPO bungalow 28, the historic building was demolished. During the demolition, some windows and doors as well as the concrete foundation were salvaged.[246] In May 2016, a new building of similar character was completed on top of the existing concrete foundation using contemporary building methods (stud-wall construction finished on the exterior with plywood and vertical wood strips attached to the plywood to simulate board and batten, vinyl windows).[247] The interior of the building was not finished. Salvaged windows and doors were not used in the new building due to the need for lead abatement and are currently (2018) in storage. The demolition and subsequent construction of the new building was not consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (36 CFR 68). These activities resulted in an adverse effect to the US Naval Base Pearl Harbor National Historic Landmark (NHL) District. As a response to the adverse effect, the National Park Service prepared an

[241] "Phase One of New Pearl Harbor Memorial Museum & Visitor Center Opened," *Pearl Harbor-Gram*, May 2010, 14.
[242] "December 7 – Dedication of Pearl Harbor Visitor Center," *Pearl Harbor-Gram*, February 2011, 14-17.
[243] "Phase One of New Pearl Harbor Memorial Museum & Visitor Center Opened," *Pearl Harbor-Gram*, May 2010, 14.
[244] *Evaluation of Historic Structures: CPO Bungalows, USS Utah Memorial, USS Arizona Memorial, and Mooring* Quays, *WWII Valor in the Pacific National Monument, Pearl Harbor, Oʻahu,* Mason Architects, June 2011, B-5 – B-7.
[245] National Park Service, "Incident Review of Adverse Effect to CPO Bungalow #28, World War II Valor in the Pacific National Monument, Final Report, July 25, 2016, 1-2.
[246] National Park Service, "Incident Review of Adverse Effect to CPO Bungalow #28, World War II Valor in the Pacific National Monument, Final Report, July 25, 2016, 1-2.
[247] National Park Service, "Incident Review of Adverse Effect to CPO Bungalow #28, World War II Valor in the Pacific National Monument, Final Report, July 25, 2016, 1-2.

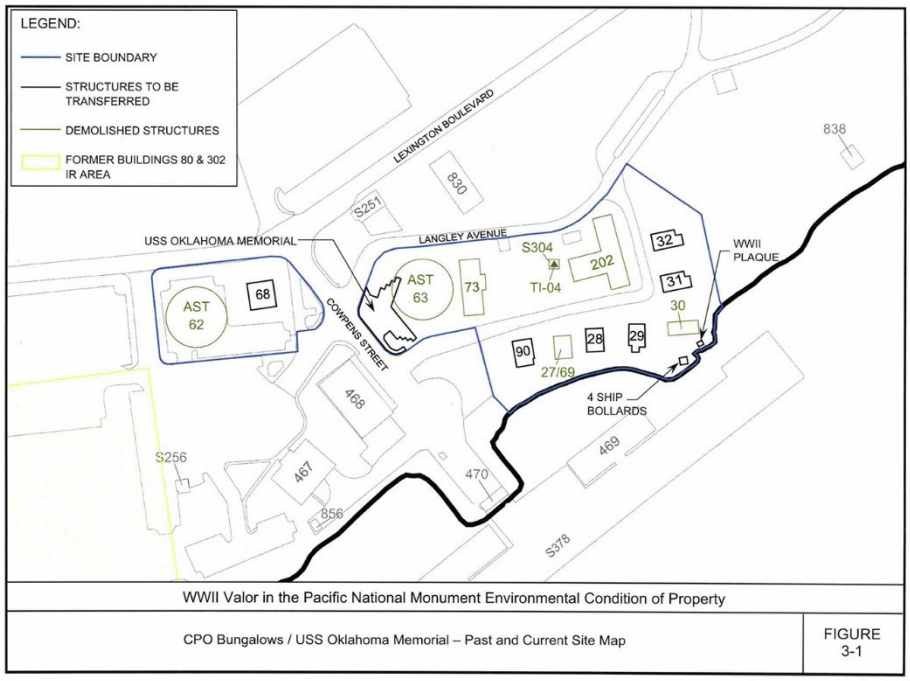
"Incident Review of Adverse Effect to CPO Bungalow #28, Pearl Harbor National Memorial, Final Report," which was completed on July 25, 2016. The new building, situated in the former location of CPO bungalow 28 remains on site.

In 2015, park planning activities continued onsite with the completion of the *Foundation Document Pearl Harbor National Memorial, Pearl Harbor Hawai'i.* The document identified, in part, the purpose of the monument, interpretive themes and significance statements for the unit. Significance statements included themes such as: "Japan Attacks O'ahu," "Pacific War O'ahu," "Remember the Sacrifices," "Final Resting Place," "Portal to the Pacific War Story," and "Enduring Peace." [248]

Today, the National Park Service is actively managing the CPO bungalows as well as the mooring quays, the USS *Arizona* Memorial, the USS *Oklahoma* Memorial and the USS *Utah* Memorial (located outside of the CLI boundary) as well as several associated landscape features. In the spring of 2015, Boy Scout Troop 135 painted the USS *Arizona* mooring quay and in 2016, an up lighting was installed at the USS *Oklahoma* Memorial to illuminate the flag. The previous lighting system with a flagpole mounted solar light was dangerous to service, repair, and replace for employees.[249] A historic structure report is currently in progress for the CPO bungalows.

History 70: Photograph showing the existing condition of CPO bungalow 28, 2009 (Pearl Harbor National Memorial).

[248] National Park Service, *Foundation Document World War II Valor in the Pacific National Monument, Pearl Harbor Hawai'i, September 2015,* 6.
[249] PEPC 64704, "Replace Flag Lighting on USS *Oklahoma* Memorial with up lighting," 2016.



History 71: Map showing extant and non-extant building locations associated with NPS parcels on Ford Island, 2009 (*Final Environmental Condition of Property, Pearl Harbor National Memorial, Chief Petty Officer Bungalows and USS Utah Memorial, Ford Island, Pearl Harbor Naval Complex, O'ahu, Hawai'i,* Naval Facilities Engineering Command (NAVFAC), Pearl Harbor, Hawai'i, August 2009, Figure 3-1.)

Analysis & Evaluation of Integrity

Analysis and Evaluation of Integrity Narrative Summary:

The significance of the CPO Bungalows Neighborhood and Battleship Row are conveyed through several landscape characteristics, including the natural systems and features, spatial organization, cluster arrangement, views and vistas, buildings and structures, circulation, vegetation, small scale features, and archeological sites. These characteristics continue to retain integrity and convey the significance of the site associated with the military development of Pearl Harbor and Ford Island during the early and mid-twentieth century.

The cultural landscape is defined by the natural systems and features of the site. Important to the development of the site are the harbor, the dry and windy climate, lack of fresh water resources, the level topography, and the shoreline. These natural systems and features remain much as they have since the end of the period of significance and contribute to the cultural landscape. The shoreline influenced the spatial organization of the neighborhood, while the climate influenced the style of the buildings and the placement of ornamental vegetation. The two primary areas within the site are the CPO Bungalows Neighborhood and Battleship Row, which take advantage of the natural topography. The neighborhood site is organized around the shoreline and the road system, which defines the space for the bungalows, the lawn, and the USS *Oklahoma* Memorial. The mooring quays are organized in a row close to the shoreline where the topography drops off under water. The general organization of the site has been retained, with the organization of the mooring quays, CPO housing, road alignments, and vegetation around the housing similar to the end of the period of significance.

The site's clusters include the mooring quays and the CPO bungalows. The mooring quays are arranged in a linear row in pairs. The CPO Bungalow Neighborhood cluster is arranged in a uniform pattern along the curvilinear Belleau Wood Loop. The overall site retains these two predominant clusters that defined the space during the period of significance. There are three views within these two clusters that contribute to the cultural landscape. Views include the view from the CPO Bungalows Neighborhood toward the harbor, the view from the USS *Arizona* Memorial toward the neighborhood, and the view from the USS *Arizona* Memorial toward O'ahu. The view from the CPO Bungalows Neighborhood toward the harbor is key in establishing the spatial relationship between these two clusters, while also conveying the significance the CPO Bungalows Neighborhood during the period of significance.

There are a variety of buildings, structures, roads, sidewalks, vegetation, small scale features, and archeological sites within the cultural landscape. There are six buildings (five contributing) within the cultural landscape, including Bungalows 28, 29, 31, 32, 68, and 90. There are ten structures (eight contributing) within the cultural landscape, including mooring quays F-6S, F-6N, F-7S, F-7N, F-8S, and F-8N, as well as the USS *Arizona* Memorial, USS *Arizona* Memorial dock, the USS *West Virginia* and USS *Tennessee* Memorial, and the USS *Oklahoma* Memorial. The circulation within the CLI boundary includes the Belleau Wood Loop road, the parking lot adjacent to Belleau Wood Loop, the parking near bungalow 68, and the concrete sidewalks to each bungalow. The road and sidewalks contribute to the cultural landscape. Within the CLI boundary are trees, foundation plantings, and lawn that have been planted on site to serve both functional and atheistic needs associated with the residential development. The overall character of the trees, shrubs, foundation plantings, and lawn contribute to the cultural landscape. The main types of small scale features within the site boundary are concrete foundation pads, clotheslines, and utilities. Many of the concrete pads and clotheslines contribute to the cultural landscape. There are also an assortment of other features, including bollards, light standards, and fencing. Archeological resources associated with the site include concrete foundations and concrete remnants that are associated with development of the site during the period of significance.

The cultural landscape retains its historic integrity through several landscape characteristics and features. The overall site retains its integrity of location, with no change in location of major features since the end of the period of significance. The overall setting of the cultural landscape has been retained, with the only major change to the setting since the end of the period of significance being the addition of parking lots to the west of the neighborhood and the construction of a residential subdivision north of the site. These changes to the setting are largely obscured from the site by vegetation. The majority of the buildings, structures, road, sidewalks, foundation pads, and vegetation display a high degree of integrity of workmanship, materials, and design even though most of these resources are in poor condition. The major changes to the design of the site since the end of the period of significance include the demolition of buildings in the lawn area north of the bungalows and the addition of the USS *Oklahoma* Memorial. The spatial organization of the site's design has been diminished by these changes, but the overall site retains its integrity of design. Additionally, the loss of foundation plantings around the bungalows has diminished the integrity of the vegetation within the site, but the overall vegetative historic character has been retained. The materials, workmanship, and design of Battleship Row and the USS Arizona Memorial are high, with no major changes since the end of the period of significance. The overall feeling of the CPO Bungalows Neighborhood and Battleship Row and its strong association with the military development of Ford Island and Pearl Harbor is evident throughout the site, with very few contemporary elements with the cultural landscape that are not associated with the US Navy's use of the area in the early-to-mid-twentieth century.

Natural Systems and Features

Natural systems and features are the natural aspects that have influenced the development and physical form of a landscape and include aspects such as the geomorphology, geology, hydrology, ecology, climate, and native vegetation. The CPO Bungalows neighborhood is located on the northeast side of Ford Island at the shoreline of Pearl Harbor. Battleship Row is located directly offshore from the neighborhood in the East Loch of Pearl Harbor. The predominant features that influenced the development of Ford Island are the dry and windy climate, the lack of fresh water resources, the shallow harbor adjacent to the island, and the jagged corral shoreline.

Harbor
Pearl Harbor defines Ford Island. The harbor's entrance is to the southwest of the island. The harbor contains the Waipio Peninsula and the Manana Peninsula, which define the boundaries of the West Loch, Middle Loch, and East Loch. To the southeast of Ford Island is the Southeast Loch located along Halawa. During the period of significance, the harbor was reached from the mainland by ferry from Halawa. In 1998, Ford Island was connected to O'ahu by bridge that carries vehicles between the two islands. The harbor, while strategic for air and sea defenses, limited the amount of development that could easily be accomplished on Ford Island. The CPO Bungalow Neighborhood, as with all development of buildings on the island, occurred on the island periphery, adjacent to the harbor, in order to maximize the space for the airfield on Ford Island. The mooring quays that define Battleship Row, were constructed offshore in an area of the harbor that was dredged to accommodate the size of the battleships.

Climate
There is little seasonal variation of the climate at this low elevation on the Hawai'ian island of O'ahu. Average high temperatures range between the mid-70s and 80s Fahrenheit, with winter lows averaging 60 degrees Fahrenheit. On the windward side of the island, the site is affected by winds, which are predominate ninety percent of the time in the summer and fifty percent of the time in winter. Winds are strongest in the afternoon. Overall, the site, like the rest of the leeward side of the island is dry, with rain predominately occurring in the winter.[250]

The climate had affected the development of the CPO Bungalows Neighborhood in several ways. Limited fresh water supplies on Ford Island resulted in limited development of the locale until fresh water systems were constructed. Before 1899, water was transported from the mainland to Ford Island.[251] Limited water supplies capped the amount of residences on the island. In addition, the hot and dry climate resulted in the CPO Bungalow Neighborhood to be designed with architecture that utilized the breezes, while trees were planted to shade the buildings from the sun. The neighborhood location was initially rather barren, with limited vegetation. Trees, shrubs, and foundation plantings were incorporated into the neighborhood, with the current species tolerant to heat and drought.

Topography
Ford Island, with its level terrain, provided a large level area that accommodated an airfield. The topography allowed for minimal grading to prepare areas on the island for development. In the shallow waters offshore, the topography was dredged in order to provide anchorages for ships. The dredged material was used to fill the exposed corral shoreline and develop additional buildable land. Archeological testing is needed to determine the extent of the filled area. The mooring quays were constructed by dredging the channel, where long pylons were used to anchor the quays to the harbor floor. The shoreline at the CPO Bungalow Neighborhood was extended to the northeast and southwest,

[250] NPS VALR website, 2018.
[251] ICRMP March 2002, page 3-113.

providing additional level topography in place of a jagged shore. These modifications were made during the period of significance and have not changed markedly since that time.

Important to the development of the site are the harbor, the dry and windy climate, lack of fresh water resources, the level topography, and the shoreline. These natural systems and features remain much as they have since the period of significance and contribute to the cultural landscape.

Natural Systems and Features 1: View of Ford Island looking southeast from NPS Visitor Center. Note the low topography and thick vegetation of Ford Island behind Battleship Row and the USS *Arizona* Memorial (NPS Cultural Landscapes, 2017).

Natural Systems and Features 2: The shoreline of the CPO Bungalows Neighborhood as seen from Battleship Row just northwest of mooring quay F-6S USS *West Virginia*. Note shoreline fill and Bungalow 32 can been seen through a break in the vegetation (NPS Cultural Landscapes, 2017).

Natural Systems and Features 3: View of the geology and topography of the shoreline at the point between bungalows 29 and 31. The level topography of the island is evident, while the natural shoreline of predominately corral is apparent at this point (NPS Cultural Landscapes, 2017).

Spatial Organization

Spatial organization is the three-dimensional organization of physical forms and visual associations in the landscape, including the articulation of ground, vertical, and overhead planes that define and create space. The spatial organization of the site is primarily related to the shoreline. The two primary areas within the site are the CPO Bungalows Neighborhood and Battleship Row, which take advantage of the natural topography. The neighborhood site is organized around the shoreline and the road system, which defines the space for the bungalows, the lawn, and the USS *Oklahoma* Memorial. The mooring quays are organized in a row close to the shoreline where the topography drops off under water.

The US Army constructed housing along the northwestern shore of Ford Island beginning in 1919. The US Navy housing built in the 1920s was located along the northeastern section of Ford Island.[252] During the period of significance, buildings were limited to the periphery of the island around the airfield.

The CPO Bungalow Neighborhood is located along the southeastern portion of Ford Island, and the housing is organized close to the shoreline, facing the interior of the island, and is connected to the rest of the island Cowpens Street. Initially, the CPO bungalows were constructed on a natural point with a shoreline of corral and scrub vegetation. By the 1930s the shoreline was modified with the placement of fill from the dredging material from the construction of the mooring quays located just offshore of Ford Island. The shape of the shoreline at the end of the period of significance is similar to the configuration that is present today. The topography of the neighborhood is relatively level, providing a uniform ground plane that is broken up only by vegetation. The bungalows are organized in a uniform pattern along Belleau Wood Loop, with lawn surrounding each building and a scattering of trees around the buildings. A thick wall of vegetation along the shoreline has divided the housing from the shoreline unlike during the period of significance when these spaces were visually connected due to a lack of shoreline vegetation. The overall spatial organization of the bungalows has been maintained despite the more dense vegetation along the shoreline.

The space of the neighborhood is defined by the curvilinear roads, with the bungalows organized to face Belleau Wood Loop, which serves to separate the space between the bungalows and an expansive lawn that once contained auxiliary buildings and structures related to the military's use of the island, which were organized along and northwest/southwest row that terminated at bungalows 31 and 32. The lawn is defined by Belleau Wood Loop that wraps around the east and south, and Langley Avenue to the north and Cowpens Street to the west. This area, which was broken into smaller spaces defined by buildings and structures during the period of significance is now a broad open area punctured by large trees and remnant foundations. The lack of vertical definition of the space by the historic buildings diminishes the historic character of this space.

At the western edge of the lawn is the USS *Oklahoma* Memorial, which is organized to fit into the space along Cowpens Street and Langley Avenue. The overall stature of the memorial is low and wide, providing a large expanse of individual markers that create a sizeable footprint. The memorial, while low to the ground, breaks up the space between the lawn and Bungalow 68, and provides a visual barrier from the lawn toward Bungalow 68. During the period of significance, a oil storage tank was located in this location, which would have also broken up the spatial plane in a similar way. While the memorial doesn't contribute to the spatial organization of the site, it is compatible with the historic character in terms of its scale and size.

Bungalow 68 is the only building on the site located to the east of Cowpens Street. The bungalow faces to the east with a parking lot to the south and west of the building. The open ground plane in this area is

[252] IRCMP, March 2002, 3-114:3:115.

broken by a large tree at the corner of Lexington Boulevard and Cowpens Street. During the period of significance the bungalow was flanked by an oil storage tank to the west where the parking lot is located today. The overall historic character of the spatial organization of this portion of the site has changed with the parking area creating an open and level space, whereas during the period of significance this portion of the site would have felt more enclosed due to the oil storage tank breaking the vertical plane and views to the west.

The six mooring quays associated with the CPO Bungalows Neighborhood, located offshore from Ford Island, are organized in a uniform row, in pairs of two. The quays rise from the water and are a substantial presence in defining the space in the south channel of Pearl Harbor. The USS *Arizona* and the USS *Arizona* Memorial, at mooring quay F7N, further delineates the space both above and below water. The quays and memorial define the northeastern edge of the site and help to delineate Battleship Row. The mooring quays and USS *Arizona* contribute to the historic spatial organization of the site as defined during the period of significance, while the USS *Arizona* Memorial is a compatible addition to this historic spatial organization. Outside of the boundary of the site is the Battleship *Missouri* Memorial that further defines the southern edge of the site and provides a large towering element to the space similar to the vertical wall that limited views out to Pearl Harbor from the bungalows when ships were moored at Battleship Row.

Overall, the site's spatial organization has been retained since the period of significance. The general organization of the site has been retained, with the organization of the mooring quays, CPO housing, road alignments, and vegetation around the housing retained from the historic period. Changes to the spatial organization since the period of significance include the dense shoreline vegetation, the removal of buildings and structures from the northern side of Belleau Wood Loop, the construction of the USS *Oklahoma* Memorial, and the construction of the parking lot to the west of Bungalow 68. Despite these changes, the site remains predominately organized along the historic alignment of the shoreline and road system.

Spatial Organization 1: View looking north from an altitude of 1,264 feet toward the site. The red lines denote the site boundary. (Source: Google Earth, 2018).

Spatial Organization 2: Looking east from the parking lot at Belleau Wood Loop toward the bungalows that are organized along the road. The broad tree canopy encloses the space along this portion of the loop road (NPS Cultural Landscapes, 2017).

Spatial Organization 3: The broad open lawn area enclosed by the roads contrasts with the smaller articulated spaces around the bungalows that are defined by trees, shrubs, and foundation plantings (NPS Cultural Landscapes, 2017).

Ford Island CPO Bungalows Neighborhood

Spatial Organization 4: The overall spatial organization of the bungalows neighborhood is largely intact since the end of the period of significance (NPS Cultural Landscapes Program, 2017).

Cluster Arrangement

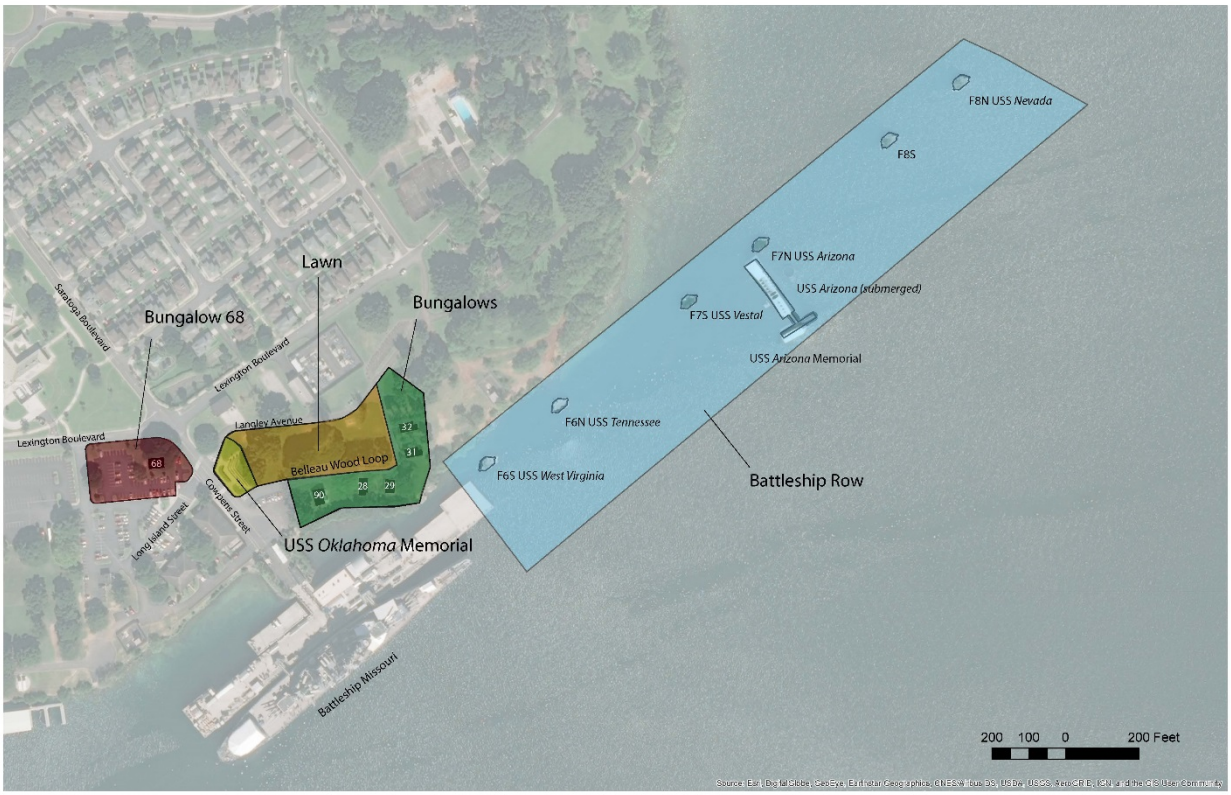
Cluster arrangement is the location and patterns of buildings, structures, and associated spaces in the landscape. The site's clusters include the mooring quays and the CPO bungalows.

The mooring quays are arranged in a linear row in pairs. They are arranged in line with the pier where the Battleship *Missouri* Memorial is docked. The arrangement parallels the Ford Island shoreline before extending out into Pearl Harbor, avoiding the shallows of the northeast portion of the harbor as it reaches the island. This arrangement provided each ship to be moored to two quays, with space in between each ship in the line. Ships could be doubled up when moored. This cluster of mooring quays is among the most evocative historic feature of December 7th, as the arrangement along with the sunken USS *Arizona*, provides a sense of Battleship Row during the attack.

The CPO Bungalow Neighborhood cluster is arranged in a uniform pattern along the curvilinear Belleau Wood Loop. The bungalows are regularly spaces and setback from the narrow road that follow the curvature of the shoreline. The arrangement placed the backs of the bungalows to the harbor. The bungalows are in pairs, with the last bungalow on the western end being relocated after the period of significance. Expansive lawns surround each residence, and naturalistic plantings of trees dot the yards. Foundation planting remnants at each building demonstrate the density of the vegetation during the period of significance. The canopy of trees diminishes inland further away from the cluster of residences. Hedges arranged around the edges of the lawn around bungalow 68 provide an enclosed space in a more exposed inland area compared to that of the other bungalows.

Changes since the period of significance include the degraded cluster arrangement within the lawn, although the foundation slabs, footings, and sidewalks that remain in the lawn area provide a hint of the building arrangement in this area north of Belleau Wood Loop during the period of significance. The installation of the USS *Oklahoma* Memorial, arranged along the east side of Cowpens Street has further degraded the historic cluster arrangement of this area. In addition, the removal of an oil tank and arrangement of a parking lot to the west of bungalow 68 has diminished the cluster arrangement of this area since the period of significance. Despite these changes, the overall site retains the key cluster arrangement that defined the space during the period of significance.

The cluster arrangement of the mooring quays and the CPO Bungalows Neighborhood contributes to the cultural landscape.



Cluster Arrangement 1: Diagram showing the clusters within the CLI boundary. Only the bungalows and Battleship Row clusters contribute to the historic cluster arrangement of the cultural landscape (NPS Cultural Landscapes, 2017).

Views and Vistas

Within the framework of the CLI, views and vistas are described in terms of their character within the boundaries of the landscape. Views are the expansive and/or panoramic prospect of a broad range of visions which may be naturally occurring or deliberately contrived. Vistas are the controlled prospect of a discrete, linear range of vision, which is deliberately contrived. There are three views that contribute to the cultural landscape; the view from the CPO Bungalows Neighborhood toward the harbor, the view from the USS *Arizona* Memorial toward the neighborhood, and the view from the USS *Arizona* Memorial toward O‘ahu.

The view from the CPO Bungalows Neighborhood toward the harbor is key in establishing the spatial relationship between these two clusters, while also conveying the significance the CPO Bungalows Neighborhood during the period of significance. Filtered views of the harbor and the Battleship *Missouri* Memorial can be seen from Belleau Loop Road, the lawn, and the areas behind the bungalows, while an unobstructed view of the southern mooring quays and the USS *Arizona* Memorial can be seen from the point of the shoreline between bungalows 29 and 31. When the bungalows were constructed, the views toward the harbor were largely unobstructed. These views filled in over the decades due to dense shoreline vegetation that has overgrown. The shoreline vegetation pattern and density is similar to the vegetation at the end of the period of significance, so it is likely that the views toward the harbor and similar as well, although no photographic documentation of the views during the period of significance has been identified at this time.

From the USS *Arizona* Memorial the view toward the CPO Bungalows Neighborhood is defined by the harbor, mooring quays F-7S, F-6N, F-6S, and the Battleship *Missouri* Memorial. The bungalows are obscured by vegetation, but the Ford Island shoreline is evident from this view. This view has been retained since the end of the period of significance.

From the USS *Arizona* Memorial the view toward the USS *Arizona* and mooring quays F-7N, F-8S, and F8N and the mainland of O‘ahu are prominent. This key view is defined by the USS *Arizona* protruding from the water’s surface. In the background, beyond the harbor, is development from the mainland. While this development in the background of this view has changed since the period of significance, the key view toward the USS *Arizona* and the mooring quays contributes to the view of Battleship Row.

Within the CPO Bungalows Neighborhood and Battleship Row are three contributing views, including from the island looking toward the harbor, and the views both south and north from the USS *Arizona* Memorial along Battleship Row.

Views and Vistas 1: View looking from CPO Bungalows Neighborhood at the point on the shoreline between bungalows 29 and 31 towards Pearl Harbor. In the foreground is the Battleship *Missouri* Memorial (right), mooring quay F6S (center), mooring quay F-6N (left), with the USS *Arizona* Memorial in left middle ground (NPS Cultural Landscapes Program, 2017).

Views and Vistas 2: View from USS *Arizona* Memorial toward the CPO Bungalows Neighborhood, with mooring quay F-76 in center, mooring quays F-6N and F-6S in background near the Battleship *Missouri* Memorial, left (NPS Cultural Landscapes Program, 2017).

Views and Vistas 3: View from the USS *Arizona* Memorial toward O‘ahu, with the USS *Arizona* and mooring quay F-7N in the foreground, mooring quays F-8S, and F-8N in the middle ground, and O‘ahu in the background (NPS Cultural Landscapes Program, 2017).

Buildings and Structures

Within the framework of the CLI, buildings are elements primarily constructed for sheltering any form of human activity, while structures are functional elements constructed for purposes other than sheltering human activity. There are six buildings (five contributing) within the cultural landscape, including Bungalows 28, 29, 31, 32, 68, and 90. There are nine structures (eight contributing) within the cultural landscape, including mooring quays F-6S, F-6N, F-7S, F-7N, F-8S, and F-8N, as well as the USS *Arizona* Memorial, the USS *West Virginia* and *Tennessee* Memorial, and the USS *Oklahoma* Memorial.

Buildings

Bungalow 28, Non-contributing, compatible
This building was constructed in 2016 on the concrete piers of the 1923 building. The building is located to the south of Belleau Wood Loop, in the middle of a row of three bungalows, and is oriented to face north. The footprint measures approximately 34 feet by 22 feet, with a rear addition that measures approximately 7 feet by 16 feet. The building has wood skirting around the crawlspace, board and batten siding, and a complex hip roof clad with wood shingles. There are two entrances to the building; a front entrance and a side entrance on the west elevation, both of which are accessed by a concrete sidewalk.

Bungalow 29, Contributing
This building is the third bungalow in the row on the harbor side of Belleau Wood Loop on Ford Island. It was constructed in 1923 and altered in 1946. The bungalow is oriented facings north. The one story building has a rectangular footprint that measures approximately 23 feet by 34 feet with a projection at the rear (south) elevation for an enclosed entrance. The building sits on concrete piers, has board and batten siding, and a hip roof with a shed roof over the rear addition that are clad with composition shingles. The building has a front and rear entrance, connected to the road by a concrete sidewalk. For additional details regarding this building description, see the 2018 Historic Structures Report.

Bungalow 31, Contributing
This building is located along the eastern end of the Belleau Wood Loop, with bungalow 32 located to the north and the harbor to the south. The building is oriented to face west. It was constructed in 1923 and altered in 1946. The one-story wood-frame building has a rectangular footprint that measures approximately 22 feet by 34 feet, with a rear projection that measures approximately 10 feet by 12 feet. The building sits on concrete piers, has board and batten siding, and a hip roof that is clad with composition shingles. The rear addition has a shed roof. The building has two entrances; a front entrance and a side entrance on the south elevation of the building toward the rear. For additional details regarding this building description, see the 2018 Historic Structures Report.

Bungalow 32, Contributing
This building is the northern most bungalow on Belleau Wood Loop. It is oriented to face west and was constructed in 1923 and altered in 1946. The bungalow is a one-story wood-frame building that has a rectangular footprint with a rear projection on the east elevation. The building measures approximately 34 feet by 22 feet and the rear addition measures approximately 10 feet by 12 feet. The building sits on concrete piers, is clad with board and batten siding, and has a hip roof with a shed-roof addition that are clad with composition shingles. The building has two entrances; a front entrance and a side entrance on the south elevation. For additional details regarding this building description, see the 2018 Historic Structures Report.

Bungalow 68, Contributing
This building is located on Cowpens Street and is oriented to face east. The building was constructed by 1932 and relocated in 1936-37 to the present location. The one-story wood-frame building has a rectangular footprint that measures approximately 29 feet by 40 feet. A small water heater closet is attached to the rear elevation. The building sites on concrete piers, has diagonally oriented tongue and groove board siding, and a hip roof clad with composition shingles. Stenciled letters have been identified on the interior face of the exterior walls that indicates the walls may be reused shipping containers, but more research and investigation is needed to determine the origin of the siding. The front entrance is reached by a concrete sidewalk, and there is a concrete patio at the rear entrance. For additional details regarding this building description, see the 2018 Historic Structures Report.

Bungalow 90, Contributing
This building is located in a row with three original bungalows on the harbor side of Belleau Wood Loop on Ford Island. It was constructed in 1938 and was moved to this location in 1945. The bungalow is oriented facing northwest. The one story wood-frame building has a rectangular footprint and a projection on the east elevation where the kitchen is located. The footprint measures approximately 29 feet by 40 feet. The building sits on concrete piers, has a board and batten siding, and a complex hip roof clad with wood shingles. The building has two entrances on the sides of the building; one entrance is on the west elevation and the other is on the east elevation. For additional details regarding this building description, see the 2018 Historic Structures Report.

Structures

USS *West Virginia* Quay F-6S (Mooring Platform 11), Contributing
This mooring quay was constructed in 1934-35. It is a “Type A” platform plan, meaning the quay is a quasi-hexagon shape with reinforced concrete exterior walls with an interior grid of reinforced concrete walls held in place at the water level by a series of concrete piles. The interior of the quay is filled with a mix of coral and sand that is part of the original design. There are cleats and bollards attached to the concrete walls. The fender system is no longer present. The exterior concrete walls are painted white and black with black lettering “USS WEST VIRGINIA BB 48” painted on the side. For detailed information regarding the quays, see the March 4, 2016 Trip Report by Sonya Cooper.

USS *Tennessee* Quay F-6N (Mooring Platform 12), Contributing
This mooring quay was constructed in 1934-35. It is a “Type A” platform plan, meaning the quay is a quasi-hexagon shape with reinforced concrete exterior walls with an interior grid of reinforced concrete walls held in place at the water level by a series of concrete piles. The interior of the quay is filled with a mix of coral and sand that is part of the original design. There are cleats and bollards attached to the concrete walls. The fender system is no longer present. The exterior concrete walls are painted white and black with black lettering “USS TENNESSEE BB 43” painted on the side. For detailed information regarding the quays, see the March 4, 2016 Trip Report by Sonya Cooper.

USS *Vestal* Quay F-7S (Mooring Platform 13), Contributing
This mooring quay was constructed in 1934-35. It is a “Type A” platform plan, meaning the quay is a quasi-hexagon shape with reinforced concrete exterior walls with an interior grid of reinforced concrete walls held in place at the water level by a series of concrete piles. The interior of the quay is filled with a mix of coral and sand that is part of the original design. There are cleats and bollards attached to the concrete walls. The fender system is no longer present. The exterior concrete walls are painted white and black with black lettering “USS VESTAL AR 4” painted on the side. For detailed information regarding the quays, see the March 4, 2016 Trip Report by Sonya Cooper.

USS *Arizona* Quay F-7N (Mooring Platform 14), Contributing
This mooring quay was constructed in 1934-35. It is a "Type A" platform plan, meaning the quay is a quasi-hexagon shape with reinforced concrete exterior walls with an interior grid of reinforced concrete walls held in place at the water level by a series of concrete piles. The interior of the quay is filled with a mix of coral and sand that is part of the original design. There are cleats and bollards attached to the concrete walls. The fender system is no longer present. The exterior concrete walls are painted white and black with black lettering "USS ARIZONA BB 39" painted on the side. For detailed information regarding the quays, see the March 4, 2016 Trip Report by Sonya Cooper.

Quay F-8S (Mooring Platform 15), Contributing
This mooring quay was constructed in 1934-35. It is a "Type B" platform plan, meaning the quay is a quasi-octagon shape with a concrete shell exterior wall and an interior grid of reinforced concrete walls held in place at the water level by a series of concrete piles. The interior of the quay is filled with a mix of coral and sand that is part of the original design. There are cleats and bollards attached to the concrete walls. The fender system is no longer present. The exterior concrete walls are painted white and black. For detailed information regarding the quays, see the March 4, 2016 Trip Report by Sonya Cooper.

USS *Nevada* Quay F-8N (Mooring Platform 16), Contributing
This mooring quay was constructed in 1934-35. It is a "Type B" platform plan, meaning the quay is a quasi-octagon shape with a concrete shell exterior wall and an interior grid of reinforced concrete walls held in place at the water level by a series of concrete piles. The interior of the quay is filled with a mix of coral and sand that is part of the original design. There are cleats and bollards attached to the concrete walls. The fender system is no longer present. The exterior concrete walls are painted white and black with black lettering "USS NEVADA BB 36" painted on the side. For detailed information regarding the quays, see the March 4, 2016 Trip Report by Sonya Cooper.

USS *Arizona* Memorial, Contributing
The USS *Arizona* Memorial was constructed in 1961-62 to memorialize the 1,177 servicemen who lost their lives during the attack on December 7, 1941. The memorial is a 184 feet long and the overall profile of the structure is shaped with curvilinear edges that peak at both ends. There is a door at the southeast end of the structure and openings along the center of both the west and east elevations. The interior is divided into an entry area, an assembly room in the center, and a shrine with a wall with the names of those that died on the USS *Arizona* when it sunk. The assembly room contains an opening in the floor with views to the sunken deck of the USS *Arizona*, as well as windows on the sides of the room that overlook the sunken ship. A dock and ramp are located at the southeast end of the memorial to allow people to disembark from the ferry and enter the memorial. The USS *Arizona* Memorial, while contributing to the cultural landscape, is also individually listed on the National Register of Historic Places.

USS *West Virginia* and *Tennessee* Memorial (F27) Contributing
The USS *West Virginia* and *Tennessee* Memorial was installed in 1947 as a memorial to the December 7, 1941 attack. The memorial is composed of a bronze plaque attached to a concrete monument that is oriented with the plaque facing the northwest at the point of the shoreline. The concrete base measures four feet, six inches by one foot, eight inches and is six inches tall. Set on the base is a concrete block that measures three feet, 10 inches long by two feet, one inch high with the bronze plaque affixed to the front that measures one foot, nine inches tall by two feet, ten inches long by one-half inches thick. At the top of this structure is a concrete block that measures two feet six inches long and four inches tall. The concrete base has large exposed aggregate and is covered by grass.

USS *Oklahoma* Memorial (F162, F165, F166) Non-contributing
The USS *Oklahoma* Memorial was constructed in 2006-07 to memorialize the 429 servicemen on the USS *Oklahoma* who lost their lives in the December 7, 1941 attack. The memorial is composed of a black granite walls and white marble standards. The granite walls represents the hull of the USS *Oklahoma*, while the marble standards represents the servicemen "manning the rails." In addition to these main design elements, signs (F162, F166), markers, benches, flagpole (F162), lighting were installed to complete the memorial design. Since the memorial was constructed after the period of significance, it is non-contributing, but compatible with the CPO Bungalows Neighborhood and Battleship Row.

USS *Arizona* Memorial dock, Non-contributing
The dock to the USS Arizona Memorial is a contemporary structure make of a steel frame and steel deck with chain railing. The dock does not contribute.

There are thirteen contributing buildings and structures and three non-contributing buildings and structures. Bungalow 28 is non-contributing but compatible, the USS *Oklahoma* Memorial and the USS *Arizona* Memorial dock are non-contributing.

Buildings and Structures 1: Bungalow 28, contributing, view looking southwest (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 2: Bungalow 29, non-contributing, view looking southeast (NPS Cultural Landscapes Program 2017).

Buildings and Structures 3: Bungalow 31, contributing, view looking southeast (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 4: Bungalow 32, contributing, view looking southeast (NPS Cultural Landscapes Program, 2017).

Building and Structures 5: Bungalow 68, contributing, view looking northwest (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 6: Bungalow 90, contributing, view looking southwest (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 7: Mooring quay F-6S, contributing, view looking northwest (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 8: Mooring quay F-6N, contributing, view looking northwest (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 9: Mooring quay F-7S, contributing, view looking north (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 10: Mooring quay F-7N, contributing, view looking southwest (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 11: Mooring quay F-8S, contributing, view looking north (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 12: Mooring quay F-8N, contributing, view looking southwest (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 13: USS *Arizona* Memorial, contributing, view looking north with non-contributing dock to the right (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 14: USS *West Virginia* and *Tennessee* Memorial, looking south (NPS Cultural Landscapes Program, 2017).

Buildings and Structures 15: USS *Oklahoma* Memorial, view looking southeast (NPS Cultural Landscapes Program, 2017).

Circulation

Circulation is defined as the spaces, features, and applied material finishes which constitute systems of movement in a landscape. The circulation within the CLI boundary includes the Belleau Wood Loop road, the parking lot adjacent to Belleau Wood Loop, two parking lots near bungalow 68, and the concrete sidewalks to each bungalow.

Roads

Belleau Wood Loop (F127) Contributing
Belleau Wood Loop is the primary road through the site, and is a curvilinear drive that connects five of the bungalows to adjacent developments on Ford Island. The loop road is built on a very shallow fill prism and is paved with asphalt. In some sections there are concrete curbs and concrete edging. The width of the road varies. The following widths of road were measured: Bungalow 90 is 20 feet, seven inches; Bungalow 28 is 18 feet; Bungalow 29 is 16 feet; between Buildings 29 and 31 there is three feet of concrete curbing that measures 3 inches deep; near Bungalow 31 is 17 feet wide; near Bungalow 32 is 17 feet wide. There is asphalt curbing in front of Bungalow 28 that ranges from one foot to one foot, six inches wide. The road is in poor condition, with the asphalt cracked and crumbling and grass growing in the cracks and over the edges of the road. Tree roots are also uplifting the asphalt in places. In 1941, the road was identified as a 12 foot wide coral paved road (22 Oct 1941 untitled plan, EV5 NAVFAC HI Reference Library). It is unknown when it was paved with asphalt or when the concrete edging was installed.

Parking lots

Belleau Wood Loop parking lot (F130), Non-contributing
A small parking lot that can accommodate approximately four cars is located adjacent to Belleau Wood Loop, across from Bungalow 90. The lot is at grade and paved with asphalt. Loose remnant wood, including a telephone pole, are used to edge the lot. The lot is in poor condition with the asphalt cracked and crumbling and grass growing in the cracks and over the edges of the lot. Morning glory is growing in disturbed areas in the lot. Tree roots are also uplifting the asphalt in places. Crushed coral was noted in the parking lot below the asphalt where the tree roots have uplifted the pavement. This parking lot does not appear in a 1968 plan or aerial photo of the site. The parking lot is in poor condition.

Bungalow 68 large parking lot (F168), Non-contributing
Located in the northwest portion of the site, the parking lot near Bungalow 68 consists of an “L” shaped lot that wraps around the west and south yard. The parking lot consists of approximately 70 car parking spaces. The parking area is flanked by a lawn strip with a scatter of trees that parallels a sidewalk along the south, west, and north edges of the parking area. The interior of the lot is open with no median or trees. The parking lot was constructed after the period of significance. The parking lot is in good condition.

Bungalow 68 small parking lot (F169), Non-contributing
Located to the east of Bungalow 68 is a small, irregular shaped parking lot that connects to Long Island Street. The parking lot is surrounded by lawn. An aerial photo dating to 1968, at the end of the period of significance does not show this parking lot. The parking lot is in good condition.

Sidewalks

Sidewalk to Bungalow 28 (F46), Non-contributing, compatible
There is a sidewalk to Bungalow 28 that wraps around the west side of the building. The sidewalk leading from the road to the building was repoured in 2016, while the sidewalk along the west side of the building was parged in 2016. The sidewalk from the street to the front steps of the building measures 13 feet nine inches long by three feet five inches wide. There are two steps at either end of the sidewalk. The walk then connects to the west elevation with a sidewalk that is eight feet, 10 inches long. There is a triangular section of sidewalk at these two sidewalks that measures five feet, six inches along the diagonal. The sidewalk along the west elevation is poured in two sections with the first section measuring 13 feet, four inches, and a step down in elevation to a section that measures 22 feet, five inches. The sidewalk at the south end is one foot, 11 inches above grade. The entire west elevation sidewalk measures four feet, six inches wide. The sidewalk connects to a set of concrete steps and concrete porch that leads to a door on the building's west elevation. The sidewalk is in good condition.

Sidewalk around Bungalow 29 (F35), Contributing
The sidewalk leading from the front entry to the side entry of Bungalow 29 is made of concrete. The "U" shape sidewalk measures two feet, six inches wide, and the front "west to east" "U" measures 13 feet, two inches long, while the "north to south" "U" measures 43 feet, 10 inches long. The rear "west of east" segment measures three feet wide and eight feet, three inches long and is composed of two sections. The sidewalk has a few cracks and scour has eroded the soil at the northwest corner of the sidewalk, but overall the sidewalk is in fair condition.

Sidewalk to Bungalow 31 (F5), Contributing
The sidewalk between the road and the entry stairs to Bungalow 31 is paved with concrete. The sidewalk measures 12 feet, 11 inches long by two feet, four inches wide and three-and-a-half inches deep. The sidewalk is heaving at the joint with the road concrete curb, and has settled below the level of the joint of the concrete pad that is at the foot of the entry steps. The sidewalk is in the same location as the sidewalk in historic photos and contributes to the historic district. The sidewalk is in fair condition, with the surface showing only minor wear.

Sidewalk around Bungalow 31 (F7) Contributing
The sidewalk connecting the front entry steps to the entry on the south elevation of Bungalow 31 is "L" shaped and made of concrete. The "north to south" running side of the "L" measures eight feet, six inches long by two feet, 10 inches wide and is three-and-a-half inches deep. The "east to west" section of the "L" measures 35 feet, seven inches long by two feet, six inches wide and is three-and-a-half inches deep. The apron on the "east to west" section of the "L" measures seven feet, 10 inches by one foot, 10 inches. The sidewalk is in the same location as the sidewalk in historic photos and contributes to the historic district. The sidewalk is heaving along the "north to south" section of the "L" and vegetation is growing between the joints of the concrete. The side is in fair condition.

Sidewalk to Bungalow 32 (F9) Contributing
The sidewalk between the road and the entry stairs to Bungalow 32 is paved with concrete. The sidewalk is constructed in two sections, with the section adjacent to the road at grade and a step up to the section that connects to Bungalow 32. The sidewalk at grade measures two feet, six inches long, and the sidewalk above grade measures 14 feet, seven inches long. Both sections are three feet, seven inches wide. The section above grade is four-and-a-half to five-and-a-half inches deep. The sidewalk is surrounded by turf and is in fair condition. The sidewalk is in the same location as the sidewalk in historic photos and contributes to the historic district.

Sidewalk around Bungalow 32 (F10) Contributing
The sidewalk connecting the front entry to the side entry on the south elevation of Bungalow 32 is made of poured concrete in an "L" shape. The "north to south" section of the "L" measures nine feet, one inch long by two feet, eight inches wide and three inches deep. The "east to west" section of the "L" measures 36 feet, six inches by two feet, 10 inches by three inches deep. The apron along the "eat to west" section of the "L" measures six feet, nine inches long by two feet wide by four inches deep. The sidewalk is in the same location as the sidewalk in historic photos and contributes to the historic district. The sidewalk is in fair condition.

Sidewalk to Bungalow 68 (F61) Contributing
The sidewalk to the front door of Bungalow 68 measures 23 feet, one inch long by three feet, 11 inches wide and is three inches deep. The concrete sidewalk is in fair condition, with grass growing over the edges of it.

Sidewalk to Bungalow 90 (F55, F56) Contributing
The sidewalk to the east entrances of Bungalow 90 is composed of two main sections (F55 and F56). This sidewalk is of similar dimensions as the other sidewalks in the district and is in fair condition. (Will add dimensions to final draft).

Sidewalk to Bungalow 90 (F58) Contributing
This sidewalk leads to the west entrance of the building and is laid out in one straight section. This sidewalk is of similar dimensions as the other sidewalks in the district and is in fair condition. (Will add dimensions to final draft).

The circulation that contributes to the cultural landscape includes Belleau Wood Loop and the sidewalks to the bungalows. Non-contributing circulation includes the two parking lots.

Circulation 1: Belleau Wood Loop road, view looking south (NPS Cultural Landscapes Program, 2017).

Circulation 2: Small parking lot to the east of Bungalow 68 (F169), view looking northwest (NPS Cultural Landscapes Program, 2017).

Circulation 3: Parking lot adjacent to Belleau Wood Loop (F130), view west (NPS Cultural Landscapes Program, 2017).

Circulation 4: Sidewalk in front of Bungalow 32, which is a typical example of a sidewalk associated with the connection from the road to the bungalows. View to north (NPS Cultural Landscapes Program, 2017).

Vegetation

Within the framework of the CLI, vegetation is defined as deciduous and evergreen trees, shrubs, vines, ground covers and herbaceous plants, and plant communities, where indigenous or introduced in the landscape, including both functional or ornamental vegetation planted for specific purposes. Within the CLI boundary are trees, foundation plantings, and lawn that have been planted on site to serve both functional and atheistic needs associated with the residential development. The overall character of the trees, shrubs, foundation plantings, and lawn contribute to the cultural landscape. It is difficult to identify specific vegetation that contributes to the cultural landscape because of a lack of historic photos of the CPO Bungalow Neighborhood.

Trees

There are a variety of trees dotting the landscape, including several towering specimen trees with broad canopies as well as trees of small stature in the yards and lawns throughout the site. These trees were planted primarily for shade, while also providing for a lush landscape in a sparsely vegetated island. A thick band of trees grows along the shoreline except for along the coral rock outcrop at the point of the shoreline. The trees throughout the cultural landscape have the effect of filtering the views looking out and looking toward the neighborhood.

Shrubs

Shrubs have been planted throughout the neighborhood in both irregular plantings as well as in rows. More naturalistic grouping and unkempt forms of shrubs are located around the front and side yards of the bungalows. Rows of shrubs clipped as uniform hedges are located along the back of bungalow 29 and

delineate the yard of bungalow 68. The shrubs are primarily for aesthetic purposes, to both create a lush landscape and also define the more intimate yard space around the bungalows.

Foundation Plantings

Foundation plantings of smaller statue shrubs and ground covers and located along the front and sides of the bungalows. In areas where the sidewalks run along the sides or front of the bungalows, foundation plantings break up the space in between the paths and buildings. The foundation plantings are not clipped and are grouped in clusters of various forms and colors. Many of these plants are missing, although several stumps are located in these spaces to give a hint of where this vegetation once grew.

Planting Beds

Planting beds are also located under several of the larger trees in front of the bungalows. These plantings are a mix of shrubs and groundcovers and are irregular in shape with plantings of various forms and colors tightly grouped. The combination of the foundation plantings and the planting beds provide a lush landscape feel and create more intimate spaces around each of the bungalows.

Lawn

The bungalows are surrounded by clipped lawns that are broken up by shrubs and trees. The lawns provide open spaces around each bungalow. Additionally, a large lawn fills the space to the north of Belleau Wood Loop. The turf is minimally maintained, but is mown, providing an open character around each bungalow that is framed by trees and shrubs.

Below is a list of the main trees, shrubs, foundation plants, and planting beds within the site boundary that contribute to the historic character of the cultural landscape during the period of significance:
Trees:

African Tulip *Spathodea campanulata* (Tree 15)
The tree is located between Bungalow 31 and Bungalow 32 in the middle of turf. The tree has a sparse canopy and dead branches. Vegetation is grown against the base of the tree at the root flare. The free is in fair condition.

Date Palm *Phoenix dactylifera* (Tree 14)
A mature date palm is located in between Bungalow 31 and Bungalow 32 in the middle of the turf. Growing over the base of the tree was a banyan (*Ficus* spp.) that has been chopped to a trunk of about three feet high. Within a foot of the palm's base is a century plant (F2). While the trunk of the palm is crooked and the banyan was grown over the trunk, the palm is in good condition.

Umbrella Tree *Schefflera arboricola* (F6)
This umbrella tree is located to the west of Bungalow 31, just to the south of the sidewalk (F5) near the road curb. The tree is medium sized and has been pruned at its base. It is surrounded by turf. The canopy of dense foliage is healthy and the tree is in good condition.

Royal Palm *Roystonea regia* (Tree 12)
This royal palm is located to the west of Bungalow 31, just to the north of the sidewalk (F5) near the road curb. It is surrounded by turf. The palm is in good condition.

Plumeria *Plumeria spp.* (Tree 11)
The plumeria is located to the southwest corner of Bungalow 31, near the curve in the road. The medium-sized tree is surrounded by turf. The tree has been heavily pruned in the past and has an uneven canopy. The tree is in fair condition.

Plumeria *Plumeria spp.* (Tree 10)
A plumeria is located to the east of the plumeria at the southwest corner of Bungalow 31. It is roughly the same size as tree 11. The tree is missing large sections of bark along various portions of the trunk and branches and is in fair condition.

African Tulip *Spathodea campanulata* (Tree 18)
An African Tulip tree is located in front of Bungalow 32, just south of the sidewalk to the front entry of the building. The tree is surrounded by turf. The tree has a sparse canopy, many dead branches, and is leaning to the west. The tree is in poor condition.

African Tulip *Spathodea campanulata* (Tree 20)
There is an African Tulip tree located to the northwest corner of Bungalow 32, and is closest to the road in a row of four African Tulips. The tree is surrounded by turf. The tree has an uneven canopy, many dead branches, and suckers. The tree is in fair condition.

African Tulip *Spathodea campanulata* (Tree 22)
This is the middle of four African Tulips located in a row to the north of Bungalow 32. The tree is adjacent to tree 21. It has a straight trunk and a small canopy. The tree's trunk flare is touching tree 21 and is surrounded by turf. The tree is in fair condition.

African Tulip *Spathodea campanulata* (Tree 21)
This is the middle of four African Tulips located in a row to the north of Bungalow 32. The tree is adjacent to tree 22. It has a curved trunk, is leaning to the north, and a small canopy with several dead branches. The tree's trunk flare is touching tree 21 and is surrounded by turf. The tree is in fair condition.

African Tulip *Spathodea campanulata* (Tree 23)
This is the eastern most of four African Tulips located in a row to the north of Bungalow 32.. The has a small canopy with several dead branches and is surrounded by turf. The tree is in fair condition.

Plumeria *Plumeria spp.* (F14B, Tag #13904)
This Plumeria is located just north of the row of African Tulips, near Bungalow 32. The tree has multi trunks and is surrounded by lawn. The tree is in good condition.

Plumeria *Plumeria spp.* (F15, Tag #13903)
This Plumeria is located just north of the row of African Tulips, near Bungalow 32. The tree has multi trunks and is surrounded by lawn. The tree is in fair condition.

Plumeria *Plumeria spp.* (F16, Tag #13902-13901)
This Plumeria is located just north of the row of African Tulips, near Bungalow 32. The tree has multi trunks and is surrounded by lawn. The tree is in fair condition.

Opiuma *Pithecellobium dulce* (Tree 24)
This tree is located at the edge of the NPS parcel, to the northeast of Bungalow 32. It has two trunks, a broad canopy, and droopy leaves. The tree is surrounded by turf. The tree is in good condition.

Umbrella Tree *Schefflera arboricola* (F19, Tag #13905)
This umbrella tree is located to north corner of the NPS parcel in the turf, north of Bungalow 32. The tree stands out in the turf. It has a wide canopy and a wide trunk. The tree is in good condition.

Royal Palm *Roystonea regia* (F31, Tag #13923)
There are two royal palm located at the point in the shoreline between Bungalow 29 and Bungalow 31. Diameter at breast height is 11.46 inches. The palm is begin encroached upon by shoreline vegetation, but is in good condition.

Umbrella Tree *Schefflera arboricola* (F19, Tag #13906)
This umbrella tree is located in the northeast corner of the NPS-owned site. It is a multi-trunk free located in turf. The tree is in good condition.

Tabebuia *Tabebuia spp.* (F21)
This tabebuia is located northwest of Bungalow 32 and is surrounded by turf. The tree is in fair condition, with wilted leaves and tips of branches that are dead.

Monkeypod *Samanea saman* (Tree 8, Tag #13925)
This monkeypod tree is located between Bungalow 29 and Bungalow 31. The tree has a broad canopy, with no understory, and is surrounded by turf. The tree is in good condition.

Royal Palm *Roystonea regia* (Tree 7, Tag #13927)
This date palm is located at the northwest corner of Bungalow 29. It is surrounded by lawn and in fair condition.

Mimosa Tree *Albizia julibrissin* (Tree 5, Tag #13928)
This mimosa tree is located at the northeast corner of Bungalow 28, near the road. The mature tree has a broad canopy, but is asymmetrical in form due to sever pruning of the main branches near the building. A planting bed is located around the tree. The tree appears to be in fair condition.

Mimosa Tree *Albizia julibrissin* (Tree 4)
This mimosa tree is located at the northwest corner of Bungalow 28, near the road. The mature tree has a broad canopy, but is asymmetrical in form due to sever pruning of the main branches near the building. A planting bed is located around the tree. The tree appears to be in fair condition.

Tabebuia *Tabebuia spp.* (F59)
There is a tabebuia located along the western edge of the parcel, just west of Bungalow 90. It is one of several trees that line the boundary with the parking area and screens the parking lot from view from Bungalow 90. It is a young tree, possibly a sprout from Tree 2) and is in good condition.

Tabebuia *Tabebuia spp.* (Tree 2, Tag #13934)
This tabebuia is a substantial size with a narrow form and sparse canopy. It is one of several trees that line the boundary with the parking area. It appears in good condition.

Banyan *Ficus spp.* (Tree 3, Tag #13935)
There is a large banyan tree located at the southwest corner of the property near the shoreline. It has a broad canopy and is missing main branches from the interior of the canopy. It is in fair condition.

Plumeria *Plumeria spp.* (F79, Tag #343)
There is a plumeria located to the southwest of Bungalow 68, in the corner of the "L" shaped hedge of hibiscus that lines the lawn. The plumeria is in good condition.

Autograph Tree *Clusia rosea* (F80)
There is an autograph tree located in the lawn to the northwest of Bungalow 68. The tree is small and has a thick dense canopy and is in good condition.

Monkeypod tree *Samanea saman* (F106, Tag #314)
This tree is located at the western edge of the parking lot in a strip of lawn. It is in good condition.

Monkeypod tree *Samanea saman* (F114, Tag #339)
There is a Monkeypod tree located north of Bungalow 68. It is a tower tree with an expansive canopy that sits prominently at the intersection and edges the lawn north of the building. It is in good condition.

Plumeria *Plumeria spp.* (F107)
There is a plumeria located at the southwest corner of the parking lot in the strip of lawn near the road. It is in good condition.

Paperbark trees *Melaleuca quinquenervia* (F123) Non-contributing
There are two paperbark trees at the northwest corner of the parking lot. The trees are in good condition.

Banyan *Ficus spp.* (Tree 34)
This banyan tree is located directly east of the USS *Oklahoma* Memorial in the lawn of the loop road. The tree has a wide canopy and a substantial root flare. The tree appears to be in good condition.

Banyan *Ficus spp.* (Tree 33)
This banyan tree is located in the lawn to the northeast of the USS *Oklahoma* Memorial. It has a wide canopy and a substantial root flare, and appears to be in good condition.

Earpod *Enterolobium cyclocarpum* (Tree 32)
There is an earpod tree located across the street from Bungalow 90 in the lawn. The tree has a broad canopy and a large trunk. It appears to be in good condition.

Monkeypod tree *Samanea saman* (Tree 31)
This monkeypod tree is located in the lawn in the center of the loop road. It has a large canopy. It appears in good condition.

Umbrella tree *Schefflera arboricola* (Tree 30)
There is a small umbrella tree located in the lawn in the center of the loop road under Tree 31 near the edge of the parking lot on Belleau Wood Loop. It appears in good condition.

Ironwood tree *Casuarina spp.* (F143, Tag #13938)
There is an ironwood tree located at the edge of Langley Avenue in the lawn. It is tall and narrow in form with a sparse canopy. The tree appears to be in good condition.

Ironwood tree *Casuarina spp.* (F144)
There is an ironwood tree located at the edge of Langley Avenue in the lawn near the intersection with Belleau Wood Loop. It is tall and narrow in form with a sparse canopy and several dead limbs and severely pruned branches. The tree appears to be in fair condition.

Banyan *Ficus spp.* (Tree 9)
This banyan is located at the 90 degree bend in Belleau Wood Loop in the lawn across the street from the bungalows. It has a rather tall and narrow canopy for a banyan due to pruning. It appears to be in fair condition.

Umbrella tree *Schefflera arboricola* (Tree 29)
There is a small umbrella tree located in the lawn across the street from the bungalows near the 90 degree bend in the road. The tree appears to be in good condition.

Shoreline vegetation
Along the shoreline at the back of Buildings 90, 28, and 29 is a strip of dense vegetation that includes predominately milo (*Thespesia populnea*), with an interspersed mix of other trees including banyan (*Ficus spp.*). The shoreline vegetation is in good condition.

Shrubs and Low-growing plants:

Century Plant *Agave attenuata* (F2)
The century plant is located at the eastern base of the Royal Palm. It is more than six feet tall and is surrounded by turf. Vegetation of various types including vines are growing at its base. The plant is in good condition.

Croton *Codiaeum variegatum* (F36)
The shrub is located at the foundation of the east elevation of Bungalow 29. It is in good condition.

Panax *Polyscias guilfoylei* (F39)
There are two panax on the north and west sides of the concrete pad (F34) associated with Bungalow 29. These plants have been heavily pruned and topped to form a hedge. They are in fair condition.

Panax *Polyscias guilfoylei* (F41)
This panax has been heavily pruned and topped to form a hedge. This plant is located at the south elevation of Bungalow 29. It is in fair condition.

Panax *Polyscias guilfoylei* (F42)
This panax has been heavily pruned and topped to form a hedge and is located at the south elevation of Bungalow 29 and is dead.

Bougainvillea *Bougainvillea spp* (F43)
There is an unpruned bougainvillea located in the lawn in front of Bungalow 28, to the east of the sidewalk. It appears to be in good condition.

Hibiscus *Hibiscus laevis* (F45)
There is a hibiscus located in the planting bed under Tree 4. It appears to be in good condition.

Hibiscus *Hibiscus laevis* (F47)
This hibiscus is located in the lawn to the west of Bungalow 28. It appears that this multi-trunk hibiscus is actually two different plants with pink and orange flowers. The plant is in good condition.

Hibiscus *Hibiscus laevis* (F49)
This hibiscus is located in the lawn to the west of Bungalow 28 and north of the clothesline. The plant is under the canopy of Tree 4, and is in good condition.

Hibiscus *Hibiscus laevis* (F54)
This hibiscus is located in front of Bungalow 90. It is the only plant along the front foundation planter. The plant is in good condition.

Panax *Polyscias guilfoylei* hedge (F67-78)
There are twelve panax plants located to the southwest of Bungalow 68. They form an "L" shaped hedge along the lawn and delineate the space between the building and the parking lot. There are in fair condition.

Panax *Polyscias guilfoylei h*edge (F81-105)
There is a panax hedge located along the edge of the lawn paralleling the road to the north of Bungalow 68. The hedge is in fair condition.

Foundation plants:

Dracaena *Dracaena fragrans* (F14A)
This dracaena is located at the foundation of the south elevation of Bungalow 32. It is approximately two feet fall and has narrow leaves. It is the only foundation planting at Bungalow 32. It is in good condition.

Croton *Codiaeum Variegatum* (F37)
This foundation planting is located at the north elevation of Bungalow 29, next to the stairs to the main entry. The plant is in good condition.

Dracaena *Dracaena fragrans* (F38)
The dracaena is located in the foundation plantings at the northwest corner of Bungalow 29. The plant is in good condition.

Morning Glory *Ipomoea spp*. (F60)
There is a morning glory attached to the porch railing to the west elevation entrance of Bungalow 90. The morning glory is in good condition.

Stumps near Bungalow 68 (F115-120)
There are several stumps of foundation plantings along the north elevation of Bungalow 68.

Planting beds:

Planting bed under tree 5 (F40)
There is a planting bed under Tree 5 at the northeast corner of Bungalow 28 that contains aloe, haole koa, opunia, and morning glory and is surrounded by lawn. The plants surround the base of Tree 5. The vegetation and extent of the planning bed is similar to that under Tree 4. The vegetation is in good condition.

Planting bed under Tree 4 (F44)
There is a planting bed under Tree 4 at the northwest corner of Bungalow 28 that contains aloe, haole koa, opunia, and morning glory and is surrounded by lawn. The plants surround the base of Tree 4. The vegetation and extent of the planning bed is similar to that under Tree 5. The vegetation is in good condition.

Vegetation 1: View from Langley Avenue looking south at the Bungalow Neighborhood. Vegetation consists of towering trees, a scattering a shrubs, remnant foundation plantings, and expansive lawn (NPS Cultural Landscapes Program, 2017).

Vegetation 2: Trees, foundation plantings, and lawn are character-defining of the Bungalow Neighborhood, view looking west with Bungalow 29 in middle ground (NPS Cultural Landscapes Program, 2017).

Vegetation 3: Clipped hedges define the lawn around several of the bungalows, such as Bungalow 68, view looking south from Lexington Boulevard (NPS Cultural Landscapes Program, 2017).

Vegetation 4: Less formal plantings include planting beds under the trees in front of bungalows 28 and 29, view to north from Bungalow 28 (NPS Cultural Landscapes Program, 2017).

Vegetation 5: Type of vegetative character that likely would have been present at the CPO Bungalows Neighborhood during the period of significance (PERL archives, Historic Photos from the 14th District Naval Command, PHOG_NO RV6P104A).

Small Scale Features

Within the CLI framework, small scale features are defined as elements which provide detail and diversity for both functional needs and aesthetic concerns in the landscape. Within the cultural landscape there are many small scale features, some that contribute to the historic character of the property, and some non-contributing features. The main types of small scale features within the site boundary are concrete foundation pads, memorials, clotheslines, and utilities. There are also an assortment of other features, including bollards, light standards, and fencing.

Foundations

The foundations are made of concrete and date to during and after the period of significance. These foundations articulate the way in which space was used in the past and may help to convey the spatial organization of the site during the period of significance.

Concrete Pad (F1) Non-Contributing
Located to the northeast of Bungalow 31 is a concrete pad that measures eight feet, four inches by 14 feet, 11 inches and three-and-a-half inches deep. The pad has an inscription that reads "Rob –N– Kim 4EVER and "♥ Amanda 1992" on the surface of the concrete. The concrete pad sits above grade and is surrounded by turf on the north and east sides. The pad is in good condition. Based on the date of the inscription it appears that this concrete pad dates to after the period of significance.

Concrete Slab – Flagpole Base (F8) Contributing
There is a concrete slab located adjacent to the sidewalk around Bungalow 31 (F7) within the turf. The slab measures two feet, three inches by two feet, one-half inch. There is a sawn-off pipe in the center that measures three feet in diameter. The slab is in fair condition with turf growing around the edges of the slab.

Concrete Slab – Flagpole Base (F11) Contributing
There is a concrete slab located adjacent to the sidewalk around Bungalow 32 (F10) within the turf. The slab measures two feet, 10 inches by two feet 10 inches. There is a pipe in the center that measures four feet in diameter and approximately under 24 inches tall. The slab is in fair condition with turf and weeds growing around the edges of the slab.

Concrete Piers (2) (F12) Contributing to Bungalow 32
There are two concrete piers at the south elevation of Bungalow 32 that used to support posts for a porch. The piers measures one foot, five inches square with a five-and-a-half inch square concrete located on top of the base. The pier closest to the stairs has an inscription of "1946" on it. The piers are in good condition. They contribute to Bungalow 32.

Concrete Slabs (3) (F13) Undetermined
There are three small concrete slabs located along the north elevation of Bungalow 32. Two slabs are next to each other and measure seven-and-a-half inches by one foot, six inches each and are spaced seven inches apart. They are located one foot, six inches from the building. There is a third slab located one foot, four inches from the building and measures one foot, three inches by one foot, six inches. It is unclear what these three slabs were used for. They are in fair condition.

Concrete Pad Adjacent to Bungalow 29 (F34) Undetermined
There is a concrete pad attached to the southwest corner of Bungalow 29. The pad is composed of two sections of concrete slabs that are poured on top of concrete masonry unit blocks that are mortared. The pad abuts the sidewalk that connects the front and side entries of the building. The overall dimensions of the pad are 16 feet, six inches long, eight feet wide adjacent to the building, and 13 feet wide at the western side of the pad. The pad surface is approximately one foot above grade. The overall condition of the pad is poor, with major cracks in the concrete surface and missing CMU blocks around the perimeter. Vegetation is growing in the surface joints and cracks.

Concrete pad (F23) Undetermined
Located in between Buildings 29 and 31 is a concrete pad that measures three feet by six feet, 10 inches by four inches deep. The pad is in poor condition, and is cracked, heaving, and covered in grass.

Concrete Slab at Bungalow 90 (F52) Undetermined
There is a concrete slab located at the southeast corner of Bungalow 90. The slab measures 11 feet, seven inches by 11 feet, seven inches. There is a metal storage container located on a concrete slab at the southeast corner of Bungalow 90. The container is contemporary and non-contributing. The slab is in fair condition.

Concrete pad (F62) Undetermined
There is a concrete pad located to the west, rear, of Bungalow 68 at the base of the stairs. The concrete pad measures one foot, 10 inches by four feet, two inches. It has three tic tac toe games inscribed into it as well as a number of illegible letters. The pad is in fair condition.

Concrete pad behind Bungalow 68 (F63) Undetermined
There is a large concrete pad behind Bungalow 68. It encloses the smaller pad (F62). The overall dimensions of F63 are 17 feet, seven inches by 13 feet. In the corner of the pad near the building there is an inscription that reads “RBG 1960.” The concrete is in fair condition with grass overgrowing the edges and several cracks in sections of the slab.

Concrete pad (F134) Undetermined
There is a concrete pad with a manhole cover in it located in the northeast section of the lawn in the center of the loop road. The pad measures 26 feet long by 18 feet wide. The pad is in fair condition.

Concrete pad (F140) Undetermined
There is a small concrete pad located to the east of the USS *Oklahoma* Memorial in the lawn. The pad is in fair condition.

Clotheslines

Clotheslines were originally constructed by the late 1930s, based on historic aerial photographs of the site. Although it is unclear when the current clotheslines were installed, the clotheslines are an important feature in demonstrating the residential qualities of the neighborhood. The clothesline poles that remain in the neighborhood contribute to the historic character of the cultural landscape.

Clothesline (F3 and F4) Contributing
Located to the south of Bungalow 32 is a clothesline that most likely dates to the period of significance based on historic photographs that show a clothesline in this location. There are two steel clothesline poles that measure 23 feet, six inches apart, and no clothesline. The steel pole (F3) is nine inches in diameter and slightly larger at the base. The pole measures six feet six inches tall, measured at grade, and

the top cross pole is six feet long. The pole is painted yellow, but the paint is faded and heavily chipped. The steel is rusting. Evidence of dark green paint is visible underneath the yellow paint. The stamped "T" joint reads "Crane." The steel pole (F4) measures 6 feet 4 inches tall, measured at grade, and the cross pole measures six feet, one inch long. This pole is also painted yellow, is heavily faded, chipped, and the steel is rusting. The poles are in fair condition.

Clothesline (F50 and F51) Contributing
There is a set of poles for a clothesline located in the lawn between buildings 90 and 28. The poles are oriented north/south. The northern pole (F50) measures seven feet tall at grade and is four inches in diameter. The top cross pole is five feet long and the diameter of the pipe is two-and-a-half inches. The pole is secured by a rounded, poured concrete base that measures one foot, three inches in diameter with the inscription "James H Laverne Dennis J Foster's 1953" in the concrete. The second pole (F51) measures six feet, eight inches tall at grade and is three inches in diameter. The top cross pole is six feet long and two inches in diameter. The pole is set in a concrete base that is covered in grass. The pole is leaning. Both poles are painted yellow and the paint is chipped and faded and the metal is pipped and rusted in places. The poles are in fair condition.

Clothesline (F65, F66) Contributing
There is a clothesline that consists of two poles located in the lawn to the south of Bungalow 68. F65 is a metal pole that measures six feet, four inches tall at grade and is two inches in diameter. The top cross pole is five feet long and two inches in diameter. The metal is not painted. F66 is 6 feet four inches tall at grade and two inches in diameter. The top cross pole is five feet long and two inches in diameter. The pole is leaning. The foundations of the poles are not visible. The poles are in fair condition.

Utilities

Manhole Covers (3) (F32-F33) Undetermined
Three sewer manhole covers are located to the southwest of Bungalow 29. The covers measure two feet, two inches in diameter and are surrounded by turf. The covers are in fair condition.

Underground utility vault (F20) Undetermined
Located in the turf at the northeastern portion of the NPS-owned site near the road is an underground vault. The vault is poured in place concrete with a steel lid. The vault measured three feet, eight inches by three feet, seven-and-a-half inches. The concrete rim of the vault is three-and-a-half inches in height above grade. The above grade portion of the vault appears to be in fair condition, with the concrete heavily chipped and the steel lid badly rusted and flaking.

Underground utility vault (F22) Undetermined
Located in between Buildings 29 and 31 is an underground utility vault. The vault measures five feet, two inches by four feet, two inches by three inches deep. The vault is in fair condition.

Water valve (F24) Undetermined
The water valve is located next to the utility vaults. The valve measures one foot, eight inches tall at grade and is one foot, eight inches long. The pipe is three inches in diameter and is painted yellow, with red paint underneath the yellow coat. The stamp on the pipe reads: 2009 2 ½ 400 WOG 3" diameter steel. The valve is in fair condition.

Electrical vault (F25) Undetermined
The vault cover is concrete and measures two feet, eight inches by two feet, three inches and is three inches tall. The vault is in fair condition.

Utility pole (F48) Contributing
There is a utility pole located to the southwest of Bungalow 28 in the lawn. The pole measures 9.87 inches in diameter. The pole has three brown ceramic insulators attached to a metal bracket at the top and insulated wire that is attached at the top that is bunched up at the base of the pole. The pole appears in good condition. There is a metal pipe protruding from the ground a few feet away from the pole. The pole is depicted in this location in a 1941 plan of the site (22 Oct 1941 untitled plan, EV5 NAVFAC HI Reference Library). The pole is in fair condition.

Pole (F64) Undetermined
There is a pole with a cross member behind Bungalow 68 that measures eight feet, four inches tall. The pole and cross pole are made of metal. It is unknown what purpose this feature once served. The pole is in fair condition.

Utility vault (F131) Non-contributing
There is a contemporary utility vault located in the northeast section of the lawn in the center of the loop road. The concrete vault top measures four feet, eight inches by three feet, two inches and is covered with a steel plate. The vault is in good condition.

Utility vault (F132) Non-contributing
There is a contemporary utility vault located in the northeast section of the lawn in the center of the loop road. The concrete vault top measures three feet, two inches by two feet and is covered with a steel plate. Grass is growing over the edges of the vault. The vault is in fair condition.

Utility vault (F133) Non-contributing
There is a contemporary utility vault located in the northeast section of the lawn in the center of the loop road. The concrete vault top measures two feet, two inches by two feet, two inches and is covered with a steel plate. The vault is in good condition.

Utility vault (F135) Undetermined
There is a contemporary utility vault located in the northeast section of the lawn in the center of the loop road. The concrete vault top measures two feet, two inches by two feet, two inches and is covered with a steel plate. The vault is in good condition.

Water valve (F141) Non-contributing
A contemporary water main valve and vault is located in the lawn near the USS *Oklahoma* Memorial. The vault is in good condition.

Manhole cover (F156) Undetermined
There is a manhole cover located at the edge of the shoreline behind Bungalow 28. The cover is in fair condition.

Utility covers (F167) Non-contributing
There is a group of utility covers located to the north of the USS *Oklahoma* Memorial that are non-contributing. The covers are in good condition.

Fences

Fence (F26) Non-contributing
The contemporary chain link fence is located along the point near the shoreline and acts as a barrier to the shoreline. The fence measures four feet, two inches tall and is painted green. It is in good condition.

Fence around bungalows 31 and 32, Non-contributing
The chainlink fence around bungalows 31 and 32 was installed by the NPS as a safety measure to barricade access to the buildings that are severely deteriorated. The fence is in good condition.

Other features

Bollards (F28) Contributing
There are two pairs of bollards located on a concrete pad at the point of the shoreline. They were likely installed as part of the 1942-43 salvage effort of the USS *Oklahoma* and USS *Utah*. The concrete pad measures 15 feet wide by 20 feet, nine inches long. At both corners of the pad closest to the shore are two bollards. The iron bollards are painted black. The pair at its base measures two feet, eight inches wide and six feet, seven inches long. Each bollard is two feet, two inches tall, and five feet, two inches in diameter. The top of each bollard measures two feet, three inches long and one foot, eleven inches wide. Aloe and Haole Koa are encroaching on the southern extent of the concrete pad. The concrete pad and bollards are in fair condition.

Small-scale features at parking lot (F108, F109, F110, F111, F120, F121, F124, F125) Non-contributing
The stop signs (F108, F124, F125, F163), light poles (F109, F121), parking sign, (F110, F111), and speed limit sign (F120) were installed with the construction of the parking lot near Bungalow 68 after the period of significance. These features are in good condition.

Light poles (F128 “H2”, F129 “H1”) Non-contributing
There are two light poles along Bealleau Loop Road. One is located across the street from Bungalow 32 and the other is located across the street from Bungalow 28. Both are metal light standards with a single arm and a downward facing light. These date to after the period of significance. These features are in fair condition.

Interpretive panel (F164) Non-contributing
The interpretive panel at the USS *Oklahoma* Memorial was installed by NPS and is non-contributing. The panel is in good condition.

Small scale features 1: Concrete pads, like this one at the west elevation of Bungalow 68 are located throughout the neighborhood. View looking east (NPS Cultural Landscapes Program, 2017).

Small scale features 2: Clotheslines, like this between Bungalows 31 and 32, are located in the yards of the bungalows (NPS Cultural Landscapes Program, 2017).

Archeological Sites

Within the framework of the CLI, archeological sites are defined as the location of ruins, traces, or deposited artifacts in the landscape, and are evidenced by the presence of either surface or subsurface features. There is one contributing archeological resource within the CLI boundary: the USS *Arizona*. There are several remnant features associated with former structures within the CLI boundary of the bungalows neighborhood that contribute to the cultural landscape's spatial organization and convey the landscape's significance. Archeological resources associated with the site include concrete foundations and concrete remnants that are associated with development of the site during the period of significance. Because these resources are not structures, but remnants of structures, they are captured in the archeological sites section. Although they have not been evaluated for eligibility as archeological resources under Criterion D, the resources, including concrete foundations and concrete remnants, are associated with development of the neighborhood during the period of significance and are important to the spatial organization of the cultural landscape.

USS *Arizona* (BB-39) NRIS #89001083, Contributing
Built in 1915, the USS *Arizona* is a steel-hulled battleship that measured 608 feet long. The USS *Arizona* was modernized between 1929 and 1931. The USS *Arizona* received the most serious damage of the ships during the December 7, 1941 attack, and is the tomb for 1,102 sailors and Marines killed during the attack. Most of the superstructure was salvaged from the ship during World War II. The battle-damage hull of the USS *Arizona* is submerged except for the sub of the mainmast and barbette for turret 3 with rise above the surface of the water.

Stairs to Water (F30) Undetermined
There is a set of five concrete steps that are resting on the shoreline with a number of large concrete blocks. The stairs have been dislodged from their original position at the edge of the shoreline that drops off to meet the water level. The stairs appear in photographs from the period of significance. Even though the stairs have been dislodged from their original position and no longer function, they are an important feature in demonstrating the connection between Battleship Row and the neighborhood on Ford Island.

Concrete remnant (F53), Undetermined
There is a concrete remnant feature located in the lawn between Buildings 28 and 90. It is unknown what this feature is or the extent of it as it is covered in grass.

Concrete remnant (F57), Undetermined
There is a concrete remnant feature that may have been used as a flagpole footing located along the east elevation of Bungalow 90.

Concrete sidewalk remnant (F136), Undetermined
There is a remnant concrete sidewalk that measures 3 feet 8 inches wide and is partially buried under grass located at the edge of Langley Avenue.

Concrete pad remnant (F137), Undetermined
There is a rectangular concrete pad remnant that is made of concrete and asphalt that measures approximately 20 feet long by nineteen feet wide that is covered with soil and grass making the edges difficult to discern. It is located in the lawn at the edge of Langley Avenue.

Concrete pad remnant (F138), Undetermined
There is a concrete pad remnant of undetermined dimensions under a thick mat of grass in the center of the lawn at the loop road, near the parking lot on Belleau Wood Loop.

Concrete sidewalk remnant (F139), Undetermined
There is a concrete sidewalk remnant that measures three feet, eight inches wide and is an undetermined length because it is covered by soil and grass. Tree roots have heaved sections of the sidewalk.

Concrete footers (F142), Undetermined
There are several concrete footers with sawn-off metal pipe in their centers located in a row under the banyan (tree 33) in the center of the loop road lawn. The footers are buried at grade and are spaced approximately nine to ten feet apart. It's unclear how many of them there are because the lawn has overgrown most of the concrete.

Pipe (F145), Undetermined
There is a pipe located near Tree 9 in the lawn.

Concrete slab remnant (F148), Undetermined
There is a concrete slab that is badly spalding that is at the point of the shoreline. The grade has eroded and it is being held in place by a banyan tree. It is unclear what other features may be associated with the slab as it is located over the water.

Archeological Sites 1: Example of a concrete remnant, a sidewalk (F136) in the lawn north of Belleau Wood Loop, that are located throughout the site (NPS Cultural Landscapes Program, 2017).

Archeological Sites 2: Example of a remnant feature that conveys historic use of the site, F30 a set of concrete stairs at the shoreline behind Bungalow 31 (NPS Cultural Landscapes Program, 2017).

Condition

Condition Assessment and Impacts

Condition Assessment: Poor

Assessment Date: July 28, 2017

Condition Assessment Explanatory Narrative:

Through the analysis and evaluation of landscape characteristics and features, it has been determined that the cultural landscape associated with the Ford Island Chief Petty Officer's Bungalows Neighborhood and Battleship Row site is in "Poor" condition. The landscape shows clear evidence of major disturbances and rapid deterioration by natural and/or human forces. The primary impacts are associated with structural deterioration and impacts to vegetation. Immediate corrective action is required to protect and preserve the remaining historical resources throughout the site.

Please see "Recommended Data for FMSS" located in the supplemental information section of this document for detailed information regarding deficiencies found at the site as well as recommended deferred maintenance and recurring maintenance strategies.

Impacts:

Within the framework of the CLI, impacts are defined as a detectable result of an agent or series of agents having a negative effect on the significance and/or integrity of the cultural landscapes, which some form of mitigation or preventative action is possible. Impacts are identified as internal, with the park boundary, or external, outside the park boundary.

Type of Impact: Erosion

External or Internal: Both Internal and External

Impact Description: Erosion has resulted in the undercutting of the shoreline adjacent to the *USS Tennessee* and *USS West Virginia* memorial.

Type of Impact: Vegetation/Invasive Plans

External or Internal: Internal and External

Impact Description: Tree roots in front of CPO bungalow 28 have heaved and cracked the sidewalk leading to the bungalow as well as the Belleau Wood Loop road and associated the parking area.

Views toward the USS *Arizona* Memorial and the mooring quays that provide a tangible link between the site and what was formerly known as Battleship Row is being compromised by encroaching shoreline vegetation.

	Small woody vegetation such as haole koa is growing in some of the mooring quays. Haole koa and opiuma seedlings around found in numerous other locations throughout the site including in the aloe garden near CPO bungalow 28.
Type of Impact:	Pests/Disease
External or Internal:	Both Internal and External
Impact Description:	Termite damage to the CPO bungalows has resulted in significant impacts to the historic buildings. Evidence of rodents around the CPO bungalows was noted. At least one unidentified species of beetle was noted on site.
Type of Impact:	Exposure to Elements
External or Internal:	Both Internal and External
Impact Description:	Exposure to elements, such as salt water, has resulted in the deterioration of historic buildings and structures, including the mooring quays.
Type of Impact:	Deferred Maintenance
External or Internal:	Both Internal and External
Impact Description:	Deferred maintenance has resulted in several deficiencies including, grasses encroaching on the edges of the historic alignment of the Belleau Woods Loop road, cracked and deteriorated road paving, sidewalks cracked or heaving, dead wood in trees, vegetation on mooring quays, soil and earth covering remnant concrete features, and rusting metal clothesline poles. Deferred maintenance of the bungalows is identified in detail in the Historic Structures Report.
Type of Impact:	Structural Deterioration
External or Internal:	Both Internal and External
Impact Description:	Deficiencies include extensive termite damage as well as deterioration that occurred as a result of excess moisture due to inadequate ventilation and deteriorated roofing materials on the CPO bungalows. Structural deterioration of the bungalows is identified in more detail in the Historic Structures Report.

The mooring quays show evidence of spalling, iron jacking, peeling paint, rusting of the appurtenances and cracking.

Historic sidewalks and concrete pads that provide access to the CPO bungalows are showing signs of structural deterioration including settling, uplift, spalling, and cracking.

Type of Impact: Improper Maintenance

External or Internal: Both Internal and External

Impact Description: Improperly pruned trees were noted throughout the neighborhood. Several foundation plantings have been cut down to stumps rather than pruned away from the buildings. Standing water noted in the lawn area near the USS *Oklahoma* Memorial.

Stabilization Measures:

Within the framework of the CLI, stabilization measures are identified as a list of immediate actions needed to address impacts to the cultural landscape. More detailed recommendations will be included in the Cultural Landscape Report. The following stabilization measures have been identified for the cultural landscape:

Buildings and Structures

- Monitor historic buildings and structures to identify and document deterioration.
- Follow recommendations for treatment provided in a Historic Structure Report for the CPO bungalows, which is currently (2018) in progress.
- Remove encroaching vegetation from mooring quays and paint every five years or as necessary. In the future, detailed treatment recommendations will also be provided for the mooring quays in a Historic Structure Report.

Vegetation

- Prune tree roots and install root barriers in select locations to minimize damage to historic circulation features and historic buildings.
- Remove deadwood from trees to enhance visitor safety and encourage new growth.
- Aerate soil and apply mulch around trees in high pedestrian use areas to avoid soil compaction.
- Refer to recommendations provided in "Ford Island *Oklahoma* Memorial Tree Assessment" prepared by Steve Nimz and Associates Inc., 2011 for detailed recommendations regarding tree root pruning and other treatments.
- Remove encroaching small woody vegetation from mooring quays.

Treatment

Approved Treatment: Rehabilitation

Approved Landscape Treatment Explanatory Narrative: The 2012 EA for the CPO Bungalows identified the rehabilitation of the bungalows with a combined visitor and administrative. Preparation of a Historic Structure Report (HSR) is currently underway (2018) based on the preferred alternative in the EA. The HSR document will establish treatment recommendations for historic buildings (CPO bungalows). A separate HSR will establish a treatment strategy for the mooring quays. A Cultural Landscape Report (CLR) will be underway later in 2018 and will establish specific treatment strategies for the landscape characteristics and features for the CPO Bungalows Neighborhood and Battleship Row under the EA preferred alternative.

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Supplemental Information

Cultural Context

The following information was excerpted from the *Pearl Harbor Naval Complex (PHNC) Cultural Landscape Report, Final*, TEC Inc. – Joint Venture, Honolulu, Hawaii and NAVFAC Pacific, Pearl Harbor, Hawaii, May 2011, 2-7 – 2-8.

Pu‘uloa is commonly used in traditional and historical texts as the name of the Pearl Harbor lagoon, and this name continued to be used into the twentieth century. The ancient name for Pearl Harbor is Ka-‘awa-lau-o-pu‘uloa, which is the name frequently used in chants. Pu‘uloa can be translated as long hill or distant hill. Ka-‘awa-lau-o-pu‘uloa is translated as the many harbored sea of Pu‘uloa, or the leaf-shaped lagoon of Pu‘uloa.

The physical and cultural landscape of Pu‘uloa included places of tradition associated with both the water and the land encompassing the waters. Traditions and customs linked to Pu‘uloa are vast. One of the most prevalent traditions for the area included the aquacultural system, or the varied types of fishponds. The riches of the harbor included various seafoods such as the pipi (pearl oyster), ‘opae (shrimp), and ‘ama‘ama (mullet). The shellfish and shrimp were caught all over the estuary, however mullet and other desirable fish were primarily collected from fishponds. Kamakau describes just a few of the blessings that Pu‘uloa provided for its people:

The pipi (pearl oyster)---strung from Namaka‘ohalawa to the cliffs of Honouliuli, from the kuapa fishponds of inland ‘Ewa clear out to Kapakule. That was the oyster that came in from the deep water to the mussel beds near shore, from the channel entrance of Pu‘uloa to the rocks along the edges of the fishponds…[after periods of kapu] the pipi were found in abundance—enough for all ‘Ewa—and fat with flesh…(Kamakau (1870 [1964:83-84]) in Tuggle and Tomonari-Tuggle 2004).

Given the great number of fishponds at Pu‘uloa, it is no wonder that the lagoon was the origin of the source of the mullet migration around the island as recounted in the legend of Laumeki (in Tuggle and Tomonari-Tuggle 2004:45).

In the Hawai‘ian perspective, fishponds were viewed as extremely valuable for their physical benefits, their aesthetic benefits as well as their associations with the spiritual realm. The deities most closely associated with Pu‘uloa are the mo‘o (water spirit, lizard, or eel beings) and the shark gods. Ethnographic information identifies the lagoon as a place associated with sharks; as deities, as a food source, and as a family ‘aumakua (family or personal god). Ka‘ahupahau is the shark goddess and guardian of Pu‘uloa. Other well-known shark deities who navigated the waters of Pu‘uloa were Kahiukā, brother of son of Ka‘ahupāhau, Kupipi, son of Ka‘hupāhau and Kamoawa, guard to the entrance of Pu‘uloa (Tuggle and Tomonari-Tuggle 2004:48). Noted Native Hawai‘ian scholar and informant Mary Kawena Pukui provides information helpful to understand the origins of Ka‘ahupahau and the relationship between residents and the resident sharks.

Her brother and she were born, not as sharks, but as human beings. One day a shark god saw them and converted them into sharks like himself. Every day they swam up a stream at Waipahu and there they were fed on awa by relatives. Awa was always the food of the gods. When they became too large to swim upstream, the offerings of food were carried to the lochs for them (Pukui 1943:57).

Because the sharks, though numerous, were not harmful within Pearl Lochs, the natives used to have fun mounting on their backs and riding them as cowboys ride horses. To turn them around, a little pressure

was used just back of the eyes. Is this a tall fish story of men riding sharks? No, it is not. My uncle said that it was true and so did the historian Kamakau (Pukui 1943: 59)

Not only were the shark gods revered by making offerings of food to them, there were certain specific sites that were identified as the homes or caves of sharks, as feeding places of sharks or bathing places of these guardian sharks. All of these areas are considered cultural places as they are associated with a cultural practice. One example are the bathing places of the shark guardian Ka‘ahupahau. These have been identified as Ma‘ipuhi in Waimano, Puhikani in Waiau and Kahuawai at Kalauao (in Tuggle and Tomonari-Tuggle 2004:56).

Pu‘uloa continues to be a traditional cultural landscape today, with spiritual significance to contemporary Native Hawai‘ians. Although cultural practices are limited due to US Navy access restrictions, Native Hawai‘ians continue to pursue opportunities. One of the celebrations that has been revived in recent years is the Makahiki, carried out on Moku‘ume‘ume (Ford Island). For many Hawai‘ians, Moku‘ume‘ume is the spiritual center of Pu‘uloa which attracts the life-giving waters of all the lands surrounding the estuary (Honolulu Advertiser February 13, 2009). As the piko or umbilical cord located in the middle of Ka-‘awa-lau-o-pu‘uloa, Moku‘ume‘ume is the core of mana (supernatural or divine power) and the appropriate place to celebrate the Makahiki, a celebration of revival, fertility and abundance.

See bibliography for reference information.

Supplemental Information

Select Survivor Recollections of the Pearl Harbor Attack

E.J. "Abe" Abrisch

It was 7:55 a.m. December 7, 1971. In my full dress US Navy Chief Petty Officer's uniform I stood on the gently rolling deck of a fifty foot motorboat, which was laying over the exact spot where my ship had been thirty years before. They say that you can never recapture the past; but, I wonder. As I stood there vivid memories began flashing through my mind, much like a kaleidoscope, gradually they began to come into focus….Yes—it was 0750 hours. Reveille had been at 0650 hours, and as I lay, fully clothed, on my cot, which was spread in the machine shop of the USS Dobbin, a repair shop, anchored in Pearl Harbor, I half read the Sunday morning paper and half wondered why they wouldn't let us sleep in on Sunday morning. Even though I had the duty that week-end, there wasn't one earthly thing to do except of an emergency, OH well!

Five minutes later, 0755 hours, the General Alarm Bell began to sound, and a voice blared over the intercom. "Away fire and rescue party, on the double." Now it was my job to get the keys from the repair office to open the lock on the handy billy pump, which was in its place by the after gangway topside. I jumped from my cot complaining bitterly about them holding a drill this early, and on a Sunday morning to boot, got the keys and took off for topside, running aft, I looked out over the side and I could see a large building, on Ford Island, burning. My God, it's the real thing, not a drill after all. I quickened my pace and seconds later I was unlocking the lock on the handy-billy pump, when that voice on the intercom reached my ears again. "Belay fire and rescue party. All hands General Quarters, all hands General Quarters, on the double." Now I was confused, what in the devil was going on? Weren't they going to send us over to Ford Island to help fight that fire? Anyway, obeying orders, I took off for my General Quarters station which was repair party 1 at the forward gangway, topside.

As I ran forward, passing a shipmate running aft, he yelled, "the Japanese are bombing us!" I thought, "Man, are you joking?" But he was gone by then and so I dismissed it from my mind as being too crazy to even think about. A moment later I arrived at my station. I looked out over the harbor and became even more confused, not giving a thought to what my shipmate had yelled to me; for there before my eyes were planes coming in from the north at a low altitude, one right after the other, going right down over battleship row and each had a large red ball painted on its side, the significance of which didn't dawn on me. I could see spurts of water in the harbor shoot into the air like geysers and the sounds of explosions reached my ears. My God, this is one realistic drill. They're going to hurt somebody doing that, my thought continued. Then, suddenly, one of the planes disintegrated in a ball of fire with a loud explosion. The oldest destroyer in the commission, the USS Allen, had scored a direct hit on its bombload as it passed. Flashes of gunfire appeared from the ships in the harbor and the sounds of explosions were intermingled with the rat-tat-tat of machine gun fire. I was sick.

I looked over the north end of Ford Island and I could see the super-structure of all the battle wagons which were moored at their pylons. As I watched, the superstructure on the north end of battleship row began to move, the USS *Nevada* was getting underway.

Gunfire and explosions were increasing everywhere. It seemed like the planes were coming in over battleship row would never stop. Then suddenly, as I looked back to the north end of Ford Island at the superstructure of the USS *Arizona*, a huge ball of fire appeared, enveloping the entire ship, and the sound of a deafening explosion reached my ears. The whole ship had blown up at once. She began to burn, emitting a hug[e] column of black smoke straight up into the windless sky. As I looked up, I could see

other planes diving down towards the battlewagons, releasing their bombloads and zooming up through the column of smoke as if to avoid detection.

At the top of the column of smoke I saw another plane emerge in a tight left turn and as it turned, it released three bombs, sort of throwing them towards us. I stood frozen on the deck, watching those three bombs heading right towards us. All three hit the stern at once, or so it seemed, because the stern felt as if it had been lifted right out of the water, jarring the entire ship with a tremendous jolt. My thoughts were so mixed up that I couldn't believe everything that was happening, nothing would fit together.

Soon we got the word from repair party four, which was below deck and aft in the area of the explosion, that no serious damage had been done to the hull. Then damage control called us to send four men to mount machine guns on the bridge. Four of us grabbed our tools and rushed up to the bridge. Another shipmate and I took the port gun tub and the other two went to the starboard tub. As we were busily engaged in bolting the mounts to the deck, a flight of Japanese planes appeared at about three thousand feet and to the port. On our portside, we had five destroyers that had come alongside for routine overhaul a few days before. All of their five inch antiaircraft guns pointed toward their muzzles skyward, and commenced firing on that flight of planes as they progressed toward the starboard. Finally the USS Phelps, which was immediately along our portside, was firing her guns, the muzzles not twenty feet away, right up over the guntub my shipmate and I were in, engulfing it in flames, heat, and smoke. A little more, and those shells would be hitting the wingtub. We scrambled out of there, but fast.[253]

See "Once Again I Turn to God," *Pearl Harbor-Gram*, July 1980, for the full article.

Cecil Camp

On the morning of December 7, 1941, I had relieved the watch in the port engine room [of the USS *Utah*]. I had been on watch about 20 minutes when the first torpedo hit the ship on the port side. It was about 5 or 8 minutes before I could hear someone hollering that the Japanese were attacking us.

I ran up the ladder to the third deck. On the port side was our sleeping quarters, and water was already washing over my bunk. I went to the starboard side of the ship, went up to the second deck to our locker room and mess hall. There were several other men there. One asked if he should take his dress blue uniform with him. I told him he wouldn't be needing that for a good while.

I grabbed an extra pair of dungarees, a carton of cigarettes, and went on top side. A friend and I sat down on the side of the ship and slid into the water. We swam to Ford Island where we were picked up by a party. They took us to the USS *California* to unload ammunition. That evening we were taken to an ammunition ship that was tied up at the docks in the shipyard. We spent the night there.[254]

Joe Morgan

By Morgan's own account, war was the last thing he expected when he joined the US Navy and a teenager. "I joined up to see the world, not to fight a war. When the attack started, I was scared and looked for a place to hide." Joe Morgan was on Ford Island when the bombs started falling December 7, 1941. He ran into a hangar and found a huge I-beam to shelter himself from the fury of the bullets,

[253] "Once Again I Turn to God," *Pearl Harbor-Gram*, July 1980, 8.
[254] National Park Service, "Cecil Camp," World War II Valor in the Pacific National Monument Oral History Collection.

bombs and explosions. While he was hiding, Morgan noticed some of his shipmates were out on the tarmac armed with nothing more than handguns, and shooting back at the aircraft roaring overhead.

"Here I was, a trained gunner hiding in an I-beam and I began to feel ashamed of myself. The shame overpowered my fear. I went into the armory and grabbed a machine gun to fight back." For Morgan and hundreds of other young men barely past boyhood, fear was a natural and understandable reaction to the devastation they witnessed. Yet, they rose above it and went on to serve with honor, and in many cases, great heroism.[255]

Lt. Col. Muller, Jr.

The ship was now over on her side, and men were swimming around in the water everywhere. Others were crawling over her sides like ants, and jumping into the oil muck that had now settled over the entire area. I slide down the back side and dove into the black water. When I came to the surface, I started swimming up the channel to clear the ship.

I was afraid the suction caused by the sinking of the *Oklahoma* might drag me under. Half-crazed men were floundering in the water everywhere. Some were drowning. Others were being cut to pieces by shrapnel and machine gun fire. Japanese planes were everywhere, strafing the water with a deadly stream of fire.

I could see that I didn't want to linger around here very long, so I started swimming as fast as I could for the shore. Several machine gun bursts followed me incredibly close. The water was so filled with oil slick that it was almost impossible to swim through it. Also this oil had ignited, and the flames were sweeping down the channel, consuming everything in its path. I think I swam most of the way underwater, in an effort to escape the strafing and keep clear of the fire.

On reaching shallow water, I stood there half-dazed, and surveyed the slaughter that was going on around me. The *Oklahoma* had her bottom above the water now; the Maryland was throwing out a deadly curtain of fire and was being subjected to a dive bombing and strafing attack. The *West Virginia* was being bombed to pieces by the Japanese bombers.

Planes were everywhere, diving from nowhere and dumping their deadly cargo into the battle line. Just then I heard a tremendous explosion, and turning I saw the *Arizona* go up in flames. A bomb hit her magazine, and there were pieces of her falling 500 yards away. Some 1,170 officers and men went up in that one puff of smoke and flame. The sight was tragic, and sickening, and I pulled myself out of the water onto the oily beach.

Ford Island was a madman's utopia for the first few hours of the attack and through most of that first day. Survivors from the wrecked ships were swarming over the island, plundering and ransacking warehouses, armories and barracks. Their purpose was essentially to obtain clothing and arms, but their means were means were almost barbarous. It was almost a miniature revolution, as disorder, havoc and fear reigned supreme.[256]

[255] National Park Service, "Joe Morgan," World War II Valor in the Pacific National Monument Oral History Collection.
[256] "Remember Pearl Harbor," *Pearl Harbor-Gram*, July 1986, 11-12. Reprinted with permission from Leatherneck Magazines of the Marines, Story by Lt. Col. Muller, Jr.

See "Remember Pearl Harbor," *Pearl Harbor-Gram*, July 1986, 11-12. Reprinted with permission from Leatherneck Magazines of the Marines, Story by Lt. Col. Muller, Jr. for full article.

Alyce Joyce Cote Reid

We had lived in non-comm quarters 51 A NAS Ford Island Pearl Harbor, for over a year. Our quarters were almost directly in line to the docks now referred to as Battleship Row and from our back yard the ship most visible at that time was the USS *Oklahoma*. Directly across the street from our back door was a fairly recently built hangar where planes were repaired and at the very upper end of our building was a huge storage tank.

We heard the noise but seemed oblivious to it, it too was the norm. The explosions that followed….We ran out the back door to the walkway in time to see the USS *Oklahoma* begin to roll over on her side.

The realization was what was happening finally moved us to react and Dad head us to the basement. There were four other families living in our building and we were all in the basement, but there was no panic, just silence, but for the chaos around us.

The next thing I recall was that Dad was getting us into the car…..Someone had mentioned that the dependents were being taken to the Captain's quarters for safety so Dad headed in that direction right straight across the golf course. An explosion that was so intense that the car rattled, not the mention the low flying Japanese planes overhead, must have changed Dad's mind, because he turned the car completely around and headed in the opposite direction. It was later that we learned that the explosion occurred when the USS *Arizona* was hit. We finally stopped at the Administration Building but we were met at the door with 'Don't bring those children in here, they're shelling us, take them to the barracks.'

When we reached the barracks we had no idea what we would see or face there. Wounded, dead and dying were everywhere, end to end, lying down standing up, covered in oil, burned, some screaming, some crying and some just totally in a daze.

After being in the barracks for four or five days we were moved to the BOQ and it was like going to a fine hotel. We hadn't slept in a bed, taken a bath or changed clothes since the 7th.

The Chaplain came to see Mother at the BOQ to tell her that all of the dependents had been evacuated to the mainland but Mother refused to consider it. Two days later we were told that it was safe enough for us to return to our quarters, we were finally going home. It wasn't the homecoming that I was prepared for though. The ships were still burning and there were men and divers on the hull of the USS *Oklahoma* still trying to get survivors and men out of the ship. All of our neighbors and friends were gone…the quarters were completely empty, not a soul left but us, of the two hundred families living there. There was a marine encampment in our front yard and tents for as far as we could see. It didn't appear that any of the quarters had been hit which was a miracle because only one street separated the quarters from the ships and attack." [Alyce Joyce was 11 years old.][257]

[257] "The Ralph Warren Cote' Sr. Family, 7 December 1941" Oral History, WWII Valor in the Pacific National Monument archives.

Site Plans

See 11 x 17 set

Feature Photos

See photo contact sheet set.

FMSS

See 11 x 17 set

Pearl Harbor National Memorial

Ford Island CPO Bungalows Neighborhood and Battleship Row CLI Site Plan 1

Cultural Landscapes Inventory | Regional Office 8, 9, 10, 12 | Cultural Landscapes Program | October 2019

Legend

NPS boundary/CLI boundary

200 100 0 200 Feet

c = contributing

nc = non-contributing

100 200 feet

Sources: ESRI ArcGIS World Imagery, World Topo
Dept. of the Navy CAD 2009
NPS PERL boundary GIS

F8N USS *Nevada (c)*

F8S (c)

F7N USS *Arizona (c)*

USS *Arizona (submerged) (c)*

USS *Arizona* Memorial (c)

F7S USS *Vestal (c)*

USS *Arizona* Memorial dock (nc)

F6N USS *Tennessee (c)*

F6S USS *West Virginia (c)*

USS *Oklahoma* Memorial (nc)

Saratoga Boulevard

Lexington Boulevard

Langley Avenue

Belleau Wood Loop (c)

Cowpens Street

Long Island Street

Battleship Missouri

32

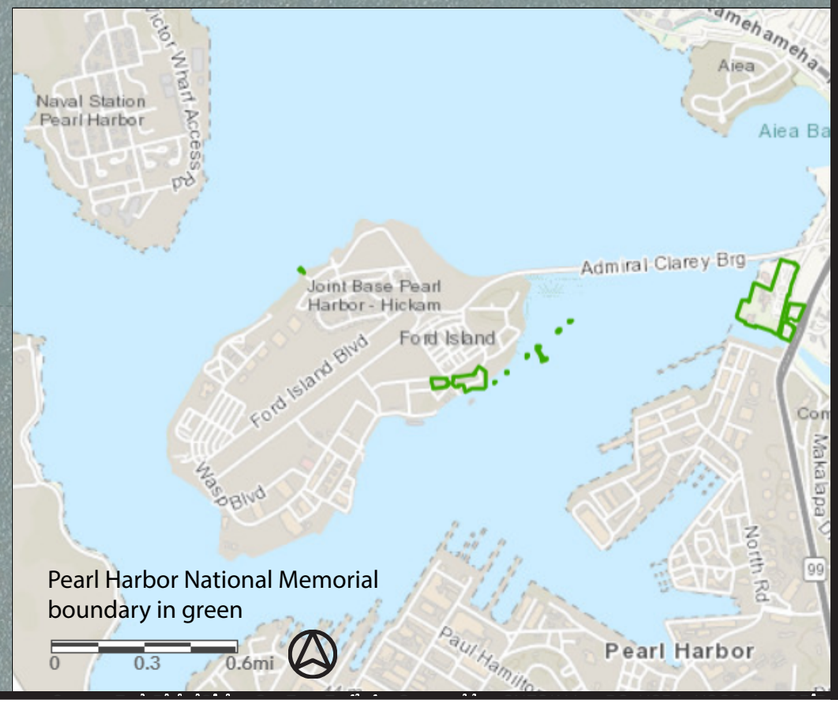
31

68

90

28

29



Pearl Harbor National Memorial
Ford Island CPO Bungalows Neighborhood and Battleship Row CLI Site Plan 2
Cultural Landscape Inventory | Regional Office 8, 9, 10, 12 | Cultural Landscapes Program | October 2019

Legend

- CPO Bungalow
- road and parking
- vegetation
- concrete foundations
- fence
- utility vault
- clothesline
- memorial
- utility pole
- light pole
- CLI Boundary/NPS Boundary
- manhole
- sign post
- drainage inlet

Scale: 1 in. = 70 ft

Sources:
2017 NPS GPS Data
2017 Aerial Photograph
2009 AutoCAD

Bungalow 28 (NC)
Bungalow 29 (C)
Bungalow 31 (C)
Bungalow 32 (C)
Bungalow 68 (C)
Bungalow 90 (C)
Belleau Wood Loop (C)
F1 Concrete pad (NC)
F3, F4, F50, F51, F65, F66 Clothesline poles (C)
F8, F11 Concrete Slab – Flagpole base (C)
F12 Concrete piers (2) (C)
F13 Concrete slabs (3) (U)
F20, F22, F24, F25, F32, F33, F64, F156 utilities (U)
F26 fence (NC)
F27 USS West Virginia and Tennessee Memorial (C)
F30, F53, F57, F136, F137, F138 F139, F142, F145, F148 Archeological feature
F34, F23, F52, F62, F63. F134, F140 Concrete pad (U)
F28 Bollards (C)
F48 Utility pole (C)
F130 Belleau Wood Loop parking lot (NC)
F131, F132, F133, F135, F141, F156, F167 Utilities (NC)
F162, F165, F166 USS Oklahoma Memorial (NC)
F168 Bungalow 68 large parking lot (NC)
F46, F35, F5, F7, F9, F10, F61 F55, F56, F58 Sidewalks (C)
F108, F109, F110, F111, F120, F121, F124, F125, F164 Small-scale features (NC)
F128, F129 Light poles (NC)
F 169 Bungalow 68 small parking lot (NC)

T15, T18, T20, T21, T22, T23 African Tulip *Spathodea campanulata*
T14 Date Palm *Phoenix dactylifera*
F6 Umbrella Tree *Schefflera arboricola*
T12, F31, T7 Royal Palm *Roystonea regia*
T10, T11, F14B, F15, F16, F79, F107 *Plumeria Plumeria spp.*
T24 Opiuma *Pithecellobium dulce*
F19, T30, T29 Umbrella Tree *Schefflera arboricola*
F21, F59, T2 Tabebuia *Tabebuia spp.*
T8, F106, F114, T31 Monkeypod *Samanea saman*
T4, T5 Mimosa Tree *Albizia julibrissin*
T3, T34, T33, T9 Banyan *Ficus spp.*
F80 Autograph Tree *Clusia rosea*
F123 Paperbark trees *Melaleuca quinquenervia*
T32 Earpod *Enterolobium cyclocarpum*
F143, F144 Ironwood tree *Casuarina spp.*
F2 Century Plant *Agave attenuate*
F36 Croton Codiaeum Variegatum
F39, F41, F42, F43, F45, F47, F49, F54, F67-78, F81-105 Panax *Polyscias guilfoylei*
F14A, F38 Dracaena *Dracaena fragrans*
F37 Croton *Codiaeum Variegatum*
F60 Morning Glory *Ipomoea spp.*
F115-120 Stumps near bungalow 68
F40, F44 Planting bed

c = contributing, nc = non-contributing
u = undetermined

Langley Avenue
Cowpens Street
Belleau Wood Loop
70 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, a

F001 concrete pad

F002 Century Plant

F003 clothesline pole

F004 clothesline

F005 front sidewalk

F006 umbrella tree

F007 sidewalk

F008 concrete slab flag-

F009 sidewalk to Build-

F010 sidewalk around

F011 concrete slab flag-

F012 concrete piers

F013 concrete slabs

F014A Dracaena fra-

F014B Plumeria

F015 Plumeria P1120231.

F016 Plumeria

F018 Umbrella tree

F019 Umbrella Tree

F020 underground vault

F021 P1120245.JPG

F022 utility vault

F023 concrete pad

F024 water valve

F025 electrical vault

F026 fence P1120261.JPG

F028 P1120276.JPG

F030 stairs to water

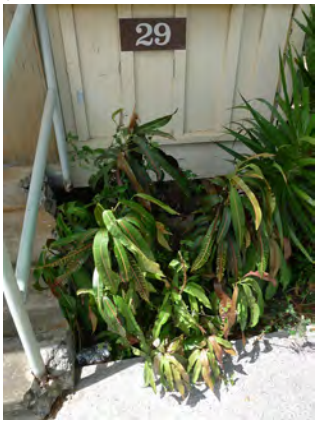
F031 Royal Palm

F032 F33 Manhole cov-

F034 concrete pad Build-

F035 sidewalk around

F036 Croton



F037 Croton

F038 Dracaena

F039 panax

F040 bougainvillea

F040 planting bed

F041 panax

F042 panax

F044 planting bed under

F045 hibiscus P1120341.

F046 sidewalk to building

F047 hibiscus

F048 telephone pole

F049 hibiscus P1120642.

F050 clothesline

F051 clothesline

F052 storage container

F053 concrete remnant

F054 hibiscus

F055 sidewalk to build-

F056 sidewalk to building

F057 concrete remnant

F058 P1120673.JPG

F059 tabebuia

F060 morning glory

F061 sidewalk to build-

F062 concrete pad

F063 concrete pad

F064 pole P1120692.

F065 clothesline

F066 clothesline

F067 panax

F068 panax

F069 panax

F070 panax

F071 panax

F072 panax

F073 - F075 panax

F076 - F078 panax

F079 plumeria

F080 autograph tree

F081 - F105 panax

F107 plumeria

F108 stop sign

F114 monkeypod tree

F114 monkeypod tree

F115 - F119 stumps

F122 paperbark tree

F123 paperbark tree

F127 Belleau Loop Road

F128 light pole

F129 light pole

F130 Belleau Loop Road

F131 utility vault

F132 utility vault

F133 utility vault

F134 concrete pad

F135 utility vault

F136 sidewalk remnant

F137 concrete pad rem-

F138 concrete pad rem-

F139 sidewalk remnant

F140 concrete pad

F141 water valve

F142 concrete footers

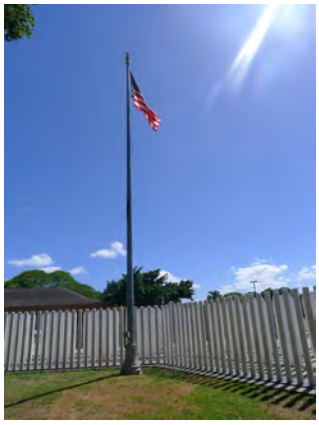
F143 ironwood tree

F144 ironwood tree

F146 milo on shoreline

F148 concrete slab rem-

F156 manhole cover


F162 flagpole P1120890.

F163 stop sign .JPG

F164 interpretive panel

F166 USS Oklahoma

F168 bungalow 68 park-

Tree 10 Plumeria

Tree 11 Plumeria

Tree 12 Royal Palm

Tree 14 Date Palm

Tree 15 African Tulip

Tree 18 African Tulip

Tree 2 tabebuia

Tree 20 African Tulip

Tree 21 and 22 African

Tree 23 African Tulip

Tree 24 Opiuma

Tree 29 umbrella tree

Tree 3 ficus P1120681.

Tree 30 umbrella tree

Tree 31 monkeypod

Tree 32 earpod P1120830.

Tree 33 banyan P1120815.

Tree 34 banyan P1120810.

Tree 4 Mimosa

Tree 5 Mimosa

Tree 7 Royal Palm

Tree 8 monkeypod

Tree 9 banyan

NPS Regional Cultural Landscapes Program
Pearl Harbor National Memorial | Ford Island
Cultural Landscape Inventory 975011 Recommended Data for FMSS

Landscape Characteristic	Feature Name	Feature Contribution	HS Number	IDLCS Number	LCS Name	IN FMSS ?	Notes	Asset Code	Location Number	Location Name	Asset Number	Asset Description Comment	CompClass	Qty	Deficiencies	DM/Stabilization and/or Treatment [Preservation or Restoration]	RM/ Preservation Maintenance
Buildings & Structures																	
Buildings And Structures	*USS Arizona* Memorial	Contributing	2	21232	USS Arizona Memorial	Y		4100	32011	BLDG-USS Arizona Memorial Structure		Multiple, See FMSS	Multiple, See FMSS	1	Laurin Huffman, PWR Historical Architect prepared several preventative maintenance recommendations in his September 2012 trip report: “Issues on Ford Island: Historic Structures under the care of World War II Valor in the Pacific National Monument". See column at right.	"To avoid excessive film build and the consequent problems that it can cause, and to prevent minor defects from distracting the overall impression that the USS Arizona Memorial has been designed to convey, it is necessary to perform minor touch-up in wear areas on a more frequent cycle than wholesale repainting."	
Buildings And Structures	*USS Arizona* Memorial Dock	Non-Contributing				Y		6300	112407	WAWY-Dock USS Arizona Memorial		Multiple, See FMSS	Multiple, See FMSS	1	Laurin Huffman, PWR Historical Architect prepared several preventative maintenance recommendations in his September 2012 trip report: “Issues on Ford Island: Historic Structures under the care of World War II Valor in the Pacific National Monument". See column at right.	Arizona Memorial Sub Structures 1) "Drainage holes in the slab should be lined with pipe that extends below the slab to reduce leaching and reactions with the concrete." 2) "Where possible, cracks should be sealed from above to prevent moisture from entering the structural concrete." 3) "Minor concrete erosion and exposed rebar ends. These rebar appear to have been used as form ties, and were once covered. After desalinization, the ends could be cleaned, treated, and regrouted (continued at right)	and eroded concrete parged." 4) "These rust stains appear to be cut-off ends of fasteners formerly used to secure brackets that supported utility lines. This exposed metal could be cleaned and treated." 5) "VALR has removed most of the unsightly utility lines that were hanging beneath the memorial. In this location it appears that one of the brackets on a line that was retained has failed."

Landscape Characteristic	Feature Name	Feature Contribution	HS Number	IDLCS Number	LCS Name	IN FMSS ?	Notes	Asset Code	Location Number	Location Name	Asset Number	Asset Description Comment	CompClass	Qty	Deficiencies	DM/Stabilization and/or Treatment [Preservation or Restoration]	RM/ Preservation Maintenance
Buildings And Structures	CPO Bungalow 68	Contributing	68	1054384	Chief Petty Officer's Quarters	Y		4100	115876	BLDG-Bungalow #68 Ford Island		Multiple, See FMSS	Multiple, See FMSS	1	Deficiencies include extensive termite damage as well as deterioration that occurred as a result of excess moisture due to inadequate ventilation and deteriorated roofing materials.	Recommendations for future treatment will be provided in a Historic Structure Report, which is currently (2018) in progress.	
Buildings And Structures	CPO Bungalow 90	Contributing	90	1054390	Chief Petty Officer's Quarters	Y		4100	115877	BLDG-Bungalow #90 Ford Island		Multiple, See FMSS	Multiple, See FMSS	1	Deficiencies include extensive termite damage as well as deterioration that occurred as a result of excess moisture due to inadequate ventilation and deteriorated roofing materials.	Recommendations for future treatment will be provided in a Historic Structure Report, which is currently (2018) in progress.	
Buildings And Structures	CPO Bungalow 28	Non-Contributing	28	1054347	Chief Petty Officer's Quarters	Y	Remove structure from LCS due to demolition of historic building. Contemporary replacement in same footprint and location.	4100	115878	BLDG-Bungalow #28 Ford Island		Multiple, See FMSS	Multiple, See FMSS	1	Currently there are no deficiencies.		
Buildings And Structures	CPO Bungalow 29	Contributing	29	1054354	Chief Petty Officer's Quarters	Y		4100	115879	BLDG-Bungalow #29 Ford Island		Multiple, See FMSS	Multiple, See FMSS	1	Deficiencies include extensive termite damage as well as deterioration that occurred as a result of excess moisture due to inadequate ventilation and deteriorated roofing materials.	Recommendations for future treatment will be provided in a Historic Structure Report, which is currently (2018) in progress.	
Buildings And Structures	CPO Bungalow 31	Contributing	31	1054365	Chief Petty Officer's Quarters	Y		4100	115880	BLDG-Bungalow #31 Ford Island		Multiple, See FMSS	Multiple, See FMSS	1	Deficiencies include extensive termite damage as well as deterioration that occurred as a result of excess moisture due to inadequate ventilation and deteriorated roofing materials.	Recommendations for future treatment will be provided in a Historic Structure Report, which is currently (2018) in progress.	

Landscape Characteristic	Feature Name	Feature Contribution	HS Number	IDLCS Number	LCS Name	IN FMSS ?	Notes	Asset Code	Location Number	Location Name	Asset Number	Asset Description Comment	CompClass	Qty	Deficiencies	DM/Stabilization and/or Treatment [Preservation or Restoration]	RM/ Preservation Maintenance
Buildings And Structures	CPO Bungalow 32	Contributing	32	1054378	Chief Petty Officer's Quarters	Y		4100	115881	BLDG-Bungalow #32 Ford Island		Multiple, See FMSS	Multiple, See FMSS	1	Deficiencies include extensive termite damage as well as deterioration that occurred as a result of excess moisture due to inadequate ventilation and deteriorated roofing materials.	Recommendations for future treatment will be provided in a Historic Structure Report, which is currently (2018) in progress.	
Buildings And Structures	Battleship Mooring Quays	Contributing		1094921	Battleship Mooring Quays	Y	See below for individual battleship mooring quay FMSS location numbers.	6300	N/A					1	See deficiencies identified below.	See DM/Stabilization and/or Treatment recommendations below.	See RM/Preservation Maintenance recommendations below.
Buildings And Structures	Mooring Quay F6S	Contributing				Y	Mooring quay painted black and white with "USS WEST VIRGINIA BB 48"	6300	236919	MARINA-Mooring Quay-F6S		Multiple, See FMSS	Multiple, See FMSS	1	1) Small woody vegetation (haole koa) growing on structure; 2) Structural deterioration noted, including spalling, iron jacking, rusting of the appurtenances and cracking; 3) Peeling paint.	1) Flush cut vegetation and remove from structure; 2) Consult with historical architect to repair cracking and spalling concrete following methods identified in Preservation Brief 15: Preservation of Historic Concrete.	1) Every year, inspect structure for impacts associated with structural deterioration; 2) Every other year, remove encroaching small woody vegetation from mooring quays; 3) Every five years, repaint mooring quays, or as necessary. Follow prescribed treatment recommendations in HSR when completed.
Buildings And Structures	Mooring Quay F6N	Contributing				Y	Mooring quay painted black and white with "USS TENNESSEE BB 43"	6300	236920	MARINA-Mooring Quay-F6N		Multiple, See FMSS	Multiple, See FMSS	1	1) Structural deterioration noted, including spalling, iron jacking, rusting of the appurtenances and cracking; 2) Peeling paint.	Consult with historical architect to repair cracking and spalling concrete following methods identified in Preservation Brief 15: Preservation of Historic Concrete.	1) Every year, inspect structure for impacts associated with structural deterioration; 2) Every five years, repaint mooring quays, or as necessary. Follow prescribed treatment recommendations in HRS when completed.

Landscape Characteristic	Feature Name	Feature Contribution	HS Number	IDLCS Number	LCS Name	IN FMSS ?	Notes	Asset Code	Location Number	Location Name	Asset Number	Asset Description Comment	CompClass	Qty	Deficiencies	DM/Stabilization and/or Treatment [Preservation or Restoration]	RM/ Preservation Maintenance
Buildings And Structures	Mooring Quay F7S	Contributing				Y	Mooring quay painted black and white with "USS VESTAL AR 4"	6300	239921	MARINA-Mooring Quay-F7S		Multiple, See FMSS	Multiple, See FMSS	1	1) Small woody vegetation (haole koa) growing on structure; 2) Structural deterioration noted, including spalling, iron jacking, rusting of the appurtenances and cracking; 3) Peeling paint.	1) Flush cut vegetation and remove from structure; 2) Consult with historical architect to repair cracking and spalling concrete following methods identified in Preservation Brief 15: Preservation of Historic Concrete.	1) Every year, inspect structure for impacts associated with structural deterioration; 2) Every other year, remove encroaching small woody vegetation from mooring quays; 3) Every five years, repaint mooring quays, or as necessary. Follow prescribed treatment recommendations in HSR when completed.
Buildings And Structures	Mooring Quay F7N	Contributing				Y	Mooring quay painted black and white with "USS ARIZONA BB 39"	6300	236922	MARINA-Mooring Quay-F7N		Multiple, See FMSS	Multiple, See FMSS	1	1) Structural deterioration noted, including spalling, iron jacking, rusting of the appurtenances and cracking 2) Peeling paint	1) Flush cut vegetation and remove from structure; 2) Consult with historical architect to repair cracking and spalling concrete following methods identified in Preservation Brief 15: Preservation of Historic Concrete.	1) Every year, inspect structure for impacts associated with structural deterioration; 2) Every other year, remove encroaching small woody vegetation from mooring quays; 3) Every five years, repaint mooring quays, or as necessary. Follow prescribed treatment recommendations in HSR when completed.
Buildings And Structures	Mooring Quay F8S	Contributing				Y	Mooring quay painted black and white	6300	236923	MARINA-Mooring Quay-F8S		Multiple, See FMSS	Multiple, See FMSS	1	1) Small woody vegetation (haole koa) growing on structure 2) Structural deterioration noted, including spalling, iron jacking, rusting of the appurtenances and cracking 3) Peeling paint	1) Flush cut vegetation and remove from structure; 2) Consult with historical architect to repair cracking and spalling concrete following methods identified in Preservation Brief 15: Preservation of Historic Concrete.	1) Every year, inspect structure for impacts associated with structural deterioration; 2) Every other year, remove encroaching small woody vegetation from mooring quays; 3) Every five years, repaint mooring quays, or as necessary. Follow prescribed treatment recommendations in HSR when completed.

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Buildings And Structures	Mooring Quay F8N	Contributing				Y	Mooring quay painted black and white with "USS NEVADA BB 36"	6300	236924	MARINA-Mooring Quay-F8N		Multiple, See FMSS	Multiple, See FMSS	1	1) Small woody vegetation (haole koa) growing on structure 2) Structural deterioration noted, including spalling, iron jacking, rusting of the appurtenances and cracking 3) Peeling paint	1) Flush cut vegetation and remove from structure; 2) Consult with historical architect to repair cracking and spalling concrete following methods identified in Preservation Brief 15: Preservation of Historic Concrete.	1) Every year, inspect structure for impacts associated with structural deterioration; 2) Every other year, remove encroaching small woody vegetation from mooring quays; 3) Every five years, repaint mooring quays, or as necessary. Follow prescribed treatment recommendations in HSR when completed
Buildings And Structures	*USS West Virginia* and USS *Tennessee* Memorial	Contributing				N		7100						1	There are currently no deficiencies.		
Buildings And Structures	Double Bollard (2)	Contributing				N	The date of installation for the two double bollards is unknown, however, it is likely that they were associated with the recovery of the U.S.S. *Oklahoma* .	3100						2	1) Minor deterioration (rust) noted at the base of the double bollards; 2) Encroaching vegetation (aloe, haole koa) growing on corner of the concrete pad associated with the double bollards.	1) Remove encroaching vegetation and soil from the concrete pad associated with the double bollards; 2) Consult with regional historical architect to stabilize deteriorated double bollard base.	1) Every 3 years, remove encroaching vegetation from concrete pad; 2) Every three years, inspect and repair double bollards as necessary.
Buildings And Structures	U.S.S. *Oklahoma* Memorial	Non-Contributing				Y		7100	111953	MONU-Oklahoma Memorial Structure	1067564	Sculpture, Plaque	EXHIBIT/SCLPTURE/S	1	1) Drainage issues noted with standing water in lawn adjacent to the memorial; 2) Discoloration of marble columns and benches due to marine environment and excess moisture.	1) Work with regional historical landscape architect to resolve drainage issues lawn. 2) Consult with regional historical architect to address discoloration of the columns; 3) Consider relocating irrigation sprinkler heads to help achieve both objectives.	2) Every three years, inspect and repair components of the memorial as necessary.
Circulation																	

Landscape Characteristic	Feature Name	Feature Contribution	HS Number	IDLCS Number	LCS Name	IN FMSS ?	Notes	Asset Code	Location Number	Location Name	Asset Number	Asset Description Comment	CompClass	Qty	Deficiencies	DM/Stabilization and/or Treatment [Preservation or Restoration]	RM/ Preservation Maintenance
Circulation	Belleau Woods Loop	Contributing				Y	Belleau Woods Loop should include asphalt curbing in front of CPO Bungalow 28 and remnants of rectangular parking lot.	3100	111952	GRDS-Oklahoma Memorial	1102180	Bungalow Road	SURFACE/LANDSURF	1	1) Pavement along road and in the parking area is deteriorated; 2) Encroaching grass and duff is reducing the with of the historic road; 3) Tree roots are impacting the road and parking area resulting in uplift; 4) Inconsistent and incompatible edge and curbing along the loop road, which is marked by different types of materials such as asphalt and concrete; 5) Haphazard wood bumper stops line edge of parking area.	1) Reestablish historic width of the road by removing encroaching grass and duff from road surface; 2) See "Ford Island Oklahoma Memorial Tree Assessment" prepared by Steve Nimz and Associates Inc., 2011 for detailed recommendations regarding tree root pruning.	Every three years, inspect road corridor for encroaching vegetation.
Circulation	CPO Bungalow Parking Area	Non-Contributing				Y	Non-contributing parking includes the large and small lots near Bungalow 68 and the lot adjacent to Belleau Wood Loop.	1300	239310	PRKG-Bungalow Parking for Bldg. #68 Lot B Rt 0907ZZ			SURFACE/TRAFSURF	1	There are currently no deficiencies.		
Circulation	CPO Bungalow Historic Concrete Sidewalks	Contributing				N	Historic concrete sidewalks are associated with the CPO Bungalows. Some components of the sidewalk associated with CPO Bungalow 28 have been replaced.	2100							1) Concrete sidewalks and stairs are showing signs of structural deterioration such as settling, uplift, spalling, and cracking; 2) Grasses are growing in-between the cracks in the sidewalks 3) Haole koa seedlings are growing along the edges of the sidewalks.	1) Consult with regional historical landscape architect for strategies to repair sidewalks; 2) Hand pull, if possible, grasses growing between sidewalk cracks; 3) Flush cut haole koa bordering edges of sidewalks.	Every three years, inspect and repair sidewalks and steps as necessary.
Small Scale Features																	
Small Scale Features	Historic Wood Light pole	Contributing				N	A historic wood light pole is located between CPO Bungalow 28 and CPO Bungalow 29.	3100						1	1) Wood light pole leaning slight; 2) Wires hanging from pole to ground.	1) Consult with regional historical architect for strategies to straighten the pole and remove and/or clean up excess wiring.	Every five years, inspect and repair wood post as necessary.

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Small Scale Features	Clothesline T Posts	Contributing				N	Historic clothesline t posts are located between several of the CPO Bungalows. More specifically the features area situated between	3100						3	1) Evidence of rust was noted on some of the steel posts; 2) Several posts are leaning.	1) Consult with regional historical architect for strategies to straighten t posts and halt deterioration (rust).	Every 3 years, 1) Inspect and repair clothesline t posts; 2) Replace materials in-kind as needed.
Small Scale Features	Concrete Pads Associated with CPO Bungalows	TBD				N	Concrete pads are associated with each of the CPO Bungalows. There age as not been determined.	3100						2	1) Concrete pads are showing signs of structural deterioration such as settling, cracking and spalling; 2) Small woody vegetation (haole koa) is growing in the cracks of the concrete pads; 3) Duff, soil and debris accumulation on surface.	1) Clean surface of concrete pads by removing duff, soil and debris; 2) Flush cut woody vegetation growing in between cracks.	1) Every three years, inspect concrete pads for impacts associated with structural deterioration; 2) Every year, remove vegetation growing in the cracks of the concrete pads.
Small Scale Features	Contemporary Metal Light	Non-Contributing				N	All of the metal light poles are non-	3100						2	There are currently no deficiencies.		
Small Scale Features	Chain Link Fence	Non-Contributing				N	The fence was installed to limit access to a portion of the shoreline that is being undercut by wave action. As a result of this installation, the USS West Virginia and USS Tennessee	3100						1	There are currently no deficiencies associated with the fence; however, the fence was installed to limit to access to this portion of the site due to undercutting of the shoreline by waves	Consult with regional NPS staff and the U.S. Navy to pursue viable alternatives for coastal shoreline stabilization.	
Vegetation																	

Landscape Characteristic	Feature Name	Feature Contribution	HS Number	IDLCS Number	LCS Name	IN FMSS ?	Notes	Asset Code	Location Number	Location Name	Asset Number	Asset Description Comment	CompClass	Qty	Deficiencies	DM/Stabilization and/or Treatment [Preservation or Restoration]	RM/ Preservation Maintenance
Vegetation	Trees						The trees contribute to the character of the cultural landscape. Examples of historic trees include Ficus microcarpa, Earpod, Monkeypod, and Ironwood.	3100							1) Dry soil conditions; 2) Deadwood; 3) Soil compaction; 4) Root suckers 5) Dead ficus on shoreline 6) Young haole koa and opiuma spreading throughout site 7) Earpod tree roots near CPO Bungalow 28 impacting sidewalk and adjacent road.	1) Consider strategies to irrigate trees; 2) Prune deadwood and remove debris from site; 3) Prune root suckers and remove debris; 4) Remove haole koa and opiuma seedlings; 5) Remove dead ficus on shoreline; 6) Aerate soil and apply mulch around historic trees located near high pedestrian use areas to avoid soil compaction; 7) See “Ford Island Oklahoma Memorial Tree Assessment” prepared by Steve Nimz and Associates Inc., 2011 for detailed recommendations regarding tree root pruning and other treatments.	1) Every year, inspect trees for deadwood as well as hazard limbs and remove. Consider incorporating this into planning associated with December 7 commemoration activities onsite; 2) Monitor health and condition of the trees; 3) Consult an arborist as needed with any specific questions or concerns.
Vegetation	Historic Foundation Plantings						Examples of historic foundation plantings include Bourgainvillea and Hibiscus.	3100							1) Dead hibiscus and plumeria; 2) Minor pest damage noted on hibiscus; 3) Deadwood and some yellowing leaves; 4) Aloe bed near CPO Bungalow 28 contains seedling haole koa and opiuma seedlings as well as morning glory.	1) Remove dead hibiscus and replace in-kind; 2) Monitor hibiscus located throughout site for pest damage and consult with local professional as needed regarding treatment if condition worsens; 3) Prune deadwood and remove debris from site; 4) Remove haole koa, opiuma, and morning glory from aloe garden.	1) Monitor health and condition of the foundation plantings; 2) Consult an arborist as needed with any specific questions or concerns.
Vegetation	Hedges and Foundation Plantings					N	The hedges and foundation plantings contribute to the	3100									

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Vegetation	Lawn					N	The lawn within the neighborhood contributes to the character of the cultural landscape.	3100							Lawn is dry with dead grass and bare patches of ground visible.	Consider strategies to irrigate the lawn.	
Views and Vistas																	
Views and Vistas	Views Toward U.S.S. *Arizona* and Mooring Quays	Contributing				N	Views toward the U.S.S. *Arizona* Memorial and the mooring quays provide a tangible link between the site and what was formerly known as "Battleship Row".	3100							Vegetation such as milo growing along the shoreline is beginning to encroach on views of the U.S.S. *Arizona* and the mooring quays.	Selectively thin encroaching vegetation to maintain historic views.	1) Every 3 years, selectively thin encroaching vegetation.
Archaeological Sites																	
Archaeological S	Archaeological Remains from Previous Development in Central Lawn	TBD				N	Previous development in this location included: Aboveground Storage Tank 62 and 63, Building 202 and Building 73. Remnants include segments of concrete sidewalk, concrete pads, and concrete footings.	3100							A thin layer of grass, soil and duff are obscuring concrete features located in the lawn associated with the CPO bungalows.	Clear thin layer of grass, soil and duff from surface of concrete features to expose them. Document features through photographs and measurements.	
Archaeological S	Archaeological Remains from Shoreline	TBD				N	Archaeological remains along the shoreline include: multiple sizes of metal pipes and a set of concrete stairs.	7200							Archaeological resources of an unknown provenance are scattered along the shoreline and are susceptible to loss through erosion and/or inundation.	Consult with regional NPS staff and the U.S. Navy for treatment recommendations.	