Sea-Based X-Band (SBX) Radar Vessel Maintenance and Repair

Draft Environmental Assessment

February 2011

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The Missile Defense Agency prepared this Environmental Assessment (EA) to evaluate the environmental consequences of mooring the SBX Radar Vessel at one of the two contingency locations for the inspection, maintenance, and repair activities.

The Proposed Action of the EA is to perform required maintenance of the SBX Radar Vessel thrusters and other scheduled general maintenance activities at a deep-water naval facility capable of providing support. The facility must have a minimum water depth of 50 feet. The Proposed Action is needed as a contingency in the event that Todd Pacific Shipyards is not available to perform required maintenance activities. The two contingency locations are Naval Station Everett, Everett, Washington and Naval Air Station North Island, San Diego, California.

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Executive Summary

EXECUTIVE SUMMARY

Introduction

The National Environmental Policy Act (NEPA) of 1969 as amended (42 United States Code 4321, et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508), Department of Defense (DoD) Instruction 4715.9, *Environmental Planning and Analysis*, Chief of Naval Operations Instruction (OPNAVINST) 5090.1C, *Environmental Readiness Program* (Environmental and Natural Resources), Department of the Navy Procedures for Implementing NEPA (32 CFR § 775[2005]), and the applicable Service environmental instructions that implement these laws and regulations, direct DoD officials to consider environmental consequences when authorizing and approving Federal actions.

Within the DoD, the Missile Defense Agency (MDA) is responsible for developing, testing, and deploying the Ballistic Missile Defense System (BMDS). The BMDS is designed to intercept threat missiles during all phases of their flight: boost, midcourse, and terminal. The Sea-Based X-Band (SBX) Radar Vessel serves as a component of the BMDS, which is an integrated, layered system to defend the United States, its deployed forces and allies, against all ranges of enemy ballistic missiles. The SBX Radar may also be used for related missions such as space surveillance.

The SBX Radar Vessel became operational in 2005, and as with any vessel, requires routine maintenance and repair as well as mandatory recertification of structural and propulsion components. The vessel's hull and four thrusters require a 5-year maintenance and repair cycle and certification in order to continue operation. The thruster maintenance was due in 2005; however, MDA received an extension until 31 March 2011. The hull certification, as well as some additional scheduled maintenance, was performed at Joint Base Pearl Harbor–Hickam, Hawaii in July and August 2010. Thruster maintenance and repair must be performed at a deep-water (a minimum of 50 feet) facility. Some additional maintenance would be performed concurrent with the thruster work. Non-completion of the maintenance and repair of the thrusters would lead to the eventual decertification of this SBX Radar Vessel and prevent its vital use as part of the BMDS.

MDA is currently planning for the repair and maintenance work to be done at Todd Pacific Shipyards, a commercial shipyard in Seattle, Washington, in the spring of 2011. MDA must try to conduct this maintenance around the SBX Radar Vessel's already scheduled participation in BMDS flight testing planned throughout the year. Therefore, MDA is also developing contingency plans to go to other locations should the current flight test schedule change or other unforeseen circumstances occur that would affect the ability to obtain the required maintenance at Todd Pacific Shipyards. MDA is proposing to perform necessary inspection, maintenance, and repair actions on the SBX Radar Vessel at one of two proposed contingency locations (Naval Station Everett (NSE), Washington or Naval Base Coronado–Naval Air Station North Island (NASNI), California). This work could begin in the spring of 2011 and take approximately 3 months to complete. However, due to the operational requirements of the SBX Radar Vessel and shifting world events, the commencement date may change. These two locations are unique and are not typically used as maintenance and repair facilities. Although minor maintenance and repair activities may be performed at NSE and NASNI, they are not functioning shipyards; therefore, this Environmental Assessment (EA) analyzes the particular

thruster and other maintenance on the SBX Radar Vessel not routinely performed at these two contingency locations.

Background

The Ground-Based Midcourse Defense (GMD) is an element of the BMDS; the purpose of the GMD element is to intercept and destroy long-range missiles in the ballistic (midcourse) phase of flight before their reentry into the Earth's atmosphere. The BMDS SBX radar operations testing and the establishment of a Primary Support Base (PSB) were analyzed in the 2003 *Ground-Based Midcourse Defense* (*GMD) Extended Test Range Environmental Impact Statement (EIS*). The locations analyzed as a PSB for the SBX Radar Vessel during operations testing were Pearl Harbor, Hawaii (now Joint Base Pearl Harbor–Hickam); Naval Base Ventura County–Port Hueneme, California; NSE, Washington; Port Adak, Alaska; and Port of Valdez, Alaska. The subsequent Record of Decision for the GMD Extended Test Range EIS selected Port Adak, Alaska as the location to establish a PSB for the SBX Radar Vessel. Currently, Adak is not used as the PSB since the SBX Radar Vessel is at sea for approximately 260 days a year. Adak was not intended to be used as a location for maintenance of the SBX Radar Vessel.

The mission of the SBX Radar, a component of the BMDS, is two-fold. It supports BMDS testing in order to improve the system. In addition, the SBX Radar serves as a component of the BMDS, which is an integrated, layered system to defend the United States, its deployed forces, and allies against all ranges of enemy ballistic missiles. The SBX Radar may also be used for related missions such as space surveillance.

The SBX Radar Vessel consists of a converted semi-submersible, mobile, twin-hulled platform on which an X-Band Radar (XBR) and other BMDS system components have been mounted. The SBX Radar is able to track, discriminate, and assess incoming missiles. The SBX Radar greatly increases MDA's ability to conduct more robust and operationally realistic testing of the BMDS, and enhances the BMDS's operational ability to intercept incoming missiles. Because of its mobility, the SBX Radar Vessel can be repositioned to provide operational forward-based coverage or relocated for optimum coverage of various scenarios in the BMDS test program. The SBX Radar Vessel is capable of traveling approximately 8 knots under its own power.

The self-propelled SBX Radar Vessel is 240 feet wide, 390 feet long, and 280 feet tall from its keel to the top of the radar dome. At transit draft, the vessel has a height of approximately 250 feet above the water surface. When conducting mission activities, the SBX Radar Vessel ballasts down to an operational draft and has a height of approximately 200 feet above the water surface. The SBX Radar Vessel is one-third the length of *USS Abraham Lincoln*. The dome of the SBX Radar Vessel extends 73.5 feet higher than the top of *USS Abraham Lincoln* and is approximately 61 feet wider at mast. The dome of the SBX Radar Vessel extends 36 feet higher than the top of *USS Nimitz* and is approximately 22 feet wider at mast. The main deck of the SBX Radar Vessel houses living quarters, workspaces, storage, power generation, bridge and control rooms, and the floor space and infrastructure necessary to support the 2,000-ton XBR antenna array; command, control, and communications suites; and an In-flight Interceptor Communication System Data Terminal. The vessel is Government owned (MDA) and contractor operated (Boeing).

Purpose and Need

The purpose of the Proposed Action is to conduct maintenance activities at one of the contingency locations (NSE or NASNI), with a deep-water port capable of providing the required maintenance activities. Thruster maintenance requires an in-port depth of 50 feet.

The SBX Radar Vessel became operational in 2005, and both the hull and the thrusters require a 5-year maintenance and repair cycle and certification in order to continue operation. If maintenance and repairs for the SBX Radar Vessel thrusters are not completed within the 5-year cycle, the vessel would not be allowed to operate. The vessel would not meet its operational qualifications, as required to operate as a seaworthy vessel, and would thus be decertified. The Proposed Action is needed to maintain certification of the SBX Radar Vessel and continue to provide a full BMDS suite of radars for anti-ballistic missile testing and an operational capability for the combatant commands. Non-completion of the maintenance and repair of the thrusters would lead to the eventual invalidation of the American Bureau of Shipping (ABS) Classification and the United States Coast Guard (USCG) Certificate of Inspection of this SBX Radar Vessel and prevent its vital use as part of the BMDS.

Proposed Action

The Proposed Action of this EA is to perform required maintenance of the SBX Radar Vessel thrusters and other scheduled general maintenance activities at a deep-water naval facility capable of providing support and with an adequate water depth. The Proposed Action is needed as a contingency in the event that Todd Pacific Shipyards is not available to perform required maintenance activities. After a review of the operational and maintenance schedule of the SBX Radar Vessel and the availability of deep-water maintenance facilities, MDA determined the west coast locations of NSE—Alternative 1; and NASNI—Alternative 2 were viable contingency locations to accommodate the proposed spring 2011 maintenance and repair activities.

No-Action Alternative

The No-action Alternative is evaluated in this document because it provides a baseline against which to measure the impacts of the Proposed Action. Under the No-action Alternative, the inspections, maintenance, and repair work on the SBX Radar Vessel would not be performed at NSE or NASNI, and there would be no disruption to the current operations at either of these locations. Under this alternative, the SBX Radar Vessel would not require a contingency location for deep water maintenance.

Alternatives Eliminated From Further Consideration

East Coast Locations—The SBX Radar Vessel is too wide to navigate through the Panama Canal, thus making east coast locations not viable due to arrival time constraints.

Bremerton Naval Shipyard, Bremerton, Washington (Puget Sound Naval Shipyard and Intermediate Maintenance Facility)—The channel at this location is too narrow to navigate the SBX Radar Vessel with the thruster wells extended into the shipyard. Additionally, the water depths at the pier are too shallow to allow for the thruster work to be performed.

Joint Base Pearl Harbor–Hickam, Hawaii—The water depths are too shallow to allow for the thruster work to be performed.

MV Blue Marlin (semi-submersible heavy lift ship)—If the SBX Radar Vessel is placed onto the MV Blue Marlin, the SBX Radar Vessel would need to be raised 15 feet to provide clearance for the thruster maintenance. This additional height would make the MV Blue Marlin unstable.

Dry Docks—No U.S.-controlled dry docks are available for use during the required maintenance time period (work would commence in the spring of 2011).

Adak Island, Alaska—Due to the weather conditions (low temperatures and sea state) and the logistics of transporting personnel and equipment to and from the site, the inspection, maintenance, and repair activities cannot be performed at this location.

Government-to-Government Consultation and Coordination with Native American Tribes

Naval Station Everett

Government-to-Government consultation and coordination was conducted with federally recognized Tribal governments (Lummi, Stillaguamish, Suquamish, Swinomish, and Tulalip Tribes) that could potentially be impacted by activities at NSE.

Naval Air Station North Island

There were no federally recognized Tribes identified in the NASNI study area; therefore, no Government-to-Government coordination was conducted at this location.

Environmental Compliance Actions Taken

Naval Station Everett

A Coastal Consistency Determination (CCD) was submitted for NSE to the Washington Department of Ecology. MDA determined that the Proposed Action would be consistent to the maximum extent practicable with the enforceable polices of the Shoreline Management Act, State Environmental Policy Act, Clean Water Act, Clean Air Act, Energy Facility Site Evaluation Council, the Ocean Resource Management Act, and with the Washington State-approved coastal zone management program. Additionally, a Biological Assessment (BA) was conducted and submitted to the National Marine Fisheries Service and U.S. Fish and Wildlife Service. The BA concluded that the Proposed Action may affect, but is not likely to adversely affect Puget Sound Chinook salmon, Puget Sound steelhead, or Coastal/Puget Sound bull trout, Endangered Species Act (ESA)-listed killer whales and listed marbled murrelets and would not adversely affect essential fish habitat for Pacific salmon or Pacific ground species. Both agencies provided a letter of concurrence with the findings of the BA.

Naval Air Station North Island

A CCD and Essential Fish Habitat Assessment (EFHA) were completed for NASNI. The CCD was submitted to the California Coastal Zone Commission. MDA determined that the Proposed Action would be consistent to the maximum extent practicable with the enforceable polices of the California Coastal Act (Sections 30230, 30231, 30232, and 30251) policies pursuant to the requirements of the Coastal Zone Management Act. The California Coastal Commission approved the Navy's determination at its scheduled hearing on 15 October 2010. The EFHA was submitted to the National Marine Fisheries Service. The EFHA concluded that based on the temporary time the SBX Radar Vessel would be at NASNI, the scope of anticipated repair and maintenance activities, and the required implementation of Best Management Practices, the

Proposed Action is not expected to degrade water quality or decrease or substantially alter prey species abundance or affect other EFHA features.

Impact Assessment Methodology

Fourteen broad areas of environmental analysis were originally considered to provide a context for understanding the potential effects of the Proposed Action and to provide a basis for assessing the severity of potential impacts. These areas included air quality, airspace, biological resources, cultural resources, geology and soils, hazardous materials and waste, health and safety, land use, noise, socioeconomics, transportation, utilities, visual and aesthetics, and water resources. These areas were analyzed as applicable for each proposed location or activity.

Results

The analysis did not reveal any significant impacts to relevant environmental resources at any of the proposed locations.

Of the 14 broad areas considered for environmental analysis, 5 resource areas (cultural resources, geology and soils, health and safety, land use, and utilities) were not analyzed further due to no potential for impacts from the Proposed Action. However, Table ES-1 summarizes the conclusions of the impact analyses made for each of the areas of environmental consideration, as well as Environmental Justice.

Table ES-2 summarizes the specific environmental concern determined during preliminary analysis for each resource analyzed and the proposed mitigation measures to prevent or reduce impact to air quality, airspace, biological resources, hazardous materials and waste, noise, socioeconomics, transportation, visual and aesthetics, and water resources. Additionally, Environmental Justice and Government-to-Government Consultations are included in Table ES-2.

There are no environmental concerns for cultural resources, geology and soils, health and safety, land use, and utilities; therefore, further analysis of these resources was eliminated, and no mitigation measures are proposed. Table ES-3 summarizes assumptions used to eliminate the need for further analysis of these resources.

Table ES-1. Summary of Environmental Impacts

Resource Category	Alternative 1 - Naval Air Station Everett (NSE)	Alternative 2 - Naval Air Station North Island (NASNI)	No-action Alternative
Air Quality	Proposed Action: Maintenance and repair emissions would not exceed the General Conformity *de minimis* levels in the air shed. The requirements imposed by the Puget Sound Clean Air Agency (PSCAA) through its orders will limit volatile organic compounds in paint to amounts listed in the Clean Air Act regulations, Table 2 of 40 CFR 63.783. This and the implementation of Best Management Practices (BMPs) listed in Chapter 2.0 will ensure that the project would have no significant impact.	Proposed Action: Maintenance and repair emissions would not exceed General Conformity *de minimis* levels in the San Diego air shed. If the air shed is newly designated to serious nonattainment and the maintenance is not completed within the 1-year grace period following the nonattainment designation, the Missile Defense Agency (MDA) would need to mitigate the nitrogen oxide (NOx) air emissions from the on-board generators to meet the NOx emissions requirements. The requirements imposed by the San Diego Air Pollution Control District (APCD) through its procedures and the permit process for Marine Coating will ensure that the project would have no significant impact on air quality.	No-action: No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: Not applicable (N/A)
Airspace	Proposed Action: No impacts to controlled and uncontrolled or special use airspace are anticipated. No impacts are anticipated to the two low altitude air routes. MDA would not be required to submit an Obstruction Notification to the Federal Aviation Administration (FAA) since there are no airfields within 20,000 feet of the proposed Sea-Based X-Band (SBX) Radar Vessel location.	Proposed Action: No impacts to controlled and uncontrolled or special use airspace are anticipated. No impacts are anticipated to the visual flight rule corridor overlying San Diego International Airport. MDA may be required to submit an Obstruction Notification to the FAA for the height of the SBX Radar Vessel and the potential for it to be a height obstruction for flights into and out of the San Diego airport.	No-action: No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Biological Resources	Proposed Action: No significant long-term adverse impacts are anticipated to marine vegetation or regional fish. Noise associated with maintenance and repair activities under the Proposed Action is not likely to significantly impact Endangered Species Act (ESA)-listed salmonids. Physical and visual barriers associated with the presence of the SBX Radar Vessel and expended materials from sanding, painting, or underwater welding activities are not expected to significantly impact ESA-listed salmonids. Proposed activities would not impact Essential Fish Habitat (EFH) since marine pollution control BMPs would be incorporated into the Proposed Action. Implementation of BMPs such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices for discharge incidental to the normal operation of Armed Forces' vessels in accordance with the Clean Water Act would preclude significant long-term adverse impacts to area marine mammals.	Proposed Action: No significant long-term adverse impacts are anticipated to marine vegetation or regional fish. No threatened or endangered fish species have been identified in San Diego Bay. Proposed activities would not impact EFH since marine pollution control BMPs would be incorporated into the Proposed Action. The Navy would continue to mitigate for eelgrass impacts consistent with South California Eelgrass Mitigation Policy and Navy mitigation bank agreements with the National Marine Fisheries Service. Implementation of BMPs such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices for discharge incidental to the normal operation of Armed Forces' vessels in accordance with the Clean Water Act would preclude significant long-term adverse impacts to area sea turtles and marine mammals. Impacts resulting from painting, outside welding, sanding, and plasma cutting would be below thresholds that could result in long-term degradation of water resources or affect water quality at the potential location.	No-action: No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A

Table ES-1. Summary of Environmental Impacts (Continued)

Resource Category	Naval Air Station Everett (NSE)	Naval Air Station North Island (NASNI)	No-action
Biological Resources (Continued)	Impacts resulting from painting, outside welding, sanding, and plasma cutting would be below thresholds that could result in long-term degradation of water resources or affect water quality at the potential location. The presence of the moored SBX Radar Vessel would not impact ESA-listed killer whales. No significant long-term adverse impacts are anticipated to seabirds due to implementation of BMPs. The presence of the SBX Radar Vessel is not likely to significantly impact threatened marbled murrelets. Repair and maintenance activities will not destroy or adversely modify critical habitat for the bull trout, Chinook salmon, or southern resident killer whale.	Collisions between sea turtles and the SBX Radar Vessel are unlikely since it would be slow moving and mobile forms of wildlife should be able to avoid it. Noise from the maintenance and repair activities is not expected to adversely affect the green sea turtle since the noise would be similar to that of maintenance on other vessels to which the turtles have become acclimated. No significant long-term adverse impacts are anticipated to area marine mammals. None of the four marine mammal species that inhabit or regularly transit the area are listed as threatened or endangered. No significant long-term adverse impacts are anticipated to seabirds. The presence of the SBX Radar Vessel is not likely to significantly impact threatened or endangered birds at NASNI.	
Cultural Resources	Proposed Action: No potential for impacts.	Proposed Action: No potential for impacts.	No-action. No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Geology and Soils	Proposed Action: No potential for impacts.	Proposed Action: No potential for impacts.	No-action. No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Hazardous Materials and Waste	Proposed Action: Hazardous materials and waste management would be performed in accordance with standard construction management procedures as well as applicable Federal, State, and local regulations. Significant impacts to the environment are not expected from the proper handling of large quantities of petroleum products, hazardous materials, or wastes during the maintenance and repair of the SBX Radar Vessel. Hazardous substance release to the environment shall be minimized by following the BMPs and following the instructions in the *Environment and Safety Requirements for Puget Sound Naval Shipyard and Intermediate Maintenance Facility Contractors, Naval Station Everett*, 2007.	Proposed Action: Hazardous materials and waste management would be performed in accordance with standard construction management procedures as well as applicable Federal, State, and local regulations. With the implementation of the procedures discussed above, significant impacts to the environment are not expected from the proper handling of large quantities of petroleum products, hazardous materials, or wastes during the maintenance and repair of the SBX Radar Vessel. Hazardous substance release to the environment shall be minimized by following the BMPs listed in Table 2-4 and following the instructions in the Commander Navy Region Southwest "Afloat Environmental Quick Response Guide."	No-action. No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A

1 **Table ES-1. Summary of Environmental Impacts (Continued)**

Resource Category	Naval Air Station Everett (NSE)	Naval Air Station North Island (NASNI)	No-action
Health and Safety	Proposed Action: No potential for impacts.	Proposed Action: No potential for impacts.	No-action. No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Land Use	Proposed Action: No potential for impacts.	Proposed Action: No potential for impacts.	No-action. No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Noise	Proposed Action: Given the distance of the residences from the pier, it is unlikely that noise from the two generators would significantly impact the ambient sound levels in the surrounding community. At a received level of 63.3 Day-Night Level (DNL) (Orientation 1) and 57.8 DNL (Orientation 2), the SBX Radar vessel would be audible at night in the closest neighborhood (Tulalip and 33rd Street). However, both orientations would be within the standard that DoD has adopted (DNL of 65) as a criterion that still protects those most impacted by noise. The shipyard equipment noise impact would be minimized by scheduling any work done after 7:00 p.m. to be inside the vessel. There would be no significant noise impact due to increased traffic.	Proposed Action: The potential noise from the Proposed Action would not significantly alter the ambient noise environment in the city of Coronado if moored in either orientation at Pier N. There would be effects to the noise environment from the shipboard generators if moored in Orientation 2 at Pier P. Alignment of the generators' exhaust away from residences (Orientation 1) would mitigate this impact. Shipyard equipment noise would be below the City of Coronado's construction noise ordinance within NASNI property limits. The shipyard equipment noise impact would be minimized by scheduling any work done after 7:00 p.m. to be inside the vessel. There would be no significant noise impact due to increased traffic.	No-action: No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Socio-economics	Proposed Action: The socioeconomic impact from the Proposed Action would be positive, but negligible.	Proposed Action: The socioeconomic impact from the Proposed Action would be positive, but negligible.	No-action. No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Transportation	Proposed Action: No potential for impacts.	Proposed Action: There would be a negligible impact on the ground transportation on city of Coronado roadways leading to and from NASNI during the temporary mooring of the SBX Radar Vessel. With consideration of established mitigation measures, the already negligible impacts would lessen.	No-action: No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Utilities	Proposed Action: No potential for impacts.	Proposed Action: No potential for impacts.	No-action. No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A

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Table ES-1. Summary of Environmental Impacts (Continued)

Resource Category	Naval Air Station Everett (NSE)	Naval Air Station North Island (NASNI)	No-action
Visual and Aesthetics	Proposed Action: The Proposed Action would not a have long-term impact on the visual and aesthetic resources in the Study Area. For the short-term, although the overall appearance of the SBX Radar Vessel is unique and may be perceived as intrusive, the visual impact of mooring of the SBX Radar Vessel at Pier A would be negligible and temporary.	Proposed Action: The Proposed Action would not have a long-term impact on the visual and aesthetic resources in the Study Area. For the short-term, although the overall appearance of the SBX Radar Vessel is unique and may be perceived as intrusive, the visual impact of mooring of the SBX Radar Vessel at Pier P or Pier N would be negligible and temporary.	No-action: No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Water Resources	Proposed Action: The Proposed Action would not have long-term impacts on marine water resources in the Study Area. Short-term effects on marine waters from this activity would be negligible given the BMPs and mitigation measures in place to prevent any adverse affect on water resources.	Proposed Action: The Proposed Action would not have long-term impacts on marine water resources in the Study Area. Short-term effects on marine waters from this activity would be negligible given the BMPs and mitigation measures in place to prevent any adverse affect on water resources.	No-action: No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Environmental Justice	The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.	The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.	No-action: No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A
Government-to-Government Consultation	Government-to-Government consultation and coordination was conducted with the federally recognized tribal governments of the Lummi, Stillaguamish, Suquamish, Swinomish, and Tulalip Tribes.	There were no federally recognized Tribes identified in the NASNI study area; therefore, no Government-to-Government coordination was conducted at this location.	No-action: No impact; continuation of current and previously analyzed and approved activities at NSE and NASNI. Proposed Action: N/A

Table ES-2. Summary of Environmental Concern and Mitigation Measures

Resource Category	Naval Air Station Everett (NSE)-Alternative 1		Naval Air Station North Island (NASNI)-Alternative 2	
	Environmental Resource Concern	Mitigation Measures	Environmental Resource Concern	Mitigation Measures
Air Quality	The nitrogen oxides (NOx) air emissions from the onboard generators.	Impacts to air quality are not significant; therefore, no mitigation measures are proposed.	The NOx air emissions from the onboard generators.	Impacts to air quality are not significant; therefore, no mitigation measures are proposed. However, by early in 2011, San Diego Air Basin (SDAB) will likely be newly designated as a serious nonattainment area for 8-hour ozone. After a 1-year grace period, the thresholds for general conformity determinations will be lowered to 50 tons/year for volatile organic compounds and NOx emissions. If the SDAB is newly designated as a serious nonattainment area for 8-hour ozone and emissions compliance is required prior to the Proposed Action, the Missile Defense Agency (MDA) would need to mitigate the NOx air emission from the shipboard generators to meet the NOx emissions requirements.
Airspace	There is a potential for the Sea-Based X-Band (SBX) Radar Vessel to be an aircraft obstruction to Paine Field.	The appropriate lighting would be on the vessel as required by the Federal Aviation Administration (FAA) to illuminate the height of the structure. MDA would submit an Obstruction Notification to the FAA if required due to the height of the SBX Radar Vessel and the proximity of several runways.	There is a potential for the SBX Radar Vessel to be an aircraft obstruction to San Diego Lindbergh Field.	The appropriate lighting would be on the vessel as required by FAA to illuminate the height of the structure. MDA would submit an Obstruction Notification to the FAA if required due to the height of the SBX Radar Vessel and the proximity of several runways.
Biological Resources	The potential for impacts to biological species from temporarily mooring the SBX Radar Vessel at NSE for maintenance and repair activities include: increased noise, increased presence of personnel, lighting on the vessel required 24/7, the potential for water quality degradation, and expended materials, including those from welding, painting, or paint-chipping.	No additional mitigation measures would be needed to protect vegetative or wildlife species.	The potential for impacts to biological species from temporarily mooring the SBX Radar Vessel at NASNI for maintenance and repair activities include: increased noise, increased presence of personnel, lighting on the vessel required 24/7, the potential for water quality degradation, and expended materials, including those from welding, painting, or paint-chipping.	No additional mitigation measures would be needed to protect vegetative or wildlife species.

Table ES-2. Summary of Environmental Concern and Mitigation Measures (Continued)

Resource Category	Naval Air Station Everett (NSE)-Alternative 1		Naval Air Station North Island (NASNI)-Alternative 2	
	Environmental Resource Concern	Mitigation Measures	Environmental Resource Concern	Mitigation Measures
Hazardous Materials and Waste	The effects of the significant quantities of oil and fuel onboard the SBX Radar Vessel and significant quantities of hazardous waste generation.	No additional mitigation measures would be needed.	The effects of the significant quantities of oil and fuel onboard the SBX Radar Vessel and significant quantities of hazardous waste generation.	No additional mitigation measures would be needed.
Noise	The effects of on-board generators noise on nearby residential areas.	No mitigation measures are proposed.	The effects of on-board generators noise on nearby residential areas.	Alignments of the SBX Radar Vessel would mitigate the noise levels produced by the Proposed Action. As a means of reducing the noise from the two diesel generators, alignments of the generators' exhaust away from residences (i.e., towards NASNI) would provide a greater buffering of the noise-sensitive areas.
Socioeconomics	Effects on the human environment, particularly population, and economic activity for the city of Everett, WA.	Impacts to the socioeconomic characteristics are negligible; no mitigation measures are proposed.	Effects on the human environment, particularly population, and economic activity for the cities of Coronado and San Diego, CA.	Impacts to the socioeconomic characteristic are negligible, no mitigation measures are proposed.
Transportation	None. Proposed Action not applicable to this resource for the proposed location. Any additional vehicle traffic related to the 307 potential temporary personnel associated with the Proposed Action is not anticipated to negatively impact the level of service of roadways leading to NSE. Mooring the SBX Radar Vessel would not require the use of water or air transportation.	No mitigation measures are proposed.	The effect to principal and minor arterial and local roadways leading to NASNI via the city of Coronado.	In the 2000 Record of Decision (ROD) for the Final Environmental Impact Statement for Developing Homeporting Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet, the Navy agreed to provide staggered work shift timing when three carriers are in port simultaneously. In addition to the staggered work times, the 2000 ROD also committed the Navy to encourage carpools and vanpools and subsidize the use of public transportation by military personnel and civilian employees in an effort to reduce traffic congestion on local roads (i.e., bus and ferry service). In compliance with the ROD requirement, the Navy provides a transit subsidy program to help offset some of the costs for employees commuting with the use of mass transit and vanpools.

Table ES-2. Summary of Environmental Concern and Mitigation Measures (Continued)

Resource Category	Naval Air Station Everett (NSE)-Alternative 1		Naval Air Station North Island (NASNI)-Alternative 2	
	Environmental Resource Concern	Mitigation Measures	Environmental Resource Concern	Mitigation Measures
Transportation (Continued)				This level of participation is the equivalent of approximately 700 vehicles per day not traveling the roadways of San Diego County and Coronado. In the 2009 ROD the Navy identified potential traffic improvements both internal (on-base) and external (off-base) to NASNI. All mitigation measures established in the 2009 ROD will continue to be considered, and no further mitigation measures would be needed in the Study Area.
Visual and Aesthetics	View corridors from roadways, parks, or buildings (public or private) from the waterfront area for NSE.	Impacts on aesthetics resources would be negligible and temporary. The lighting system on the vessel is in accordance with navigational rules, the Occupational Safety and Health Administration (OSHA), and the FAA regulations; therefore, no mitigation measures are proposed. No mitigation measures are proposed for visual and aesthetic resources in the Study Area.	View corridors from roadways, parks, or buildings (public or private) from the waterfront area for NASNI.	Impacts on aesthetics resources would be negligible and temporary. The lighting system on the vessel is in accordance with navigational rules, the OSHA, and the FAA regulations; therefore, no mitigation measures are proposed. No mitigation measures are proposed for visual and aesthetic resources in the Study Area.
Water	Impacts on East Waterway (Everett harbor) from underwater welding and seawater overboard discharge.	Impacts to water resources resulting from the Proposed Action would have a low potential for causing an adverse environmental effect. To mitigate potential of lost welding rods/electrodes from entering and accumulating on the floor of the Everett Harbor, underwater welders are required to log and track the number of rods used during the underwater process. Contractors and personnel working at NSE during the maintenance and repair period must obtain a copy of all environmental requirements and BMPs established for the NSE (e.g., Environmental Safety Requirements for Contractors at NSE, 20 August 2007).	Impacts to San Diego Bay from underwater welding and seawater overboard discharge.	Impacts to water resources resulting from the Proposed Action would have a low potential for causing an adverse environmental effect. To mitigate potential of lost welding rods/electrodes from entering and accumulating on the floor of the San Diego Bay, underwater welders are required to log and track the number of rods used during the underwater process. Contractors and personnel working at NASNI during the maintenance and repair period must obtain a copy of all environmental equipments and BMPs established for NASNI (e.g., Afloat Environmental Quick Response Guide, 2009; Senior Officer Present Afloat (SOPA) COMNAVREGSW Instruction 5400.2, 2005; Stormwater Pollution Prevention Plan).

Table ES-2. Summary of Environmental Concern and Mitigation Measures (Continued)

Resource Category	Naval Air Station Everett (NSE)-Alternative 1		Naval Air Station North Island (NASNI)-Alternative 2	
	Environmental Resource Concern	Mitigation Measures	Environmental Resource Concern	Mitigation Measures
Environmental Justice	Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, focuses on identification and analysis of disproportionately high and adverse human health or environmental effects of actions on minority and low-income populations in the United States.	No mitigation measures are proposed. The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. Traditional minority populations comprise a small percentage of the total population for the city of Everett. American Indian and Alaskan Native persons comprise 1.6% of the population for the city of Everett.	Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, focuses on identification and analysis of disproportionately high and adverse human health or environmental effects of actions on minority and low-income populations in the United States.	No mitigation measures are proposed. The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. Traditional minority populations comprise a small percentage of the total population for the cities of Coronado and San Diego.
Government–to-Government	Government-to-Government coordination was executed with federally recognized Tribal governments (Lummi, Stillaguamish, Suquamish, Swinomish, and Tulalip Tribes) with the potential to be impacted by activities at NSE.	No mitigation measures are proposed.	There were no federally recognized Tribes identified in the NASNI study area; therefore, no Government-to-Government coordination was done at this location.	No mitigation measures are proposed.

Table ES-3. Summary of Resources Not Requiring Environmental Analysis and Mitigation Measures

Resource Category	Naval Air Station Everett (NSE)-Alternative 1, and Naval Air Station North Island (NASNI)-Alternative 2 Environmental Resource Concern and Mitigation Measures
Cultural Resources	None. There are no known underwater archaeological sites or features within the deep water terminal area. In addition, there are no activities associated with the Proposed Action that could potentially affect either terrestrial archaeological sites or aboveground properties (e.g., buildings, structures) that are eligible for listing on the National Register of Historic Places.
Geology and Soils	None. There are no planned disturbances to soil or landforms (e.g., dredging), or installation of pier pilings.
Health and Safety	None. The radar would not be in use while the Sea-Based X-Band (SBX) Radar Vessel is in port. Any risk to divers performing underwater welding activities is covered by the established policy and procedures of the company providing the service. There are no other anticipated effects to public health and safety.
Land Use	None. There are no planned changes in the current facility designated land use patterns. The use of the facility (i.e., entrance of vessels into port, maintenance activities) is a normal facility operation.
Utilities	None. It is normal operating procedure for vessels (e.g., Aircraft Carriers, Oilers) to moor at these locations and use pier-side hook-up to potable water, waste water, or shore power. The current electrical capacity provided by these locations is sufficient for the temporary use of these services by the SBX Radar Vessel.

Acronyms and Abbreviations

ACRONYMS AND ABBREVIATIONS

ABS	American Bureau of Shipping
ACAM	Air Conformity Applicability Model
ADT	Average Daily Traffic
AGL	Above Ground Level
AMSL	Above Mean Sea Level
APCD	Air Pollution Control District
ARTCC	Air Route Traffic Control Center
BA	Biological Assessment
BMDS	Ballistic Missile Defense System
BMP	Best Management Practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CALTRANS	California Department of Transportation
CCD	Coastal Consistency Determination
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COMNAVREGSW	Commander, Naval Region Southwest
CVN	Nuclear-powered Aircraft Carrier
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
DAR	Defense Access Roads
dB	Decibels
dBA	A-weighted Decibels
DNL	Day/Night Levels
DoD	Department of Defense
DOPAA	Description of Proposed Action and Alternatives

DP	Dynamic Positioning
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EFHA	Essential Fish Habitat Assessment
EIFS	Economic Impact Forecasting System
EIS	Environmental Impact Statement
ERL	Effects-Range Low
ERM	Effects-Range Medium
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
GMD	Ground-Based Midcourse Defense
HAP	Hazardous Air Pollutant
HVAC	Heating, Ventilation, and Air Conditioning
IDT	In-Flight Interceptor Communication System Data Terminal
IFR	Instrument Flight Rules
INRMP	Integrated Natural Resources Management Plan
kV	Kilovolt
kW	Kilowatt
L_{eq}	Hourly Equivalent Noise Level
LOS	Level of Service
LPC	Light Pollution Code
LRU	Line Replaceable Unit
MBTA	Migratory Bird Treaty Act
MDA	Missile Defense Agency
Mg/L	Milligram(s) per Liter
µg/m^3	Microgram per Cubic Meter

MLLW	Mean Lower Low Water
MSL	Mean Sea Level
MW	Megawatt
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NASNI	Naval Air Station North Island
NAVSEA	Naval Sea Systems Command
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOTAM	Notice to Airmen
NOx	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NSA	National Security Areas
NSE	Naval Station Everett
NSR	New Source Review
OPNAVINST	Chief of Naval Operations Instruction
OSHA	Occupational Safety and Health Administration
Pb	Lead
PCB	Polychlorinated Biphenyl
PL	Public Law
PM	Particulate Matter
PM2.5	Particulate Matter with a Mean Aerodynamic Diameter of 2.5 Microns or Less
PM10	Particulate Matter with a Mean Aerodynamic Diameter of 10 Microns or Less
PSB	Primary Support Base
PSCAA	Puget Sound Clean Air Agency
PSD	Prevention of Significant Deterioration
PSNS-IMF	Puget Sound Naval Shipyard—Intermediate Maintenance Facility
RCW	Revised Code of Washington
RONA	Record of Non-Applicability

RWQCB	Regional Water Quality Control Board
SBX	Sea-Based X-Band
SDAB	San Diego Air Basin
SEIS	Supplemental Environmental Impact Statement
SIP	State Implementation Plan
SLM	Sound Level Meters
SMS	Sediment Management Standards
SO2	Sulfur Dioxide
SOPA	Senior Officer Present Afloat
SO_X	Oxides of Sulfur
SPCC	Spill Prevention, Control, and Countermeasures
SRKW	Southern Resident Killer Whale
SSDG	Ship Service Diesel Generator
SWPPP	Storm Water Pollution Prevention Plan
TFR	Temporary Flight Restriction
TWE	Thruster Well Extension
UNDS	Uniform National Discharge Standards
UPS	Uninterruptible Power Supply
USC	United States Code
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VFR	Visual Flight Rules
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
VTS	Vessel Traffic Service
W	Watt
WAC	Washington Administrative Code
WDOE	Washington State Department of Ecology
XBR	X-Band Radar

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1.0 Purpose and Need for Proposed Action

1.0 PURPOSE AND NEED FOR PROPOSED ACTION

1.1 INTRODUCTION

The National Environmental Policy Act (NEPA) of 1969 as amended (42 United States Code 4321, et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508), Department of Defense (DoD) Instruction 4715.9, Environmental Planning and Analysis, Chief of Naval Operations Instruction (OPNAVINST) 5090.1C, Environmental Readiness Program (Environmental and Natural Resources), Department of the Navy Procedures for Implementing NEPA (32 CFR § 775[2005]), and the applicable Service environmental instructions that implement these laws and regulations, direct DoD officials to consider environmental consequences when authorizing and approving Federal actions.

Within the DoD, the Missile Defense Agency (MDA) is responsible for developing, testing, and deploying the Ballistic Missile Defense System (BMDS). The BMDS is designed to intercept threat missiles during all phases of their flight: boost, midcourse, and terminal. The mission of the Sea-Based X-Band (SBX) Radar Vessel, a component of the BMDS, is two-fold. It supports BMDS testing in order to improve the system. In addition, the SBX Radar serves as a component of the BMDS, which is an integrated, layered system to defend the United States, its deployed forces and allies, against all ranges of enemy ballistic missiles. The SBX Radar may also be used for related missions such as space surveillance.

The SBX Radar Vessel became operational in 2005. As with any vessel, it requires routine maintenance and repair as well as mandatory recertification of structural and propulsion components. Both the hull and the thrusters require a 5-year maintenance and repair cycle and certification in order to continue operation. The thruster maintenance was due in 2005; however, MDA received an extension until 31 March 2011. The work to accomplish hull certification, as well as some additional scheduled maintenance, was performed at Joint Base Pearl Harbor–Hickam in July and August 2010. Thruster maintenance and repair work must be performed at a deep-water facility. Some additional maintenance work would be performed concurrent with the thruster work. MDA is currently planning for the repair and maintenance work to be done at Todd Pacific Shipyards, a commercial shipyard in Seattle, WA in the spring of 2011.

MDA must try to conduct this maintenance around the SBX Radar Vessel's already scheduled participation in BMDS flight testing planned throughout the year. Therefore, MDA is also developing contingency plans to potentially utilize other locations should current flight test schedules change or other unforeseen circumstances occur that would affect the ability to obtain the required maintenance at Todd Pacific Shipyards. MDA is proposing to perform necessary inspection, maintenance, and repair actions on the SBX Radar Vessel at one of two proposed contingency locations: Naval Station Everett (NSE), WA or Naval Base Coronado-Naval Air Station North Island (NASNI), San Diego. If performed at one of the contingency locations, this work could commence in the spring of 2011 and take approximately 3 months to complete. However, due to the operational requirements of the SBX Radar Vessel and shifting world events, the commence date may change. These locations are unique and are not

typically used as maintenance and repair facilities. Although minor maintenance and repair activities may be performed at NSE and NASNI, they are not functioning shipyards; therefore, an Environmental Assessment (EA) that analyzes the particular thruster and other maintenance on the SBX Radar Vessel not routinely performed at one of these two contingency locations will be completed. Accordingly, this EA examines the potential for impacts to the environment at NSE and NASNI as a result of the proposed maintenance activities associated with the SBX Radar Vessel. The X-Band Radar (XBR) and the weather radar would not be operated while in port. No radar tracking, testing, or calibration would occur during maintenance activities in port.

1.2 BACKGROUND

SBX Radar operations testing and the establishment of a Primary Support Base (PSB) were analyzed in the *Ground-Based Midcourse Defense* (*GMD) Extended Test Range Environmental Impact Statement (EIS)* (Missile Defense Agency, 2003). The locations analyzed as a PSB for the SBX Radar Vessel were Pearl Harbor, Hawaii (which joined with Hickam Air Force Base in January 2010 to form Joint Base Pearl Harbor–Hickam); Naval Base Ventura County–Port Hueneme, California; NSE, Washington; Port Adak, Alaska; and Port of Valdez, Alaska. The subsequent Record of Decision for the GMD Extended Test Range EIS selected Port Adak, Alaska as the location to establish a PSB for the SBX Radar Vessel. Currently, Adak is not used as the PSB since the SBX Radar Vessel is at sea for approximately 260 days a year. Adak was not intended to be used as a location for maintenance of the SBX Radar Vessel.

The SBX Radar Vessel consists of a converted semi-submersible, mobile, twin-hulled platform on which an XBR and other system components have been mounted (Figure 1-1). The SBX Radar is able to track, discriminate, and assess incoming missiles. The SBX Radar greatly increases MDA's ability to conduct more robust and operationally realistic testing of the BMDS, and enhances the BMDS's operational ability to intercept incoming missiles. Because of its mobility, the SBX Radar Vessel can be repositioned to provide operational forward-based coverage or relocated for optimum coverage of various scenarios in the BMDS test program. The SBX Radar Vessel is capable of traveling approximately 8 knots under its own power.

The self-propelled SBX Radar Vessel is 240 feet wide and 390 feet long. At transit draft, the vessel has a height of approximately 250 feet above the water surface. The SBX Radar Vessel is one-third the length of *USS Abraham Lincoln*. The dome of the SBX Radar Vessel extends 73.5 feet higher than the top of *USS Abraham Lincoln,* and the dome is approximately 61 feet wider at mast. The dome is 36 feet higher than the top of *USS Nimitz,* and the dome is approximately 22 feet wider at mast. When conducting mission activities, the SBX Radar Vessel ballasts down to an operational draft and has a height of approximately 200 feet above the water surface. The main deck of the SBX Radar Vessel houses living quarters, workspaces, storage, power generation, bridge and control rooms, and the floor space and infrastructure necessary to support the 2,000-ton XBR antenna array; command, control, and communications suites; and an In-flight Interceptor Communication System Data Terminal (IDT). The vessel is Government owned (MDA) and contractor operated (Boeing).

Details of the maintenance and repair requirements for the thrusters are discussed in Chapter 2.0, and a detailed analysis of the two deep-water facilities is discussed in Chapter 3.0. Non-completion of the maintenance and repair of the thrusters would lead to the eventual decertification of this SBX Radar Vessel.

Sea-Based X-Band Radar Vessel

Figure 1-1

1.3 POTENTIAL LOCATIONS FOR DEEP-WATER MAINTENANCE

In accordance with the developing contingency plans noted in Section 1.1, other potential locations need to be analyzed should the test schedule change or other unforeseen circumstance occur that would affect the ability to complete the required maintenance and repair activities.

Due to the accessibility requirements of the SBX Radar Vessel thrusters, the maintenance and repair work must be performed at a deep-water facility. After a review of the operational and maintenance schedule of the SBX Radar Vessel and the availability of deep-water naval facilities, MDA determined the west coast locations of NSE and NASNI to be viable locations to accommodate the spring 2011 maintenance and repair period.

1.3.1 NAVAL STATION EVERETT, EVERETT, WA

NSE is located next to the marina area of the city of Everett, Washington, about 25 miles north of Seattle on the northeast side of Possession Sound (Figure 1-2). NSE consists of two related installations: the Everett Waterfront Site and the Navy Support Complex in Marysville, Washington. The scope of the EA pertains only to the Everett Waterfront Site. NSE serves as the homeport site for one Nuclear-Powered Aircraft Carrier (CVN)-class aircraft carrier (USS Abraham Lincoln [CVN 72]) and six other combat ships, providing operational services to support Navy forces in the Pacific Northwest and administrative support to tenant activities. The site consists of 117 acres along the Everett waterfront and is bordered by the Snohomish River to the west, Port Gardner Bay to the south, and the East Waterway to the east (Naval Station Everett, 2008a). Access to and from Puget Sound berthing sites—including those for NSE—is by the charted major ship travel channel, and all marine vessel traffic therein is regulated by the U.S. Coast Guard. A U.S. Coast Guard buoy tender and cutter are located at NSE. Strict control of all shipping is maintained through a common radio channel. Ship traffic to NSE requires sailing around the southern end of Whidbey Island and up the island's eastern side to the NSE berthing piers. (U.S. Department of the Navy, 1999) Additionally, NSE is located within a geographical area that is within the adjudicated usual and accustomed (U&A) fishing grounds and stations of the Lummi, Stillaguamish, Suquamish, Swinomish, and Tulalip. Mutually respectful government-to-government relationships between the Navy and Tribal Governments are essential.

1.3.2 NAVAL AIR STATION NORTH ISLAND, NAVAL BASE CORONADO, CORONADO, CA

Naval Base Coronado is a 5,000-acre complex in San Diego consisting of five installations that stretch from the entrance of the San Diego Bay to the City of Imperial Beach to the South. NASNI is one of the five installations which is located in the City of San Diego and occupies approximately 2,000 acres of the complex at the north end of the Coronado Peninsula (Figure 1-3). NASNI is headquarters for 4 major military Flag Officer staffs including Commander Naval Air Forces, and supports 21 squadrons and more than 220 aircraft. USS Nimitz (CVN 68) and USS Ronald Reagan (CVN 76) are homeported at its piers. The base is also home to the Navy's Deep Submergence Unit. When all ships are in port, the population of the station swells

EXPLANATION

- Interstate
- Seattle Urban Area
- County Boundary

NORTH

0 5 10 20 Miles

Naval Station Everett

Washington

Figure 1-2

EXPLANATION

- Major Road
- Country Boundary
- San Diego Urban Area

NORTH

0 5 10 20 Miles

Naval Air Station North Island

Coronado, California

Figure 1-3

to more than 25,000 active duty, reserve, and civilian workers from 140 tenant commands. North Island itself is host to 23 squadrons and 75 additional tenant commands. NASNI occupies approximately 2,000 acres of the complex at the north end of the Coronado Peninsula (Naval Facilities Engineering Command, 2008)

NASNI is bordered by San Diego Bay on the north and west, the Pacific Ocean on the south, and by the city of Coronado on the east. NASNI was established as a CVN home port through the Defense Base Closure and Realignment Act and a subsequent NEPA decision (U.S. Department of the Navy, 1995).

1.4 PURPOSE AND NEED

1.4.1 PURPOSE

The purpose of the Proposed Action is to conduct maintenance activities at one of the contingency locations (NSE or NASNI), with a deep-water port capable of providing the required maintenance activities. Thruster maintenance requires an in-port depth of 50 feet.

1.4.2 NEED

If maintenance and repairs for the SBX Radar Vessel thrusters are not completed within the 5-year cycle, the vessel would not be allowed to operate. The vessel would not meet its operational qualifications, as required to operate as a seaworthy vessel, and would thus be decertified. Thruster maintenance requires a deep-water port (at least 50 feet deep). The Proposed Action is needed as a contingency in the event that Todd Pacific Shipyards is not available to perform required maintenance activities of the thrusters in order to maintain a full suite of radars for anti-ballistic missile testing and an operational capability for the combatant commands.

1.5 DECISION(S) TO BE MADE

Following the public review period (as specified in newspaper notices and letters to agencies and the general public, if requested), the MDA will consider public and agency comments received as well as operational and test schedules and availability of port facilities in deciding (1) where to complete the required maintenance and repairs in the event that Todd Pacific Shipyards is not available; (2) whether to sign a Finding of No Significant Impact (FONSI), which would allow the Proposed Action to proceed; (3) whether to conduct additional environmental analysis (if needed); or (4) to select the No-action Alternative.

1.6 SCOPE OF ENVIRONMENTAL ASSESSMENT

In accordance with Council on Environmental Quality Regulations (40 CFR 1502.14(d)), this EA analyzes the Proposed Action, which includes two alternative locations, and the No-action Alternative. The No-action Alternative serves as the baseline from which to measure the impacts of the alternatives for the Proposed Action. Under the MDA No-action Alternative, the inspection, maintenance, and repairs of the SBX Radar Vessel would not occur at one of the two alternate locations described above, but would be performed at Todd Pacific Shipyards as planned. However, since the SBX Radar is a critical test asset as well as an integral operational

component of the BMDS, both missile defense test and operational capabilities would be severely degraded if the SBX Radar Vessel is not able to continue to operate due to required maintenance being performed.

1.7 RELATED ENVIRONMENTAL DOCUMENTATION

As appropriate, the conclusions of these NEPA studies are summarized and included in this document:

- *Silver Strand Training Complex Draft Environmental Impact Statement,* January 2010
- *Final Supplemental Environmental Impact Statement for Developing Homeporting Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet*, December 2008
- *Draft Northwest Training Range Complex Environmental Impact Statement/Overseas Environmental Impact Statement*, December 2008
- *Final Missile Defense Agency Ballistic Missile Defense System (BMDS) Programmatic Environmental Impact Statement*, January 2007
- *Ground-Based Midcourse Defense (GMD) Sea-Based X-Band Radar (SBX) Placement and Operation Adak, Alaska Environmental Assessment,* October 2005
- *Environmental Assessment for Construction of Support Facilities for Coastal Patrol Boat "Blue Shark" at Naval Station Everett, Everett Washington*, December 2004
- *Ground-Based Midcourse Defense* (*GMD) Extended Test Range Final Environmental Impact Statement (EIS)*, July 2003
- *Naval Base Coronado Environmental Assessment*, February 2002
- *Environmental Assessment for Installation of a Log Boom Security Barrier around Piers Alpha and Bravo at Naval Station Everett, WA*, October 2001
- *Final Environmental Impact Statement for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet*, July 1999
- *Supplemental Final Environmental Impact Statement Element II Breakwater Pier Naval Station Everett, WA,* November 1993
- *Environmental Assessment Element 1 Carrier Battle Group Homeporting in the Puget Sound Area, Washington State*, June 1989
- *Final Environmental Impact Statement Carrier Battle Group Puget Sound Region Ship Homeporting Project*, June 1985

2.0 Description of the Proposed Action and Alternatives

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action, the No-action Alternative, Alternatives 1 and 2, and alternatives considered but eliminated from further study.

2.1 DESCRIPTION OF SEA-BASED X-BAND RADAR VESSEL

The Sea-Based X-Band (SBX) Radar Vessel is made up of a seagoing platform on which an X-Band Radar (XBR) has been mounted. This section describes the SBX Radar Vessel and its components (the Sea-Based Platform and XBR). Figure 1-1 shows the XBR and Sea-Based Platform.

2.1.1 SBX RADAR VESSEL

The SBX Radar Vessel supports Ballistic Missile Defense System (BMDS) integrated flight testing. It exercises all midcourse sensor functions including weapon task plans, in-flight target updates, target object maps, and kill assessments. The SBX Radar supports most extended range test scenarios.

The SBX Radar also has a real-world missile defense mission. It is part of an integrated, layered system to defend the United States, its deployed forces, allies, and friends against all ranges of enemy ballistic missiles.

The SBX Radar Vessel is self-propelled by four steerable 3.4-megawatt (MW) electrically driven thrusters, which extend below the bottom surface of the platform's pontoons. While in open water, two thrusters effectively propel and maneuver the SBX Radar Vessel without assistance.

The thrusters of the vessel are retractable. While the thrusters are extended, the draft of the SBX Radar Vessel is approximately 50 feet. The retractable thrusters can be lifted into the pontoons to reduce the draft of the vessel to approximately 35 feet, allowing it to enter shallower ports.

The SBX Radar Vessel has a permanent crew of approximately 83 personnel, which includes approximately 16 Boeing employees, 65 subcontractors (mariners, security, communications, and radar personnel) and 2 government employees. In addition, there is sufficient berthing, accommodations, and lifesaving equipment to support an additional 50 people onboard on a temporary basis to support testing.

When the vessel is operational in the open ocean, the electrical power requirement for the SBX Radar Vessel and its various payloads is approximately 20.76 MW. This is supplied in a varying combination by six 3.46-MW Ship Service Diesel Generators (SSDG). The SBX Radar Vessel has a fuel capacity of approximately 1.88 million gallons; however, the fuel is normally

maintained at approximately 80 percent of capacity or 1.4 million gallons. Approximate fuel consumption for transit and radar operation is 14,500 gallons per day.

2.1.2 COMPONENTS OF THE SEA-BASED RADAR VESSEL

2.1.2.1 Sea-Based Platform

The Sea-Based Platform is a commercial platform manufactured by Moss Maritime of Oslo, Norway. The platform is a column-stabilized semi-submersible platform, with two pontoons and six stabilizing columns supporting the upper hull. The structure has sufficient strength to support a deck load of 20,000 tons. Table 2-1 provides the dimensions of the platform. The Sea-Based Platform is semi-submersible, meaning that it has large ballast tanks that are evacuated to raise the vessel and reduce draft for transit or pier-side use. The helicopter pad is not anticipated to be in use during the maintenance and repair period.

Table 2-1. Platform Dimensions

Platform Characteristics	Dimensions
Upper Hull	
Length of deck	272 feet
Width of deck	240 feet
Height to upper deck	133 feet
Draft during operation with thrusters installed	91.8 feet
Draft during transit with thrusters installed	50 feet
Pontoons	
Length	390 feet
Width	47 feet
Depth	33.3 feet
Pontoon spacing	190 feet
Displacement during operation	50,340 tons
Displacement in transit	32,800 tons

Source: U.S. Army Space and Missile Defense Command, 2003

2.1.2.2 X-Band Radar Component

The XBR is a multifunction radar that performs tracking, discrimination, and kill assessments of overflying missiles for both missile defense testing and for missile defense contingencies in the case of an actual missile attack against the United States. The XBR is mounted on a 90-foot diameter antenna mount track support cylinder housed in a 103-foot base diameter radome. Total height of the SBX Radar Vessel above the water line including the XBR radome is approximately 250 feet at transit draft.

2.2 PROPOSED ACTION AND ALTERNATIVES

2.2.1 PROPOSED ACTION

The Proposed Action of this Environmental Assessment (EA) is to conduct maintenance activities at one of the contingency locations (Naval Station Everett [NSE], Washington or Naval Air Station North Island [NASNI], California), with a deep-water port capable of providing the required maintenance and repair of the SBX Radar Vessel thrusters and other scheduled general maintenance activities (detailed in Table 2-2). The facility must have a minimum water-depth of 50 feet.

Inspection, maintenance, and repair activities on the SBX Radar Vessel are similar to activities that are performed on all U.S. Navy ships. These activities include thruster maintenance, painting, welding, blasting, sanding, plasma cutting, inspections, installation of new equipment, removal of broken and obsolete equipment, equipment calibration, washing of equipment and vessel, and purging of systems (i.e., cooling, sewage, water, etc). These activities will occur inside the vessel, outside the vessel (topside and below the waterline), and pier-side, and can be broken down into standardized work categories as shown in Table 2-2. Activities that would occur under each of these maintenance categories are described in the table. Associated shipyard equipment that would be used in support of maintenance and repair are described in Table 2-3. Additionally, the XBR and the weather radar would not be operated while at pier-side. No radar tracking, testing, or calibration would occur during maintenance activities.

Table 2-4 lists standard industry Best Management Practices (BMPs) that apply to the pertinent sub-tasks (e.g., painting, welding, plasma cutting, paint removal, and sanding) that have the potential to impact the environment when the SBX Radar Vessel is in-port for maintenance and repairs. BMPs are a series of maintenance, housekeeping, and materials management practices that minimize wastes from activities such as paint stripping and surface preparations, painting, non-dry dock maintenance, welding, cutting, engine maintenance, and materials handling. These BMPs are drawn from the established management practices from the Washington Department of Ecology Pollution Prevention Center, Shipbuilders.org, Environmental and Safety Requirements for Puget Sound Naval Shipyard and Intermediate Facility Contracts, and the Afloat Environmental Quick Response Guide. However, BMPs are not limited to those listed in Table 2-4; the contractor or personnel performing the sub-tasks must obtain and follow established BMPs and/or mitigation measures for the sub-task for the appropriate location (NSE or NASNI). Potential impacts to the environment are analyzed in Chapter 3.0.

Table 2-2. Proposed Inspection, Maintenance, and Repair Activities

Standardized Work Category	Proposed Activity	Resultant Sub-Tasks Potentially Affecting the Environment *	Inside/ Outside of Vessel
Hull/ Structural	**Armory Viewing Window**: Install viewing window as required by OPNAVINST 5530.13D.	• Plasma cutting • Welding • Painting	Inside
	Hull Preservation: Prepare, prime, and paint all zone, columns, K-bracing, topside weather deck, and underside of the wet deck as determined based on actual conditions. Prepare, prime, and paint pontoon tops with a durable high-profile epoxy slip resistant coating.	• Sanding • Painting • Solvent cleaning **NOTE:** The Contractor shall provide all necessary environmental enclosures as required by the manufacturer of the product being installed and by the shipyard where the product is being installed.	Outside
	MDA Welds Inspection: Conduct MDA welds inspection.	• Welding • Painting	Outside
	Pontoon Deck Chafing Plates: Install a chafing plate on the forward deck top of each pontoon beneath each tow bridle chain.	• Welding • Painting	Outside
	Tow Bridle & Mooring Winch Wires: Remove and replace tow bridle with new bridle. Inspect, clean, replace if required, lubricate, and reinstall mooring in-haul (winch) wires.	• Solvent cleaning • Lubrication	Outside
Machinery Propulsion	**Direct Acting Governors:** Install direct acting governor on all Ship Service Diesel Generators (SSDGs).	• Potentially a limited amount of diesel fuel exposure	Inside
	Dynamic Positioning (DP) Enhancements: Install DP enhancements per design.	• Welding • Painting	Inside
	Main Engine Oil Sump Heaters: Install sump heaters in SSDG oil pans.	**Note:** Use existing sump valve.	Inside
	SSDG Sea Water Cooling: Modify SSDG Jacket Water/Sea Water system to install a back flush capability.	• Sea water drain • Welding	Inside
	Propulsion Thrusters: Perform in-water inspection of thrusters. Replace lower thruster seals and inspect upper gear boxes.	• Underwater welding	Under-water
Electrical	**24 Volts, Direct Current Engine Power System:** Modify the 24 Volts, Direct Current system to the SSDG control panels from the two existing, independent, non-redundant power panels to multiple, redundant sources of power per the results of the approved concept study.	• Welding • Painting	Outside
	Classified Video Tele-Conferencing System: Install second Classified Video Tele-Conferencing on board the SBX Radar Vessel.	• N/A	Inside
	Drive Platform Control System **Redundant Power:** Install Drive Platform Control System redundant power via the Port 11 kV High Voltage Switchboard.	• Welding • Painting	Inside

Table 2-2. Proposed Inspection, Maintenance, and Repair Activities (Continued)

Standardized Work Category	Proposed Activity	Resultant Sub-Tasks Potentially Affecting the Environment *	Inside/ Outside of Vessel
Electrical (Continued)	**Integrated Electronic Security System Volumetric Sensor:** Update Integrated Electronic Security System to (1) install volumetric sensors in the airlocks at each of the three entrances to the XBR, and (2) disable and remove the three existing volumetric sensors in the IDT Radome.	• N/A	Inside
	Security Base Station Install: Install base Station radio and connect to leaky wire system.	• N/A	Inside
	Shore Power 480V Electrical Services: Install connection boxes and provide cables for Shore Power Electrical Services compatible with Navy standard connections.	• Welding **Note:** Access to some locations for installation will require marine chemist to verify all tanks opened will be "safe for entry."	Inside
	XBR 208 V Receptacle: Install one additional 208 V receptacle to the network rack in the Electronics Equipment Room for the upgraded CISCO switch.	• N/A	Inside
Auxiliary Machinery	**Crane Turret Modification:** Modify port and starboard turret structures to strengthen backing plates per manufacturer's recommendations.	• Welding • Painting • Paint removal (including scraping, sandblasting and chipping)	Inside
Outfit, Furnishings and Habitability	**Repair Potable Water System:** Renew corroded fittings in the potable water system. Perform Phase 1 of a five phase program to renew corroded fittings.	• Welding • Painting • Possible chlorination while sanitizing for United States Public Health Service	Inside
	Clean/Repair Sewage System: Clean entire sewage system.	**NOTE:** Acid Cleaning (Contract includes cleanup) Cleaning chemical is an acidic cleaning solution that will dissolve scale from sewage system piping. Cleaning is accomplished with the piping in place and with minimal disruption. Contractor–furnished acid resistant mixing tank and recirculating pump (with associated flexible hoses and vales) are hooked up to the piping to be cleaned. Cleaning chemicals are circulated through the unit until all deposits have been dissolved. When piping is clean, cleaning chemical is pumped to a large tank located on the pier and piping is flushed with fresh water (also pumped to the tank on the pier).	Inside

Table 2-2. Proposed Inspection, Maintenance, and Repair Activities (Continued)

Standardized Work Category	Proposed Activity	Resultant Sub-Tasks Potentially Affecting the Environment *	Inside/ Outside of Vessel
Ship's Mission	**Fire Detection XBR Power:** Install additional power source for XBR fire detection on antenna mount per design, in order to increase redundancy.	• Limited welding	Inside
	Radiate Warning System Improvement: Improve Radiate Warning System by installing additional weather deck loud speakers.	• Testing of the loud speakers	Outside
	Ready Service Locker: Relocate Ready Service Locker for ammunition on the port side on the main deck next to gun mount.	• Welding • Painting	Inside
	XBR SPDE: Re-cable mission critical Signal Processing Data Equipment per XBR-updated Power Panel Schedule.	• N/A	Inside

***NOTE:** Procedures for performing these sub-tasks that could potentially affect the environment (i.e., Best Management Practices [BMPs], mitigation measures) are discussed in Chapter 3.0.

Table 2-3. Shipyard Equipment Potentially Used in Support of Maintenance and Repair

Potential Shipyard Equipment	Resources Potentially Affected
Saws and Tools (hand held) Yard Air Compressors (general service) Pumps Welding Units Track Blaster Units Portable Lighting, Ventilation Weight Handling Equipment (cranes) Travel Lift (crane) Work Floats (barges)	• Air Quality-Air Emissions • Hazardous Waste, Fuels, Oily Waste Disposal • Noise-Ambient Terrestrial • Visual and Aesthetic

1 **Table 2-4. In-port Best Management Practices**

Activity	Standard Industry Best Management Practices
Surface Preparation, Paint Removal, Sanding Areas	• Enclose, cover, or contain blasting and sanding areas to the maximum extent practical to prevent abrasives, dust, and paint chips from reaching storm sewers or receiving water • Use shrouded or vacuum-assisted tools that prevent abrasives, dust, and paint chips from leaving immediate area being worked on (dustless sanders, vacuum blasting robots) • Use blast media that does not contain pollutants (examples: garnet, steel, ultra-high-pressure water) • Cover drains, trenches, and drainage channels to prevent entry of blasting debris to the system • Prohibit uncontained blasting or sanding activities over open water • Prohibit blasting or sanding activities during windy conditions that render containment ineffective • Inspect and clean sediment traps to ensure the interception and retention of solids before entering the drainage system • Segregate water that has come into contact with abrasives and paint chips from water that has not; treat separately • Collect spent abrasives frequently and store in an enclosed, covered area from which it cannot escape or be rained upon • Consider testing paint before removal to establish potential pollutant levels. • In no event shall waste or any other material be disposed of, or be allowed to enter, the adjacent waters or the storm sewer system
Painting	• Every practical effort shall be employed to prevent paint, paint chips, dust, and other debris from entering the water. • Enclose, cover, or contain painting activities to the maximum extent practical to prevent overspray from reaching the receiving water. • Prohibit uncontained spray painting activities over open water. • Prohibit spray painting activities during windy conditions that render containment ineffective. • Mix paints and solvents in designated areas away from drains, ditches, piers, and surface waters, preferably indoors or under a shed. Paints and solvents shall not be mixed on floats. • When painting from floats, paint should be in cans 5 gallons or smaller, with drip pans and drop cloths underneath. Paint float must have tarp or suitable drop cloth at the bottom grating. • Have absorbent and other cleanup items readily available for immediate cleanup of spills. Paint and solvent spills should be treated as oil spills and shall be prevented from reaching storm drains and subsequent discharge into the surrounding body of water. • Allow empty paint cans to dry before disposal. • Keep paint and paint thinner away from traffic areas to avoid spills. • Recycle paint, paint thinner, and solvents. • Train employees on proper painting and spraying techniques, and use effective spray equipment that delivers more paint to the target and less overspray. • Investigate and use non-pollutant bearing paints (hard epoxies, fluorinated polyurethanes, isothiazolone-containing). • In no event shall waste or any other material be disposed of, or be allowed to enter, the adjacent waters or the storm sewer system. • Educate personnel about the environmental consequences of paint choice.

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1 **Table 2-4. In-port Best Management Practices (Continued)**

Activity	Standard Industry Best Management Practices
Pressure Washing Areas	• Perform pressure washing only in designated areas where wash water containment can be effectively achieved. • Do not use detergents or additives in the pressure wash water. • Direct deck drainage to a collection system sump for settling and/or additional treatment. • Use solid decking, gutters, and sumps at lift platforms to contain and collect wash water. • Segregate storm water from process water.
Non-Dry Dock Activities *	• Hang tarpaulin from the boat, and/or from fixed or floating platforms, to reduce pollutants transported by wind. • Place plastic sheeting or tarpaulin underneath boats to contain and collect waste and spent materials, and clean and sweep regularly to remove debris. • Use appropriate plastic or tarpaulin barriers for containment when work is performed on a vessel in the water to prevent paint overspray from contacting storm water or the receiving water. • Vacuum or sweep rather than hose debris from the dock.
Engine Maintenance and Repairs	• Maintain an organized inventory of materials used in the maintenance shop. • Dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers properly. • Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries). • Drain oil filters before disposal or recycling. • Store cracked batteries in a non-leaking secondary container. • Promptly transfer used fluids to the proper container; do not leave full drip pans or other open containers around the shop. Empty and clean drip pans and containers. • Do not pour liquid waste down floor drains, sinks, or outdoor storm drain inlets. • Plug floor drains that are connected to the storm or sanitary sewer; if necessary, install a sump that is pumped regularly. • Inspect the maintenance area regularly for proper implementation of control measures. • Train employees on proper waste control and disposal procedures.
Shipboard Water Handling	• Keep cooling water used aboard ships separate from sanitary wastes to minimize disposal costs for the sanitary wastes. • Keep cooling water from contact with spent abrasives and paint to avoid pollution of the receiving water. • Inspect connecting hoses for leaks. • Discharge sanitary wastes from the ship being repaired to the yard's sanitary system or dispose of by a commercial waste disposal company.
Materials Storage and Handling	• Maintain good integrity of all storage tanks. Above ground storage tanks shall incorporate appropriate containment and protection to prevent contamination of surface and groundwater. • Inspect storage tanks to detect potential leaks and perform preventive maintenance. The tank shall include an overfill protection system to minimize the risk of spillage during loading. • Inspect piping systems (pipes, pumps, flanges, couplings, hoses, valves) for failures or leaks. • Train employees on proper filling and transfer procedures. • Store containerized materials (fuels, paints, solvents) in a protected, secure location and away from drains. The area shall be paved, free of cracks and gaps, and sufficiently impervious to contain leaks and spills or be over a drip pan large enough to hold contents of the container. The designated area shall be covered.

2
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Table 2-4. In-port Best Management Practices (Continued)

Activity	Standard Industry Best Management Practices
Materials Storage and Handling (Continued)	• Store reactive, ignitable, or flammable liquids in compliance with the local fire code. • Identify potentially hazardous materials, characteristics and use. • Control excessive purchasing, storage, and handling of potentially hazardous materials. • Keep records to identify quantity, receipt date, service life, users, and disposal routes. • Secure and carefully monitor hazardous materials to prevent theft, vandalism, and misuse of materials. • Train employees on proper storage, use, cleanup, and disposal of materials. • Provide sufficient containment for outdoor storage areas for the larger of either 10 percent of the volume of all containers or 110 percent of the volume of the largest tank. • Use temporary containment, where required, by portable drip pans. • Use spill troughs for drums with taps. • Mix paints and solvents in designated areas away from drains, ditches, piers, and surface waters. • Protect containers storing liquid wastes or other liquids, which have the potential of adding pollutants to water (e.g., fuels, paints, and solvents), from the weather in a protected, secure location, and away from drains. • Do not store parts, materials, and containers directly on the pavement, or ground. When possible, store parts, materials, and containers indoors. • Store both spent and virgin sandblast grit under cover. Eliminate contact between process or storm water and sandblast grit. Waste grit must also be managed as a waste following the appropriate state and Federal regulations and this document. • Permanently installed tanks and designed areas for liquid waste are to be surrounded by a dike system. The dike shall be of sufficient height to provide a volume within the dike area equal to 10 percent of the total tank storage or 110 percent of the largest tank, whichever is greater.
Topside Welding, Burning, and Cutting	• Use control measures of some type of capture and collection system that prevents the fumes from escaping the work area. • Cutting fume and dust that may be exposed to rain fall should be cleaned from the work area on a regular and frequent basis. Cleaning should never be accomplished by air blowing, which would only re-suspend the fume particles, where they may be transported to other areas that are exposed to rainfall. Cleaning should be accomplished using vacuums equipped with appropriate filters and/or wet cleaning methods that prevent the escape of the fume to the environment. • All Occupational, Safety, and Health Administration (OSHA) standard welding practices must be followed. • Fire guards and protective measures must be in place during all welding and cutting activities.
Yard Cleanup	• Clean the project site on a regular basis to minimize loss of accumulated debris into water or the storm drainage system. Do not hose down areas and allow the runoff to enter into storm drains. • Conduct weekly cleanliness inspections of outdoor work and storage areas, including storm drain catch basins. Provide cleaning of work areas as necessary to maintain control of potential pollutants. • If trash containers are equipped with drain fixtures, plugs will be installed.
Containment and Control of Dust and Overspray	• Carry out any activity that generates pollutants, (e.g., blasting, painting, metal finishing, welding, grinding) in enclosed, covered areas. • Take applicable measures to adequately contain spent blast grit, paint chips, and paint overspray to prevent the discharge of these materials into water. • Perform spray paint operations in a manner to contain overspray and spillage, and minimize emission of particulates. • Perform all dry-blasting (i.e., sand, grit, abrasive) operations within an enclosure with adequate dust collection.

Table 2-4. In-port Best Management Practices (Continued)

Activity	Standard Industry Best Management Practices
Drip Pans	• Use drip pans or other protective devices at hose connections when transferring oil, fuel, solvent, industrial wastewater, and paint. Where design constraints, vertical connections, or interferences do not allow placement of drip pans, use other measures, such as chemical resistant drapes. Where a spill would likely occur, use drip pans or other protective devices when making and breaking connections, or during component removal operations. • Immediately repair, replace, or isolate leaking connections, valves, pipes, and hoses, carrying wastewater, fuel, oil, or other hazardous fluids. As a temporary measure, place drip pans under leaking connections, equipment, or vehicles to collect any leaking fluid.
Vehicle and Equipment Cleaning and Equipment Preventive Maintenance	• Cleaning/washing of vehicles and equipment is prohibited except at designated wash rack areas and with prior approval. • Inspect vehicles and equipment for leaks before use. Maintain them in good condition at all times. Inspect infrequently used vehicles and equipment monthly for leaks. Inspect all equipment and vehicles for fluid leaks before placing them on piers. • If equipment is found to be leaking, take immediate action to stop the leak and remove it from the naval base or commercial site. Initiate spill response and clean up, as appropriate. • Immediately stop all leaks. As a temporary measure, use drip pans to contain leaking fluids.
Over-Water Work	• For over-water work, provide and position floats, tarps, or other suitable protection adjacent to and under work area to contain debris. Work that has a potential for pollution may include, but is not limited to, painting, paint chipping, blasting, welding, grinding, cutting, chipping, and sanding. No paint or paint residue shall enter water. If windy conditions prevent adequate containment of pollutants, stop work until conditions allow.
Outdoor Work Operations	• When loading and unloading liquids and fine granulated materials from trucks and trailers at outdoor loading areas, prevent potential spills to storm drains by placing or installing a door skirt, door seal, and valved storm drain line. • Place mats over the storm drains. • Do not dump pollutants on the ground. • When performing outdoor work operations, have equipment and supplies on-hand to control and clean up debris. Many outdoor work operations can produce debris, which if not controlled can wash into storm drains and into local waters. • When performing welding operations on the pier, work shall be performed in an enclosed area with fire retardant plywood on the deck to protect the pier. Clean up after each welding operation and recycle the welding rods into the metal recycle bins.
Spray Coating	• The operator shall use best management practices in its spray coating operation, including the collection of organic solvent used for cleanup of equipment into normally closed containers to minimize evaporation to the atmosphere, and keeping containers used for the storage and disposal of organic solvent closed except when these containers are being cleaned or when materials are being added.
Discharges into Storm Drains	• Do not discharge anything into the storm drains.

Table 2-4. In-port Best Management Practices (Continued)

Activity	Standard Industry Best Management Practices
Diving Operations	• A current supply switch to interrupt the current flow to the welding or burning electrode shall be tended by a dive team member in voice communication with the diver performing the welding and burning; and kept in the open position except when the diver is welding or burning. • The welding machine frame shall be grounded. • Welding and burning cables, electrodes holders, and connections shall be capable of carrying the maximum current required by the work, and shall be properly insulated. • Dielectrically insulated gloves shall be provided to divers performing welding and burning operations. • Prior to welding or burning on closed compartments, structures or pipes, which contain a flammable vapor or in which a flammable vapor may be generated by the work, they shall be vented, flooded, or purged with a mixture of gases which will not support combustion.
Fueling/Defueling	• If in-port fueling is required, it shall be conducted during daylight and normal working day with fully qualified watch team aboard to include key engineering supervisory personnel.

Source: Pacific Northwest Pollution Prevention Research Center and Washington Department of Ecology, 1999; Shipbuilders.org, 2005; Puget Sound Naval Shipyard, 2007; Afloat Environmental Quick Response Guide, 2009;, Chapter 296-37 of the Washington Administration Code, 2010; Title 8 §6057 of the California Code of Regulations, 2010

* Note: The SBX Radar Vessel will not have any maintenance activities performed in dry dock due to size limitation.

The vessel would be in-port for maintenance and repair for approximately 3 months. The SBX Radar Vessel would be accompanied by its support vessel (the motor vessel Dove, shown in Figure 2-1). The Dove is 279 feet long, travels with the SBX Radar Vessel, and delivers personnel, supplies, and fuel to the radar platform. The Dove's presence does not require environmental review consideration.

Generators

The SBX Radar Vessel would operate on two 3.46-MW generators functioning at 40 percent capacity while in-port and use approximately 1.8 MW (summer months) to 2.6 MW (winter months) of power. Diesel fuel consumption while connected to a pier would be approximately 3,200 gallons per day. Two generators would be required 24/7 for lights, air conditioning, computers, etc. because personnel would still live on the vessel during its time in-port. The operation of the two generators would result in approximately 0.72 of a ton of oxides of nitrogen emissions per day to the air. The generators are located in the stern (back) of the vessel. The SBX Radar Vessel is not equipped to connect to shore power; but, this capability would be installed while in-port during the inspection, maintenance, and repair period. However, due to the complexity of the installation of the shore power connection, it is not anticipated that the vessel would connect to shore power during the approximately 3-month inspection, maintenance, and repair period.

The SBX Radar Vessel Support Vessel—Dove

Figure 2-1

Painting and Solvents

Maintenance would include preparing, priming, and painting all zones, columns, K-bracing, topside weather deck, underside of the wet deck, and the pontoon tops on the SBX Radar Vessel. This would require approximately 1,500 gallons of paint and 330 gallons of solvents. All painting would be roller or brush application to reduce air emissions and would follow standard best management practices listed in Table 2-4.

Shipyard Equipment

Shipyard equipment like that listed in Table 2-3 (e.g., hand held saws, air compressors, welding units, abrasive blasting units) would run intermittently on the deck of the SBX Radar Vessel or on the dock.

Vessel Orientation

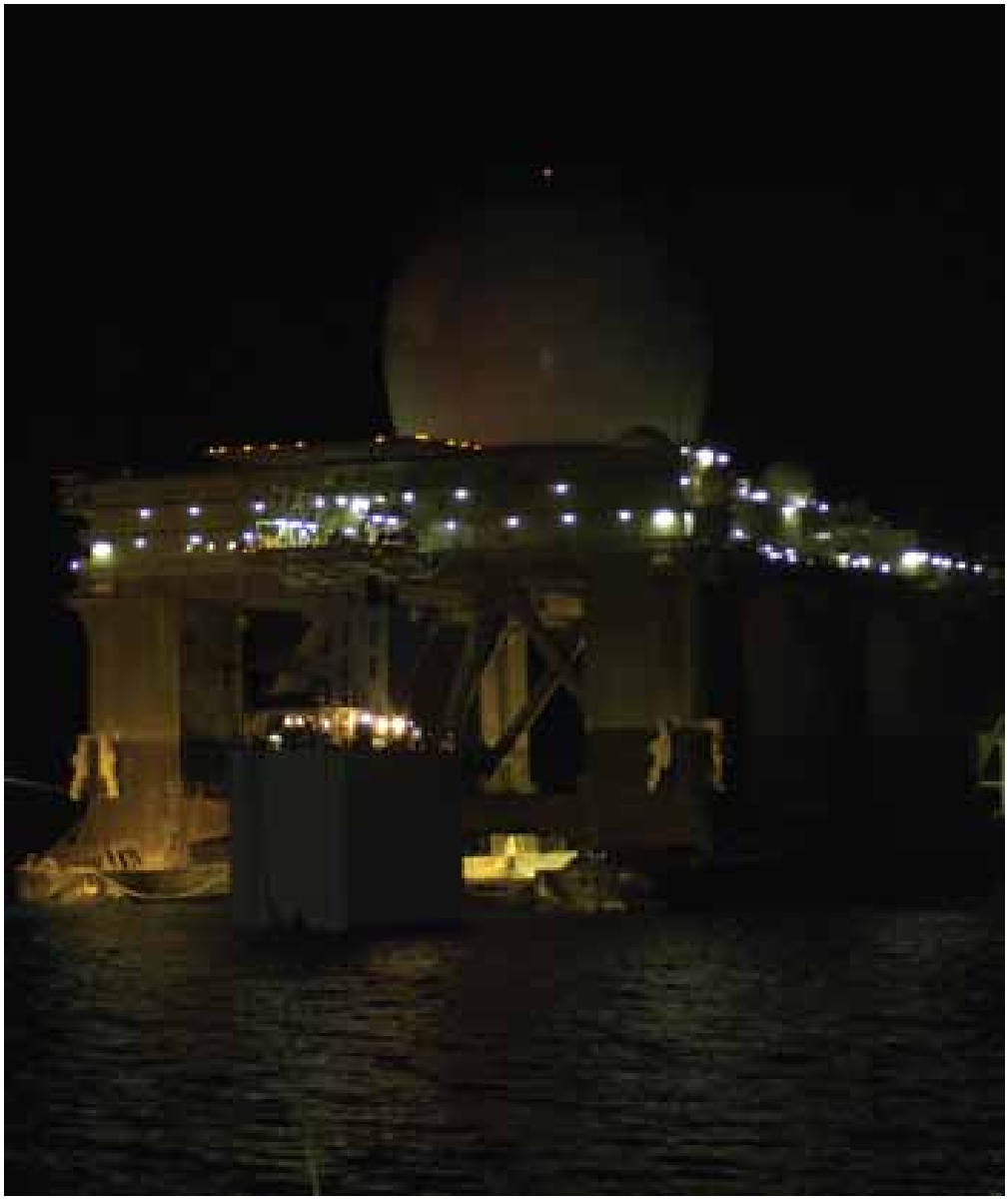
Due to the position of pier side equipment (i.e., pier side crane) at the potential locations (NSE and NASNI) the orientation of the SBX Radar Vessel may vary. The vessel may be turned about, (orientation of the bow and stern may vary) to best access thrusters and pier side equipment.

Temporary Added Personnel

During the maintenance and repair period, there could be up to 307 personnel working onsite (83 SBX Radar Vessel permanent personnel, 24 shore support, and 200 shipyard workers). Permanent personnel would live on the vessel during the maintenance and repair period. Therefore, an additional 224 personnel would be commuting to the site for up to 3 months with a one-way commute assumed to be 10 miles. Travel in Government-owned vehicles during the Proposed Action was assumed to be 50 miles for the 83 SBX Radar Vessel permanent personnel. There would be two work shifts scheduled from 0530 to 2200, 6 days per week. The majority of the high-level noise work activities will be done during the day. No in-water repairs (i.e., divers working on thrusters) would be performed at night.

Lighting System

The lighting system on the vessel is operational 24 hours per day. Lights are in accordance with navigational rules, the Occupational Safety and Health Administration (OSHA), and the Federal Aviation Administration (FAA) regulations. There are four incandescent floodlights around the inside perimeter of the radar dome, and red safety-lights on the top of the radar dome. Additionally, there are compact fluorescent lamps for safe passage, trainable 500-watt (W) incandescent floodlights at lifeboat and raft launching stations, 300-W incandescent floodlights at each of the four mooring stations, and a number of conventional 60-W fluorescent lamps located along inside and outside walkways. These lights are shielded to the maximum degree possible or pointed downward to minimize the attraction to birds. However, the trainable 500-W incandescent floodlights at each of the four mooring stations, and a number of conventional 60-W fluorescent lamps are not operated while in-port. See Figure 2-2 for a night-time view of the SBX Radar Vessel.



Night-time View of the SBX Vessel

Figure 2-2

Underwater Welding

Underwater wet welding activities would be performed to install small pad eyes on the thruster areas of the vessel where the thruster well extension unit would be attached (Figures 2-3 and 2-4). The American Welding Society describes the wet-welding process as one in which the diver and the welding arc are exposed to water with no physical barrier between them (Underwater, 2009). A 6 inch x 6 inch area where the small pad eyes are to be installed would be cleaned by scraping away any rust or paint. According to the Uniform National Discharge Standards (UNDS), underwater ship husbandry includes activities such as underwater welding. From operational experience, it is estimated that approximately 5 pounds of slag or spent welding rod are discharged during each underwater welding operation, and approximately 12 of these operations are performed fleet-wide each year on Navy ships, with a total of 60 pounds annually (U.S. Environmental Protection Agency, 1999). It is anticipated that less than 5 pounds of spent material would be discharged during each underwater welding activity associated with the maintenance and repair of the SBX Radar Vessel.

Seawater Cooling System

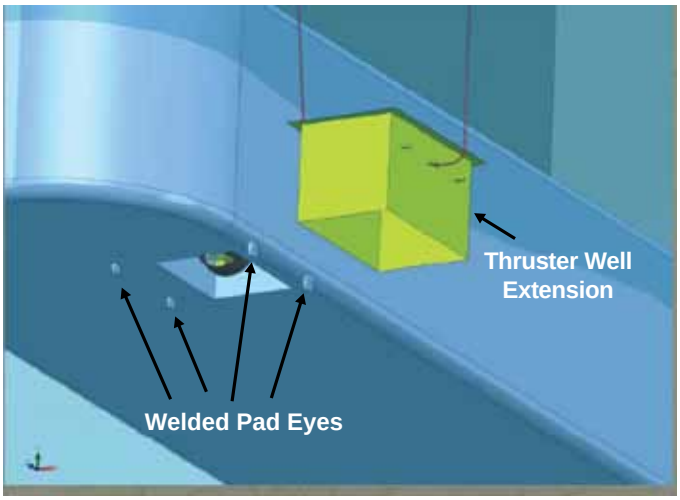
The SBX Radar Vessel would use seawater from the bay in the heat exchange of the heating, ventilation, and air conditioning (HVAC) system, which would be discharged back into the bay. The cooling system has a typical flow of 7,400 gallons per minute and would be expected to incur a temperature rise of approximately 6 degrees Fahrenheit, with a maximum temperature rise of 10 degrees Fahrenheit. The SBX Radar Vessel seawater cooling discharge would contain some heavy metals; the quantity would be less than on typical armed forces vessels which utilize nickel-copper piping. While the SBX Radar Vessel uses some copper-nickel piping, it also uses a composite piping that does not contribute heavy metals. The cooling water discharge has four points of discharge at pontoon-level locations below the waterline and two points of discharge at upper hull locations. Any water discharged from the vessel's cooling system while in-port would have originated directly from the water at one of the two proposed locations (Everett Harbor and San Diego Bay). Strainers or screens are used to prevent and mitigate the intake of debris and aquatic organisms. Each strainer plate is slotted with holes measuring a maximum of 0.79 inch by 8.1 inches.

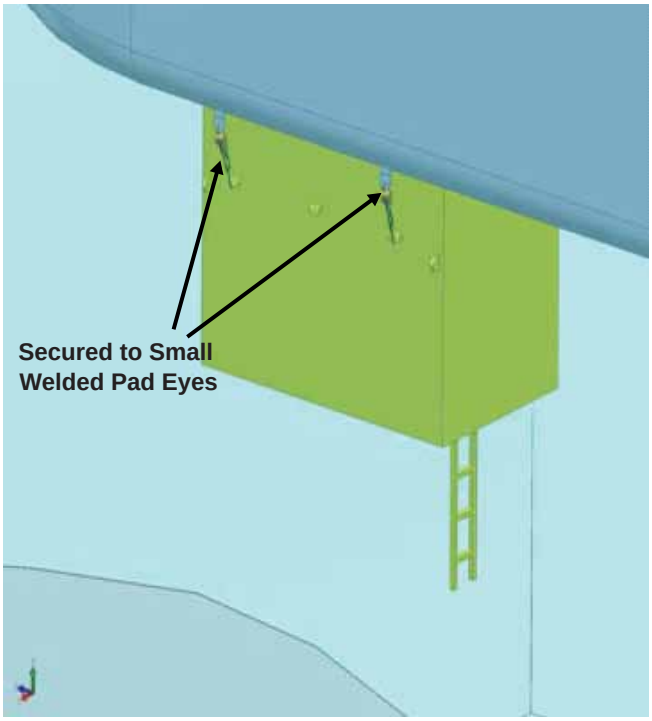
Refueling

Additionally, the SBX Radar Vessel would refuel at the maintenance and repair location after repairs are complete, prior to its departure. Fuel transfers would fully comply with U.S. Coast Guard (USCG) regulations. Additionally, no fuel will be off-loaded from the SBX Radar Vessel while in-port.

Oil Spill Response

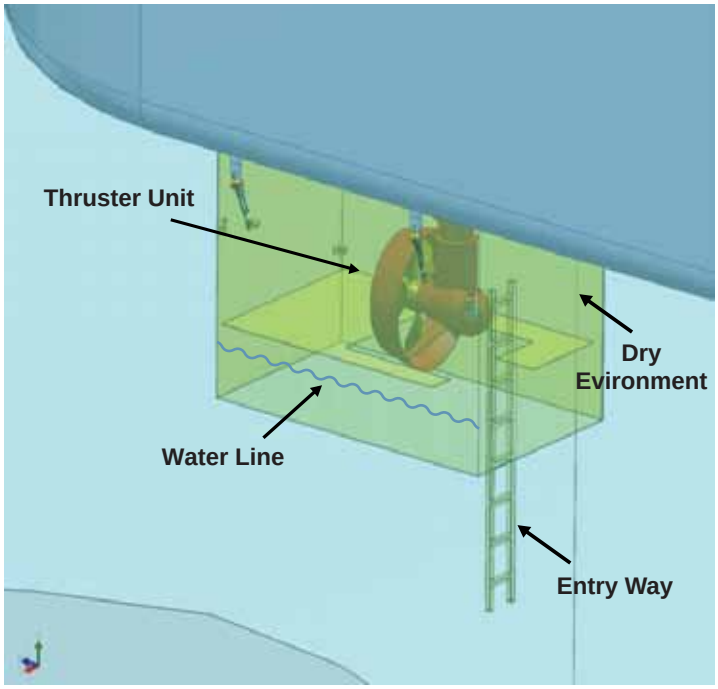
The SBX Radar Vessel is a USCG documented and ABS classed marine vessel. Interocean American Shipping is the commercial marine operator that has an approved SBX Shipboard Oil Pollution Prevention Plan and a Corporate Spill response plan that is approved by the USCG. There is an Oil Spill Response Organization on stand-by at all times for the SBX.

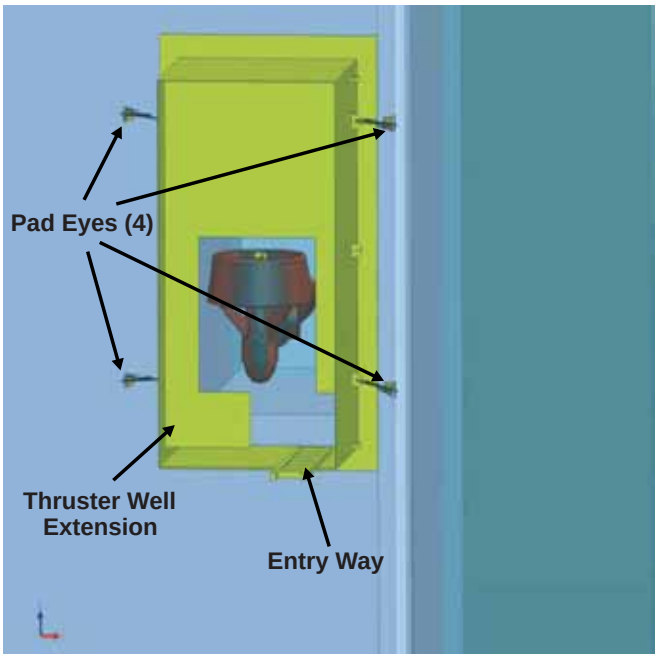




Thruster Well Extension Being Lowered, Installed Pad Eyes, and Secured Thruster Well Extension

Figure 2-3





Thruster Unit, Entry Way, and Controlled Dry Environment

Figure 2-4

Arrival and Departure of the SBX Radar Vessel

The SBX Radar Vessel is operated and maneuvered safely in areas under her own power in significant winds and seas. During transit into the East Waterway (Everett Harbor) and the San Diego Bay, the vessel would be at transit draft in a self propelled condition. The vessel would establish vessel traffic service (VTS) contact as required of all maritime vessels. The vessel would be provided with one or possibly two escort tug vessels based on the prevailing weather conditions capable of maintaining traffic separation lanes as required and under the direction of the VTS. The vessel is under USCG security escort within 12 nautical miles of an approach to a port. The SBX Radar Vessel has an approved emergency and normal tow procedure established and in use. It is not the intention of the SBX Radar Vessel to significantly impact the traffic of any waterways leading in or out of a potential port, but rather to safely and securely make a passage through the area. The SBX Radar Vessel has the capability to follow the traffic separation scheme.

Thruster Maintenance

Included in the maintenance and repair activities for the SBX Radar Vessel described in Table 2-2 is work to be performed on the thrusters. The SBX Radar Vessel is propelled by four 3.4 MW thrusters that are used to move the vessel. The vessel became operational in 2005, and thruster maintenance, a critical part of its required 5-year maintenance cycle, is planned to commence in the spring of 2011. The thruster maintenance was due in 2005; however, the Missile Defense Agency received an extension for this work until 31 March 2011. Maintenance and repair for the thrusters require approximately 45 days to complete. This could include, but not be limited to, propeller blade seal replacement or blade repair, propeller blade straightening and repair, propeller cleaning and polishing, gear lash and gear inspections, shaft seal repair and replacement.

The four SBX Radar Vessel thrusters would be accessed using a Thruster Well Extension (TWE). The TWE is lowered into the water with a small shore side crane and is designed to be floated from thruster to thruster once underwater. The TWE is positioned in place with the thruster retracted and secured to the hull bottom by four small welded pad eyes at each thruster. The small welded pad eyes are not currently installed on the hull, but must be installed prior to the TWE being attached. The installation of the small pad eyes would require underwater welding. Once floated into position, the TWE is secured with chain blocks to the welded pad eyes. See Figure 2-3 for an illustration of the lowering of the TWE, welded pad eyes, and secured TWE to hull bottom.

The thruster unit is lowered into the well extension, and an air bubble is created (the thruster well is de-watered), then maintenance and repair begins in a controlled dry environment. The TWE has a working platform with entry-way, and a working level. See Figure 2-4 for an illustration of the TWE with the thruster unit, entry way, and controlled dry environment. The majority of the oil (lubricant) contained in the thruster wells would be removed at the pier prior to maintenance; however, a small excess amount would remain in the thruster wells (less than 5 gallons). The excess oil would be pumped out via a hose leading up to a surface tank. BMPs and mitigation measures to be used with the maintenance and repair of the thrusters are discussed in Chapter 3.0 of this EA.

2.2.2 ALTERNATIVES

2.2.2.1 No-action Alternative

The No-action Alternative is evaluated in this document because it provides a baseline against which to measure the impacts of the Proposed Action. Under the No-action Alternative, the inspections, maintenance, and repair work on the SBX Radar Vessel would not be performed at NSE or NASNI, and there would be no disruption to the current operations at either of these locations. Under this alternative, the SBX Radar Vessel would not require a contingency location for deep water maintenance.

2.2.2.2 Alternative 1—Maintenance Requirements Performed at Naval Station Everett, Everett, WA

As part of Alternative 1, all activities listed in Table 2-2 would be performed at NSE. Figure 2-5 indicates the location where the SBX Radar Vessel would be moored at NSE (Pier A).

2.2.2.3 Alternative 2—Maintenance Requirements Performed at Naval Air Station North Island, Naval Base Coronado, San Diego, CA

As part of Alternative 2, all activities listed in Table 2-2 would be performed at NASNI. Figure 2-6 indicates the location where the SBX Radar Vessel would be moored at NASNI (Pier N or Pier P).

2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The following six additional facilities were considered as alternative sites to perform the inspection, maintenance, and repair work, but were eliminated from further consideration for the following reasons:

- East Coast Locations—The SBX Radar Vessel is too wide to navigate through the Panama Canal, thus making East Coast locations not viable due to arrival time constraints.
- Bremerton Naval Shipyard, Bremerton, Washington (Puget Sound Naval Shipyard and Intermediate Maintenance Facility)—The channel at this location is too narrow to navigate the SBX Radar Vessel with the thruster wells extended into the shipyard. Additionally, the pier water depths are too shallow to allow for the thruster work to be performed at Bremerton Naval Shipyard, Bremerton, WA.
- Joint Base Pearl Harbor–Hickam, Hawaii—The water depths are too shallow to allow for the thruster work to be performed at Joint Base Pearl Harbor–Hickam, HI.
- MV Blue Marlin (semi-submersible heavy lift ship)—As it relates to thruster maintenance, if the SBX Radar Vessel is placed onto the MV Blue Marlin, the SBX Radar Vessel would need to be raised 15 feet to provide clearance for the thrusters. This additional height would make the MV Blue Marlin unstable.
- Dry Docks—No U.S.-controlled dry docks are available for use during the required maintenance time period (work would commence in the spring of 2011).
- Adak Island, Alaska—Due to the weather conditions (low temperatures and sea state) and the logistics of transporting personnel and equipment to and from the site, the inspection, maintenance, and repair activities cannot be performed at this location.

EXPLANATION

- Street
- Protective Barrier
- Potential Mooring Location
- Naval Station Everett Boundary

NORTH

0 500 1,000 2,000 Feet

Naval Station Everett

Everett, Washington

Figure 2-5

EXPLANATION

- Street
- Potential Mooring Location
- Naval Air Station North Island Boundary

NORTH

0 1,000 2,000 4,000 Feet

Naval Air Station North Island, Naval Base Coronado

Coronado, California

Figure 2-6

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3.0 Affected Environment and Environmental Consequences

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the natural and human environment that may be affected by the Proposed Action, including the No-action Alternative, Naval Station Everett (NSE), and Naval Air Station North Island (NASNI), and provides a baseline point for understanding any potential impacts. Available reference materials, including Environmental Assessments (EAs), Environmental Impact Statements (EISs), installation plans, and scientific articles were reviewed. Questions were directed to installation and facility personnel and private individuals. Site visits were conducted where necessary to gather the baseline data presented below. Appendix C describes the primary statutes, regulations, and ordinances that provide guidance for avoiding or minimizing impacts on the resources analyzed within this EA.

Fourteen broad areas of environmental consideration were originally considered to provide a context for understanding the potential effects of the Proposed Action and to provide a basis for assessing the severity of potential impacts. These areas included air quality, airspace, biological resources, cultural resources, geology and soils, hazardous materials and waste, health and safety, land use, noise, socioeconomics, transportation, utilities, visual and aesthetic resources, and water resources.

3.1 NO-ACTION ALTERNATIVE

Under the No-action Alternative, inspections, maintenance, or repair work would not be performed on the Sea-Based X-Band (SBX) Radar Vessel at NSE or NASNI. There would be no change to regional air quality, airspace, biological resources, cultural resources, geology and soils, hazardous material and waste production or collection, health and safety, land use, noise, socioeconomics, transportation modes (i.e., ground, air, or water), utilities, visual and aesthetics, or marine water resources. The existing operations at both contingency locations would continue as normal.

3.2 NAVAL STATION EVERETT (ALTERNATIVE 1)

Environmental Resources

Of the 14 broad areas of environmental consideration, the proposed maintenance and repair activities could have an effect on air quality, airspace, biological resources, hazardous materials and waste, noise, socioeconomics, visual and aesthetic resources, and water resources at NSE. These resource areas are analyzed in the following sections.

The remaining resource areas were not analyzed for the following reasons:

- Cultural—There are no known underwater archaeological sites or features within the deep water terminal area. In addition, there are no activities associated with the Proposed Action that could potentially affect either terrestrial archaeological sites or aboveground properties (e.g., buildings, structures) that are eligible for listing on the National Register of Historic Places.
- Geology and Soils—There are no planned soil disturbances of terrestrial or underwater soils or landforms (e.g., dredging) or installation of pier pilings.
- Health and Safety—The radar would not be in use while the SBX Radar Vessel is in port. Any risk to divers performing underwater welding activities is covered by the established policy and procedures of the company providing the service. There are no other anticipated effects to public health and safety.
- Land Use—There are no planned changes in the current facility designated land use patterns. The use of the facility (i.e., entrance of vessels into port, maintenance activities) is a normal facility operation.
- Transportation—Any additional vehicle traffic related to the 307 potential temporary personnel associated with the Proposed Action is not anticipated to negatively impact the level of service (LOS) of roadways leading to NSE. Mooring the SBX Radar Vessel would not require the use of water or air transportation.
- Utilities—It is normal operating procedure for vessels (e.g., Aircraft Carriers, Oilers) to moor at NSE and use pier-side hook-up to potable water, waste water, or shore power. The current electrical capacity provided by NSE for Nuclear-powered Aircraft Carriers (CVNs) would be sufficient to operate the SBX Radar Vessel while moored at NSE when it becomes capable of connecting to shore power.

3.2.1 AIR QUALITY

The primary air quality concerns at NSE are the exhaust from the onboard generators and the emissions from painting operations.

3.2.1.1 Affected Environment

Existing Conditions

Climate

Climate at Puget Sound can be described as cool marine. Average annual rainfall is about 35 inches. July and August are the driest months, whereas December and January are the wettest. Temperatures typically range from 59 degrees Fahrenheit (°F) to 44°F. Summer is the sunniest season, and July is the hottest month with an average high of 75°F. January tends to be the coldest month, with lows averaging 34°F. Prevailing winds during the summer are typically from the north, whereas winter winds generally come from the south.

Regional Air Quality

NSE falls under the Puget Sound Clean Air Agency's (PSCAA's) jurisdiction, encompassing King, Kitsap, Pierce, and Snohomish Counties, Washington. The Puget Sound airshed is currently in a maintenance area for ozone (measured as volatile organic compounds [VOCs] and nitrogen oxides [NOx]), carbon monoxide (CO), and particulate matter with a mean aerodynamic diameter of 10 microns or less (PM10). The Puget Sound airshed is in attainment for all other criteria pollutants—sulfur dioxide (SO2) and particulate matter with a mean aerodynamic diameter of 2.5 microns or less (PM2.5).

The Washington State Department of Ecology (WDOE) maintains a network of air quality and meteorological monitoring stations throughout the Puget Sound region; the closest station to NSE is in Marysville, Washington. The air quality for the Puget Sound area has steadily improved over the last decade. Levels of fine particles (PM2.5) at the Marysville and Darrington monitors, both in Snohomish County, remain in attainment with the Federal standard, but exceed the PSCAA's more stringent local health goal (Puget Sound Clean Air Agency, 2009).

Existing Emissions Sources

The 2004 air emissions inventory at NSE concluded that NSE is not required to obtain a Title V operating permit. The 2004 inventory shows that natural gas-fired boilers, diesel-powered emergency generators, and the steam plant are the main stationary sources of combustive emissions at NSE. The steam plant, boilers, and abrasive blasting contributed equally as sources with potential to emit PM10. VOC emissions are generated from a combination of point sources—tanks, the oily wastewater pretreatment facility, and area sources—use of janitorial supplies, paints, and solvent. Actual emissions of criteria pollutants in the 2004 inventory were as follows: PM10 (1 ton/year), NOx (2 tons/year), VOCs (16 tons/year), CO (3 tons/year), and sulfur dioxide (SO2) and lead (Pb) (0 tons/yr) (Naval Facilities Engineering Command Northwest, 2005). The 2004 actual emissions inventory would be used for comparative purposes to evaluate the magnitude of emissions that would occur from the project alternatives.

Current Requirements and Practices

Equipment used by military, Navy civilians, and contractors, including ships and aircraft, is properly maintained in accordance with applicable Navy requirements and industrial standards, thus reducing potential impacts to air quality. Operating equipment meets Federal and State emission standards, where applicable.

NSE does not hold a Title V air permit because it is not a major source permit holder under Prevention of Significant Deterioration (PSD) or New Source Review (NSR); not an affected source under acid rain rules; not a solid waste incineration unit owner under Sec. 129; not a major source subject to National Emissions Standards for Hazardous Air Pollutants (NESHAP); not a synthetic minor source subject to NESHAP; and not a major source subject to Maximum Achievable Control Technology standards and New Source Performance Standard (See Appendix C for more details). The proposed level of activity on the SBX Radar Vessel and pier-side would not cause NSE to exceed the thresholds triggering a requirement for a Title V permit.

National emission standards for shipbuilding and ship repair (surface coating), listed in the Clean Air Act (CAA) regulations, Subpart II of Part 63, NESHAPs, apply to major sources of hazardous air pollutant (HAP) emissions. Major sources are shipbuilding and repair facilities/coating operations emitting over 10 tons per year of an individual HAP or over 25 tons per year of total HAP are regulated. The Proposed Action is not expected to be a major source of HAP (VOC) emissions.

Pier-side use of abrasive blasting units and spray coating of vessels is restricted at NSE in orders issued by the PSCAA. All contractors hired to perform the SBX Radar Vessel maintenance must follow the restrictions and conditions in these orders, which include the containment or filtering of toxic air pollutants and a limit of VOCs in paint to amounts listed in the CAA regulations, *Table 2 to Subpart II of Part 63, Volatile Organic HAP (VOHAP) Limits for Marine Coatings* (Puget Sound Clean Air Agency, 2005). Table 2 limits volatile organic HAP, or VOCs, to 340 grams per liter coating for general use and to higher limits (between 340 and 780 grams per liter) for specialty coatings (U.S. Environmental Protection Agency, 1995).

General Conformity Applicability

The U.S. Environmental Protection Agency (USEPA) has published *Revisions to the General Conformity Regulations; Final Rule*, in the 5 April 2010 Federal Register (40 CFR Parts 51 and 93). The U.S. Navy published *Clean Air Act (CAA) General Conformity Guidance* in Appendix F, Chief of Naval Operations Instruction (OPNAVINST) 5090.1C, dated 30 October 2007. These publications provide implementing guidance to document CAA Conformity Determination requirements.

USEPA's general air conformity rule applies to Federal actions occurring in nonattainment or maintenance areas when the total indirect and direct emissions of the subject air pollutant exceed specific thresholds. Because of maintenance plans in place for ozone, CO, and PM10 in the Puget Sound airshed, the general conformity *de minimis* level of 100 tons per year applies for these pollutants. See Appendix C for more details. Table 3.2.1-1 shows the *de minimis* levels that apply to the Proposed Action at NSE.

See Appendix C for more details of the current requirements and practices listed above.

Table 3.2.1-1. *De minimis* Levels for Determination of Applicability of General Conformity Rule, Naval Station Everett

Air Quality Jurisdiction	Criteria Pollutant Emission, tons/year					
	VOC	NOx	CO	PM10	PM2.5	SO2
Puget Sound Clean Air Agency (PSCAA)	100	100	100	100	N/A	N/A

Source: 40 CFR 93.153

3.2.1.2 Environmental Consequences

Approach to Analysis

The evaluation of potential air quality impacts includes the effects of air pollutant emissions from the proposed maintenance and repair activities occurring within the PSCAA area and in coastal waters within 3 nautical miles of a shoreline. These coastal waters are part of the same air quality jurisdiction as the contiguous land area.

The National Environmental Policy Act (NEPA) analysis involves estimating emissions generated from the proposed activities and assessing potential impacts on air quality, including an evaluation of potential exposures to toxic air pollutant emissions. The proposed activities as described in Chapter 2.0 that would change air emissions in the region could include:

- Shipboard generators—For purposes of this air quality section, 2½ months, or 75 days, of operation was used because the duration of the activity is estimated to be up to 3 months. After the installation of the equipment to supply power to the vessel from a shore connection, shore power could be used to reduce the use of diesel generators, but it is unknown when the installation will be complete. Therefore, those reductions could not be included in the emissions impact.
- Paints and solvents
- Shipyard equipment—For purposes of this air quality section, the shipyard equipment listed in Chapter 2.0, Table 2-3, is reflective of maximum equipment requirements, but is not necessarily reflective of equipment needed on any given day. Each of the items was estimated to operate a total of 975 hours (75 days operating 13 hours per day). The length of time any particular piece of equipment is required is ultimately a function of the final maintenance schedule. For example, it is estimated that one welder will be necessary for 75 days; this could be accomplished through the use of one welder for 75 days, or two welders for 37.5 days. For the purposes of calculated emissions, the precise scheduling is not a critical factor; rather, the total operating hours for each piece of equipment is the relevant metric.
- Added personnel—Includes temporary commuting from the 224 shipyard workers; includes additional 50 miles of miscellaneous travel (mix of car, truck) by each of the 83 personnel living on the vessel for while in port for 3 months.

Estimated emissions associated with these actions will be compared to *de minimis threshold* to screen for the need (if any) for a formal conformity determination, and will be compared to the current requirements and practices listed above to evaluate the magnitude of emissions that could occur from the proposed activities.

Results of Analysis

Appendix D contains the complete results for the screening level air quality modeling that was used to estimate net increases in air pollution. The results are summarized below.

General Air Conformity Applicability

Total air emissions for the SBX Radar Vessel maintenance and repair are assumed to occur within 1 year, which accurately represents the temporary nature of the Proposed Action. Table 3.2.1-2 shows the estimated air emissions of the subject pollutants resulting from the Proposed Action.

Table 3.2.1-2. Estimated Air Emissions from SBX Radar Vessel Maintenance and Repair, Naval Station Everett

Emission Source Category	Emissions, Tons/Year			
	VOC	NOx	CO	PM10
Two diesel generators operations	5.93	53.76	14.28	0.83
Shipyard equipment	0.15	0.41	1.28	0.01
Shipyard worker commute	0.01	0.01	0.08	0
Government-owned vehicle miles traveled	0.00	0.01	0.07	0
TOTAL Emissions	**6.09**	**54.19**	**15.71**	**0.84**
PSCAA *de minimis* threshold[(1)]	100	100	100	100
Proposed Action exceeds *de minimis threshold?*	No	No	No	No

Source: derived from USEPA, 1998; U.S. Air Force, 2010

Notes:

[(1)] Puget Sound Clean Air Agency (PSCAA) is a maintenance area for carbon monoxide (CO), particulate matter less than or equal to 10 microns (PM10), and the 8-hour Federal ozone standard; volatile organic compounds (VOCs) and nitrogen oxides (NOx) are precursors to the formation of ozone. The PSCAA is in attainment of the Federal sulfur dioxide (SO2) and particulate matter less than or equal to 2.5 microns (PM2.5) standards; therefore, emissions estimates and *de minimis* thresholds are not shown.

The estimated air emissions from these sources associated with the maintenance and repair of the SBX Radar Vessel would be below the *de minimis* threshold levels for conformity; i.e., VOC, NOx, CO, and PM10 emissions are below 100 tons per year as shown on Table 3.2.1-2. Therefore, the Proposed Action would conform to the PSCAA State Implementation Plan (SIP) and would not trigger a conformity determination under Section 176(c) of the CAA. A Record of Non-Applicability (RONA) for CAA conformity in accordance with Navy CAA Conformity Guidance, OPNAVINST 5090.1C, is provided in Appendix H.

Shipboard Generators Emissions

Air emissions will increase as a result of the limited use of shipboard generators. As shown in Table 3.2.1-2, the NOx emission from two diesel generators operations would be approximately 53.76 tons/year; or an additional 0.72 ton/day of NOx emissions to the air. CO emissions are predicted to be 14.28 tons/year and VOC emissions 5.93 tons/year. The shipboard generators are estimated to result in 0.83 ton/year of PM10 emissions and greenhouse gas emissions (CO_2) of 2,772 tons/year as shown in Table D-2.

For perspective, actual emissions of criteria pollutants in the NSE 2004 Air Inventory were as follows: PM10 (1 ton/year), NOx (2 tons/year), VOCs (16 tons/year), CO (3 tons/year), and SO2 and lead (Pb) (0 tons/yr) (Naval Facilities Engineering Command Northwest, 2005). Compared to the level of NOx emissions the NSE currently produces, the anticipated level of NOx

emissions from the limited use of the shipboard generators is high but compliant with the region's limits. The magnitude of generator use during the SBX Radar Vessel maintenance and repair is different from homeported vessels at NSE because Navy vessels have the ability to connect to shore power. The PM emissions are not significant, and the CO2 emissions are not "meaningful" greenhouse gas emissions as defined by draft guidance of the Council on Environmental Quality (see Appendix C for more details).

The use of onboard generators may cause emissions of visible matter, or nuisance emissions (such as odors or dust), and particulates. This may impact air quality in the immediate vicinity of the project site, but these emissions are not anticipated to be noticeable by residents in downwind communities.

No significant long-term air quality impacts to the region from the shipboard generators are anticipated.

Painting and Solvents Emissions

Over 250,000 square feet of the vessel would be prepared and painted, which would require the use of approximately 1,500 gallons of paint and 330 gallons of solvents. VOC emissions will occur as solvents volatilize from the product. Implementation of Best Management Practices (BMPs) for containment and filtering of emissions that are listed in Chapter 2.0 will minimize the impact to air quality.

As indicated previously, at NSE, the PSCAA has issued an order for pier-side use of abrasive blasting units and spray coating of vessels. All contractors hired to perform the SBX Radar Vessel maintenance must follow the restrictions and conditions in these orders, which include the containment or filtering of toxic air pollutants and a limit of VOCs in paint to amounts listed in the CAA regulations, Table 2 of 40 CFR 63.783. To comply, the MDA/contractor would use low VOC content paint, as specified on the MSDSs from the paint manufacturer and as shown on Table D-4. There will be no significant air impact from paint and solvent use.

Because the painting and solvent activities are part of existing orders from the PSCAA, the emissions are exempt from conformity per 40 CFR 93.153(d) (1), and emissions from painting are not estimated in this analysis. See Appendix D, Section D.1.4 for this discussion.

Other Emissions

Shipyard equipment is listed in Chapter 2.0, Table 2-3. Estimates of emissions were based on estimated hours of usage as discussed in Appendix D. As shown in Table 3.2.1-2, potential CO, particulate matter (PM10), and NOx emissions from diesel-powered shipyard equipment are not expected to significantly impact air quality. The traffic-related air emissions resulting from the temporary shipyard worker commutes and Government-owned vehicle miles traveled (VMT) would have no significant impact on air quality because of the low number of trips proposed and their temporary nature.

3.2.1.3 Mitigation Measures

Based on the analysis above, no long-term or significant impacts to air quality would occur because of the SBX Radar Vessel maintenance and repair. Therefore, no mitigation is proposed.

3.2.1.4 Summary of Effects

The analysis determined that the mooring of the SBX Radar Vessel for 75 days and the maintenance and repair would cause short-term impacts to air quality, but will not exceed General Conformity *de minimis* levels in the PSCAA regulations, or National Ambient Air Quality Standards (NAAQS). The major ozone (measured by NOx and VOCs) and CO air pollutant emissions sources include shipboard diesel generators, employee commuting, diesel shipyard equipment (NOx and CO), and surface coating (VOCs). The estimated air emissions from these sources associated with the maintenance and repair of the SBX Radar Vessel for NOx would be 54.19 tons per year, for VOC would be 6.09 tons per year, for CO would be 15.71 tons per year and for PM10 would be 0.84 ton per year. These emissions will be temporary and will not significantly impact the Puget Sound Air Basin. The requirements imposed by the PSCAA through its orders will limit VOCs in paint to amounts listed in the CAA regulations, Table 2 of 40 CFR 63.783. This and the implementation of BMPs listed in Chapter 2.0 will ensure that the project would have no significant impact on air quality.

3.2.2 AIRSPACE

Airspace surrounding NSE is analyzed in this EA because there is a potential for the SBX Radar Vessel to be an aircraft obstruction.

3.2.2.1 Affected Environment

Airspace, or that space which lies above a nation and comes under its jurisdiction, is generally viewed as being unlimited. However, it is a finite resource that can be defined vertically and horizontally, as well as temporally, when describing its use for aviation purposes. The time dimension is a very important factor in airspace management and air traffic control. Under Public Law (PL) 85-725, *Federal Aviation Act of 1958*, the Federal Aviation Administration (FAA) is charged with the safe and efficient use of our nation's airspace and has established certain criteria and limits to its use.

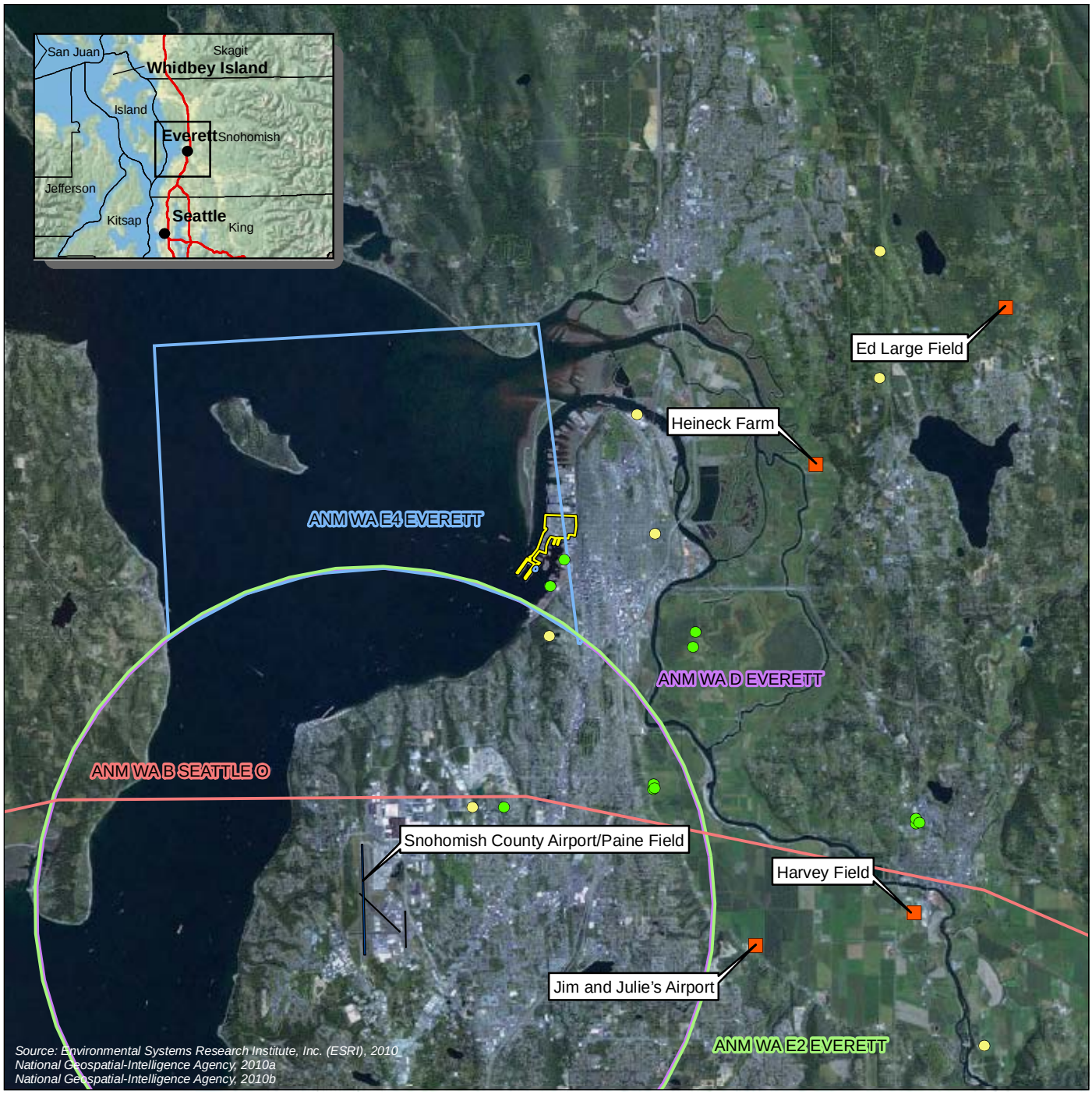
The method used to provide this service is the National Airspace System. This system is "…a common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information and manpower and material" (Federal Aviation Administration, 2007).

Existing Conditions

Appendix C provides descriptions of airspace classes and other general information related to airspace issues.

Controlled and Uncontrolled Airspace

The Seattle Air Route Traffic Control Center (ARTCC) regulates air traffic in the region. As shown on Figure 3.2.2-1, the proposed location for the SBX Radar Vessel is within Class E airspace ANM WA E4 EVERETT for Snohomish County Airport/Paine Field, which is in effect from surface to 3,100 feet above mean sea level (AMSL). This airspace adjoins Class E airspace ANM WA E2 EVERETT, which is also in effect from surface to 3,100 feet. Seattle International Airport Class B airspace ANM WA B SEATTLE O is located approximately 4 miles



EXPLANATION

- Other Airfield
- Aerial Obstruction (200' to 249')
- Aerial Obstruction (Greater than 250')
- Airfield Runway
- Potential Mooring Location
- ANM WA D EVERETT (Surface to 3,100')
- ANM WA E4 EVERETT (Surface to 3,100')
- ANM WA E2 EVERETT (Surface to 3,100')
- ANM WA B SEATTLE O (6,000' to 10,000')
- Naval Station Everett Boundary

NORTH

0 1 2 4 Miles

Aircraft Obstructions in the Region of Naval Station Everett

Everett, Washington

Figure 3.2.2-1

south of the proposed SBX Radar Vessel location and is in effect from 6,000 to 10,000 feet AMSL. (National Geospatial Intelligence Agency, 2010a)

Special Use Airspace

There is no special use airspace within the Study Area. The nearest special use airspace is located approximately 25 miles west of NSE and includes the Chinook and B Military Operating Areas, and the Admiralty Inlet Military Operating Area.

Aerial Obstructions

Generally, only man-made structures extending more than 200 feet above ground level (AGL) are depicted on aeronautical charts. Some objects less than 200 feet AGL, such as antennas, tanks, and lookout towers, are also included if very near an airport. There are a number of aerial obstructions to aircraft as identified in the Digital Vertical Obstruction files (National Geospatial-Intelligence Agency, 2010b). Figure 3.2.2-1 shows the aerial obstructions that are 200–249 feet AGL, similar to the SBX Radar Vessel, and those that are greater than 250 feet AGL. When navigating through this area, pilots must be aware of these obstructions. The FAA requires an Obstruction Notification submittal for all objects that intersect a 100:1 slope up from the surface of a runway out to 20,000 feet from the runway. For example, on flat ground a 100-foot structure would require a notification submittal if located within 10,000 feet of an airport.

Airports/Airfields

Seattle–Tacoma International Airport is located approximately 37 miles south of NSE. Snohomish County (Paine Field) Airport is about 5 miles southwest of NSE. Several other small airfields are located within the area, including Harvey, Heineck, Ed Large, and Jim and Julie's as shown on Figure 3.2.2-1.

Current Requirements and Practices

NSE follows all applicable Navy and FAA rules and regulations that control and regulate area airspace. The following Temporary Flight Restriction was placed in effect after 11 September 2001 above NSE due to national security:

> "2/0451 - WA. Flight restrictions Everett, WA. Effective immediately until further notice. Pursuant to 14 CFR Section 91.137a (1) temporary flight restrictions are in effect due to national security. Only relief aircraft operations under the direction of Department of Defense are authorized in the airspace at and below 2000 feet msl within a 3 nautical miles radius of (47 59 N/122 13 W) the Paine (PAE) VOR/DME 014 degree radial at 4.53 nautical miles. Excluding that airspace west of the Paine FLD Runway 16R ILS localizer. Unless authorized by ATC for purposes of conducting arrival/departure operations. "

The military had wanted to turn 13 Temporary Flight Restrictions (TFRs), including the above, into prohibited areas. The Aircraft Owners and Pilots Association opposed that and suggested that airspace over military installations be designated national security areas (NSA). For 11 of the 13 TFRs, the FAA agreed. TFRs in Washington (Bremerton, Everett, and Port Townsend) became NSAs on 23 December 2004 with the publication of the latest sectional chart. NSAs are marked on aeronautical charts with a broken magenta line and an advisory message to pilots to avoid the area. If needed during times of heightened security, the FAA can issue a Notice to Airmen (NOTAM) restricting flight in an NSA. (Aircraft Owners and Pilots Association, 2004)

3.2.2.2 Environmental Consequences

Approach to Analysis

To complete the analysis of effects to airspace in the Study Area, a systematic review of relevant literature was conducted, including scientific articles, technical reports published by Government agencies, work conducted by private businesses and consulting firms, Department of Defense (DoD) reports, operational manuals, and current and prior environmental documents for facilities and activities. The literature and other information sources cited are identified in Chapter 5.0, References.

Results of Analysis

Controlled and Uncontrolled Airspace

No impacts to controlled and uncontrolled airspace are anticipated since the X-Band Radar (XBR) would not be radiating.

Special Use Airspace

There is no special use airspace within the region of influence. Consequently, there would be no impacts to special use airspace.

Aerial Obstructions

Based on an initial analysis, the Missile Defense Agency (MDA) would not be required to submit an Obstruction Notification to the FAA. There are no airfields within 20,000 feet of the proposed SBX Radar Vessel location.

Although the top of the SBX would be approximately 250 feet AGL, it includes appropriate warning lights to help pilots identify it when transiting through the area. During the day in clear weather the SBX is of sufficient size to easily identify and avoid. When navigating through this area pilots must already be aware of the existing aerial obstructions shown on Figure 3.2.2-1, and the addition of the SBX Radar Vessel would not result in an impact.

Airports and Airfields

The SBX Radar Vessel would not be located within the approach of any airport and would not impact aircraft transiting the area. Seattle–Tacoma International Airport is located approximately 37 miles south of NSE, and Snohomish County (Paine) Airport is 5 miles southwest of NSE. There would be no impacts to airspace at the small airfields such as Harvey, Heineck, Large, Frontier, and Arlington. There would be no radiofrequency interference/ electromagnetic interference issues with communication or radar at the airports and airfields since the XBR would not be used while the SBX Radar Vessel is in port.

3.2.2.3 Mitigation Measures

The appropriate lighting would be on the vessel as required by FAA to illuminate the height of the structure. Although not anticipated, if required the MDA would submit an Obstruction Notification to the FAA due to the height of the SBX Radar Vessel.

3.2.2.4 Summary of Effects

No impacts are anticipated to controlled and uncontrolled airspace or special use airspace since the XBR would not be radiating. No impacts are expected to area airports and airfields as a result of the SBX potentially being an aerial obstruction since it includes FAA approved lighting and is located more than 20,000 feet from any airports.

3.2.3 BIOLOGICAL RESOURCES

Biological resources are analyzed in this EA because of the potential for impacts to biological species from temporarily mooring the SBX Radar Vessel at NSE for maintenance and repair activities. These activities would result in increased noise, increased presence of personnel, lighting on the vessel required 24/7, the potential for water quality degradation, and expended materials, including those from welding, painting, or paint-chipping.

Native or naturalized vegetation, wildlife, and the habitats in which they occur are collectively referred to as biological resources. For the purpose of discussion, biological resources have been divided into the areas of marine vegetation, invertebrates, fish, marine mammals, and seabirds, with threatened and endangered species and environmentally sensitive habitat located as subsections. A Biological Assessment (BA) was prepared concurrent with this EA and submitted to the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) to evaluate effects to species listed as threatened or endangered under the Endangered Species Act (ESA) at NSE. The BA concluded that the Proposed Action may affect, but is not likely to adversely affect Puget Sound Chinook salmon or steelhead, Coastal/Puget Sound bull trout, ESA-listed killer whales, or listed marbled murrelets. The Proposed Action would not adversely affect essential fish habitat (EFH) for Pacific salmon or Pacific ground species. Each agency provided a letter of concurrence with the findings of the BA.

3.2.3.1 Affected Environment

The region of influence for biological resources includes areas that may potentially be affected by the use of NSE for the SBX Radar Vessel maintenance and repair. NSE is located within the Puget Trough Ecoregion, an area that includes the marine waters of Puget Sound and the lowlands generally up to about 1,000 feet above sea level. There are no traditional natural resource land uses such as forestry or agriculture at NSE; all open areas that are not paved over are covered in maintained lawns and landscaped shrubs and trees. NSE is an irregularly shaped, man-made land parcel constructed by numerous individual landfills over the past several decades. The NSE Waterfront Site has no wetlands. (Naval Station Everett, 2008a)

Existing Conditions

Marine Vegetation

Macrophyte algae are common in the Everett Harbor area on riprap and along intertidal rocks near river mouths. Representative species are *Fucus* sp., *Ulva* sp., *Enteromorpha* sp., and *Bryopsis* sp. Eelgrass beds occur in the general area of Port Gardner Bay and Possession Sound and provide important habitat for juvenile fish, fish eggs, benthic invertebrates, and foraging waterfowl, but there are no known eelgrass beds within the water boundary of NSE. Underwater plants provide food, breeding areas, nurseries, and resting places for wildlife in the Sound. Twenty-six species of kelp provide habitat for young rockfish, sea otters and birds, and food for sea urchins and other species (National Wildlife Federation, 2010). The shoreline

adjacent to the proposed mooring location is armored and does not provide habitat features such as eelgrass, kelp beds, and natural, unmodified shorelines associated with salmon presence. Eelgrass is the primary vegetation in the intertidal areas of the Strait of Juan de Fuca and Puget Sound and covers more than 40 percent of the intertidal area (Commander, U.S. Pacific Fleet, 2008). (Naval Station Everett, 2008a; 2009a)

Marine Invertebrates

As part of the baseline year sampling for the Everett Waterfront Site water and sediment quality certification monitoring effort in 1993, 10 sediment quality stations and 1 reference station inside the East Waterway and in the near vicinity were sampled for benthic infauna as well as for sediment quality. The inner East Waterway (Figure 2-5) stations have a lower abundance of benthic invertebrates than found in the outer waterway stations; proportionately more polychaetes and crustaceans than the outer waterway stations and fewer bivalves, indicating greater disturbance; and show a decrease in species richness and diversity compared to those found in the outer waterway stations (Naval Station Everett, 2008a).

The most diverse groups of invertebrates include decapod crustaceans (crabs, lobsters, and shrimp), amphipods (small shrimp-like creatures), bivalves, barnacles, and gastropods (snails and slugs). Less common groups include other shrimp-like creatures such as isopods, mysids, and euphausids (krill), and segmented bristleworms (polychaetes). (Commander, U.S. Pacific Fleet, 2008)

The nearshore areas of the East Waterway and other areas of the Everett Harbor are used as habitat by epibenthic (living immediately above the bottom) invertebrates. These organisms are preyed upon by juvenile salmon during their outward migration from the Snohomish River in the spring and early summer of each year. (Naval Station Everett, 2008a)

No significant populations of commercial or recreational species of mollusks are found in the East Waterway except for low numbers of softshell, littleneck, and butter clams. The Everett Harbor area is unclassified and therefore considered a prohibited zone for the harvest of shellfish. The shoreline along the western side of the East Waterway has been found to support large numbers of juvenile Dungeness crab, the one significant commercial and recreational species found in the East Waterway. (Naval Station Everett, 2008a)

Fish

The Snohomish River (Figure 2-6) is the second largest drainage basin in Puget Sound and supports populations of several salmon and trout species (Snohomish County, 2001). It has a number of tributaries, including the Snoqualmie and Skykomish rivers. The lower river's estuary and adjacent marine areas provide vital transit habitat for adults migrating up-river to spawn and for their offspring migrating through to their marine phase of life. The four species of salmon found in this system are chinook (spring and summer/fall races), coho, pink, and chum. These naturally reproducing species are augmented with hatchery fish (winter and summer steelhead). Of the fish species with distributions overlapping the NSE action area for which hearing sensitivities are known, most are hearing generalists, including salmonid species. The hearing capability of Atlantic salmon, a hearing generalist, indicates that salmon are unlikely to detect sounds originating in air, but are sensitive to substrate-borne sounds; and compared with the carp and cod salmon hearing is poor (Hawkins and Johnstone, 1978). (Snohomish County, 2001; Naval Station Everett, 2008a)

Other anadromous (migrating from the sea to fresh water to spawn) game fish are found in lower numbers than the salmon and are caught primarily in nearshore locations. Juvenile sea-run cutthroat juveniles have been caught in greater numbers than steelhead and bull trout/Dolly Varden char. Dolly Varden char are the least numerous of the anadromous game fish in the vicinity of the Waterfront Site. (Naval Station Everett, 2008a)

The near shore waters of Puget Sound contain an abundance and wide variety of fish species. The most abundant demersal or bottom-dwelling fish (reported to be less diverse and numerous than pelagic species) in the project area is the Pacific staghorn sculpin followed by English sole, sand sole, and Pacific sanddab. The most common pelagic or off-bottom species of fish that have been noted throughout the year in the vicinity of the Waterfront Site are Pacific hake, walleye pollock, Pacific cod, Pacific herring, Pacific tomcod, and spiny dogfish. (Washington Department of Fish and Wildlife, undated; Naval Station Everett, 2008a)

Threatened and Endangered Fish Species

Several fish species are listed by the Federal Government as threatened or endangered (Table 3.2.3-1). Species excluded from analysis in this EA (Table 3.2.3-1) are described in Appendix E.

Chinook Salmon. The federally threatened Chinook salmon (*Oncorhynchus tshawytscha*) is found in the Puget Sound. Threats to the Chinook salmon include over-fishing, increased sedimentation, and decrease in water quality. Puget Sound Chinook salmon were listed as threatened by NMFS in 1999, and the listing was reaffirmed in 2005. The Proposed Action is located within the geographic area of the Puget Sound Chinook evolutionarily significant unit (ESU). These Chinook salmon occur in the rivers that drain into Puget Sound, and in marine waters. (Naval Station Everett, 2009a) Because of the proximity of the Snohomish River and associated estuary, both migrating adults and outmigrating juvenile salmon could occur in the vicinity of the Proposed Action. (Naval Station Everett, 2009a)

Both summer and fall-run Chinook salmon occur in the Snohomish River. The summer stock spawns primarily during September. Returning adults are often seen in the river as early as late May, with most fish likely entering the river in late June and July. The fall stock begins spawning in late September and spawns through October, with the individuals from the Snoqualmie River portion of the population observed spawning until mid-November or later. (Naval Station Everett, 2009a)

Critical Habitat for Chinook Salmon. The critical habitat designation for Chinook salmon excludes DoD lands subject to an approved Integrated Natural Resource Management Plan (INRMP). NSE has an approved INRMP, so the waters surrounding NSE are not designated critical habitat for Chinook salmon. The INRMP is periodically reviewed and re-approved in consultation with NMFS to ensure the plan is being implemented and the conservation efforts are effective. (Naval Station Everett, 2009a)

Table 3.2.3-1. Federally Threatened and Endangered Species Potentially Present within the Action Area

Common Name *Scientific Name*	Status	Critical Habitat	Basis for Exclusion from Analysis
Fish			
Bocaccio Rockfish* *Sebastes paucispinis*	E	NA	Unsuitable habitat in action area
Canary Rockfish* *S.pinniger*	T	NA	Unsuitable habitat in action area
Eulachon* *Thaleichthys pacificus*	T	NA	Rare occurrence in action area
N. American Green Sturgeon* Southern DPS *Acipenser medirostris*	T	Proposed to include Strait of San Juan de Fuca	Rare occurrence in action area
Puget Sound Bull Trout Coastal-DPS *Salvelinus confluentus*	T	Designated, marine shorelines	NA
Puget Sound Chinook Salmon ESU *Oncorhynchus tshawytscha*	T	Designated, narrow nearshore zone (from MLLW out to a depth of 98 feet)	NA
Puget Sound Steelhead DPS *O. mykiss*	T	Under development	NA
Yelloweye Rockfish* *Sebastes ruberrimus*	T	NA	Unsuitable habitat in action area
Birds			
Marbled Murrelet *Brachyrhamphus marmoratus*	T	Designated, none in aquatic habitat and none in Terrestrial Portion of action area	NA
Short-tailed Albatross* *Phoebastria albatrus*	E	None	Extremely rare occurrence in action area
Western Snowy Plover* *Charadrius alexandrinus nivosus*	T	Designated, portions of Washington marine shoreline, not in action area	Occurs mostly along coast
Marine Mammals			
Southern Resident Killer Whale DPS *Orcinus orca*	E	Greater than 20 feet deep	NA
North Pacific Humpback Whale* *Megaptera novaeangliae*	E	None designated	Rare occurrence in action area
Eastern Steller Sea Lion* DPS *Eumetopias jubatus*	T	Designated, but none in Washington	Rare occurrence in action area

Source: Naval Station Everett, 2008a; National Marine Fisheries Service, 2009; 2010a; b; c; d; U.S. Fish and Wildlife Service, 2007; 2010a

ESU=Evolutionarily Significant Unit; MLLW=Mean Lower Low Water; DPS=Distinct Population Segment; E=Endangered; T=Threatened; NA=Not Applicable (species is analyzed in EA)
* = Species described in Appendix E

Steelhead Trout. Puget Sound steelhead trout *(Oncorhynchus mykiss)* were listed as threatened by the NMFS in 2007 and occur in the rivers that drain into Puget Sound, and in marine waters. The Proposed Action is located within the geographic range of the Puget Sound steelhead ESU. Because of the proximity of the Snohomish River and estuary, both migrating adults and outmigrating juveniles could occur in the vicinity of the Proposed Action. (Naval Station Everett, 2009a)

Both summer and winter steelhead stocks use the Snohomish River system. Adult winter steelhead freshwater entry begins in early November and continues through April. Spawning can occur from March through June (Hard et al., 2007). Native summer stocks are small runs of fish, and data on run timing are not available. Adult migrating steelhead could be in the project vicinity in the months prior to their freshwater spawning period. (Naval Station Everett, 2009a)

Wild steelhead juveniles typically spend 2 full years in freshwater before outmigrating to marine water during spring. Because of their large size at outmigration, steelhead trout typically do not spend a large amount of time in the nearshore and tend to move quickly out to open water. (Naval Station Everett, 2009a)

Critical Habitat for Puget Sound Steelhead. Critical habitat has not yet been designated for Puget Sound steelhead. (Naval Station Everett, 2009a)

Bull Trout. The Puget Sound distinct population segment (DPS) of bull trout (*Salvelinus confluentus)* was listed as federally threatened in November 1999. Bull trout are threatened by habitat degradation and fragmentation. Because of the proximity of the Snohomish River and estuary, both migrating adults and juveniles could occur in the vicinity of the Proposed Action. (Naval Station Everett, 2009a)

The Snohomish watershed (Snohomish–Skykomish core area) is one of eight core areas within the Puget Sound management unit identified in the 2004 bull trout recovery plan. This core area contains anadromous, fluvial (pertaining to living in rivers), and resident bull trout. A large portion of the migratory segment of the Snohomish–Skykomish core area population is anadromous (U.S. Fish and Wildlife Service, 2004). (Naval Station Everett, 2009a)

Three of the four populations of bull trout in the Snohomish River migrate to the estuary and nearshore areas for the spring and summer, and immature fish use the lower reaches of the Snohomish River from Ebey Slough to Thomas' Eddy during the winter months. Bull trout use lower estuaries and nearshore marine areas extensively for extended rearing and subadult and adult foraging. Although foraging bull trout may tend to concentrate in forage fish spawning areas, they are found throughout accessible estuarine and nearshore habitats (U.S. Fish and Wildlife Service, 2004). (Naval Station Everett, 2009a)

Critical Habitat for Bull Trout. Critical habitat has been designated for the Coastal–Puget Sound population of bull trout. NSE property includes land on or near the shores of Puget Sound that contain important foraging and migration habitat for the bull trout. The installation includes approximately 5 miles of marine nearshore habitat. NSE's INRMP benefits bull trout by providing (1) protection of nearshore marine waters adjacent to the station from oil spills around berthing naval vessels; (2) bioswales to prevent the release of toxins, contaminants, and oils generated on station from reaching the water column through storm drains; (3) timing

restrictions on all proposed routine construction or repair activities that will take place below the mean higher high water line; and (4) the restoration of riparian habitat on Navy lands located along the Middle Fork Quilceda Creek. Based on the above considerations and in accordance with section 4(a)(3)(B)(i) of the ESA, USFWS determined that the identified lands are subject to the NSE INRMP and that conservation efforts identified in the INRMP provide a benefit to bull trout occurring in habitats within or adjacent to NSE. Therefore, lands within NSE were determined exempt from critical habitat designation. The INRMP is periodically reviewed and re-approved in consultation with the USFWS to ensure the plan is being implemented and the conservation efforts are effective. (U.S. Fish and Wildlife Service, 2010b; Naval Station Everett, 2009a)

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended, requires that Federal agencies consult with NMFS on actions authorized, funded, or undertaken that may adversely affect EFH. EFH refers to "those waters and substrate (sediment, hard bottom) necessary to fish for spawning, breeding, feeding or growth to maturity."

The project location is within the geographic range and definition of Pacific salmon EFH for various life stages of Chinook, pink, and coho salmon (Pacific Fishery Management Council, 1999), and EFH for various life stages of species of Pacific groundfish. This includes nearshore and tidal submerged environments and habitat features.

Marine Mammals

As the population of California sea lions has grown, they have expanded their range to include Puget Sound. Their prey in the Everett area is, from most to least common: hake, herring dogfish, salmon, codfish, pollock, and cod. California sea lions in Washington feed in the waters near NSE and haul out on logs stored in the water and on floating portions of NSE's security barrier (U.S. Coast Guard, 2004). Harbor seals also haul out on these log rafts, but apparently do not breed in the area. Their summer numbers are low, but winter numbers (October–January) peak at 100–300 animals. One or more gray whales and a few killer whales pass within about 0.5 mile of the base, near the mouth of the Snohomish River, once or twice a year. (Naval Station Everett, 2008a)

Threatened and Endangered Marine Mammal Species

Several threatened and endangered marine species occur in areas off the coast of Washington State (Table 3.2.3-1). Killer whales (*Orcinus orca*) occur in Puget Sound; the humpback whale (*Megaptera novaeangliae*) and steller sea lion (*Eumetopias jubatus*) may also occur there, but only as a rare or infrequent occurrence.

Killer Whale. Killer whales are probably the most instantly-recognizable of all the cetaceans. They have a striking black-and-white color pattern, and the adult male has a tall, erect dorsal fin (3.3 to 5.9 feet in height). The white oval eye patch and variably-shaped saddle patch, in conjunction with the shape and notches in the dorsal fin, help in identifying individuals. Killer whales are the largest member of the dolphin family. (National Marine Fisheries Service, 2008)

The Southern Resident Killer Whale (SRKW) stock (or population segment) is listed as endangered under the ESA (National Marine Fisheries Service, 2005); it is also designated as

depleted under the Marine Mammal Protection Act. The SRKW occurs in the Pacific Northwest and Puget Sound Study Area. Since 2001 the population has increased, with 87 whales in the Southern Resident DPS in 2007 (National Marine Fisheries Service, 2008).

Residents are most often seen during May through October when they are found in inland waters around the San Juan Islands, including Haro Strait, Boundary Passage, and the eastern portion of the Strait of Juan de Fuca. During summer (the peak feeding time), the pods tend to make a circuit between the mouth of the Fraser River and the Strait of Juan de Fuca, traveling up to a hundred miles a day and swimming through the San Juan Islands to feed on migrating salmon. SRKW are common throughout the summer and congregate at particular coastal locations at this time of year in association with high densities of migrating salmon. (National Marine Fisheries Service, 2008)

Salmon are the principal prey for resident killer whales during spring, summer, and fall. Current data suggest that Chinook salmon (the area's largest salmonid) are the most commonly targeted species. Other salmonids appear to be eaten less frequently, as are rockfish, halibut, lingcod, and herring. (National Marine Fisheries Service, 2008)

Critical Habitat for Killer Whales. Designated critical habitat was recently proposed for three specific areas: the Summer Core Area in Haro Strait and waters around the San Juan Islands; Puget Sound; and the Strait of Juan de Fuca, which comprise approximately 2,564 square miles of marine habitat. Eighteen military sites (including NSE) were excluded because they were determined to have national security impacts that outweighed the benefit of designation. (National Marine Fisheries Service, 2008)

Seabirds

Examples of seabirds that occur in northern Puget Sound are glaucous-winged gulls, cormorants, pigeon guillemots, and tufted puffins. A variety of shorebirds and the bald eagle have also been observed in the vicinity. Seventy percent of seabirds in Puget Sound nest on Protection Island located at the mouth of Discovery Bay in the Strait of Juan de Fuca outside the region of influence. (Washington State Department of Natural Resources, 2006)

The Puget Sound region has hundreds of species of seabirds, shorebirds and waterfowl, including the tufted puffin, bufflehead, western sandpiper, bald eagle, pigeon guillemot, common loon, harlequin duck, rhinoceros auklet, cormorants, scoters, and grebes. (National Wildlife Federation, 2010) Port Gardner Bay and the Snohomish River floodplain provide important habitat for waterbirds. Jetty Island provides nesting habitat for Arctic terns and glaucous-winged gulls. Large numbers of wigeons and mallards are found in the Snohomish River delta, north of Port Gardner Bay, and east of Jetty Island. The primary waterbirds observed in the Port Gardner Bay vicinity include various gulls, wigeons, mallards, western grebes, cormorants, and scoters. Military readiness activities, such as the maintenance of the SBX Radar Vessel, are exempt from the take prohibitions of the Migratory Bird Treaty Act (MBTA) provided they do not result in a significant adverse effect on the population of a migratory bird species. While individual birds may be startled by intermittent noise (generators, welding, and sandblasting), proposed maintenance and repair activities are not expected to significantly impact a population of any of the migratory species that occur in the NSE area and thus would be exempt from the MBTA take prohibitions. (U.S. Department of the Navy, 1999)

Threatened and Endangered Bird Species

Threatened and endangered birds that have the potential to occur at NSE are provided in Table 3.2.3-1. Species that are only rarely seen at NSE are described in Appendix E. The marbled murrelet (*Brachyramphus marmoratus*) is the species most likely to be seen there.

Marbled Murrelet. The marbled murrelet was listed as threatened in 1992. It is a small member of the Alcidae family, which includes puffins, murres, and auklets (Naval Facilities Engineering Command, 2001). Most marbled murrelets live in Alaska where the population is estimated at between 200,000 and 800,000. Population estimates for Washington State are between 5,000 to 6,500 and California 6,450. Marbled murrelets use Port Gardner Bay and Possession Sound for foraging. (U.S. Department of the Navy, 2006; Washington Department of Ecology, 2009)

Marbled murrelets occur year-round in all inland marine waters of the Strait of Juan de Fuca, Puget Sound, and Georgia Strait. During summer aerial surveys conducted between 1992 and 1999, marbled murrelets were distributed throughout the inland marine waters of Washington State (with notable gaps between Everett and Tacoma) during the summer, with concentrations in the San Juan Islands, north Hood Canal, and along the south coast of the Strait of Juan de Fuca. By winter, there was a definite shift towards the more protective waters embayments of the San Juan Islands, Hood Canal, Discovery Bay, Saratoga Passage, and Port Townsend, although some murrelets could be found throughout the summer range. (U.S. Department of the Navy, 2006)

Critical Habitat for the Marbled Murrelet. Marbled murrelet populations have suffered significant population declines in the Pacific Northwest due primarily to the removal of essential habitat by logging and coastal development. All critical habitat is located onshore and outside of the Action Area. The designation of critical habitat contributes to the species conservation by identifying areas that contain trees with potential nesting platforms and forested areas within 0.5 mile of potential nest trees with a canopy height of at least half of the site potential tree height or other areas that may require protection or special management. (U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, 2009; U.S. Department of the Navy, 2006)

Current Requirements and Practices

Certain species and habitats are protected by several Federal laws: ESA, Marine Mammal Protection Act, MBTA, and Magnuson-Stevens Fishery Conservation and Management Act. Federal agencies are required to assess the effect of any project on threatened and endangered species under Section 7 of the ESA and consult with the regulatory agency if the action may adversely affect a threatened or endangered species.

Appendix C contains a synopsis of laws, rules, and regulations that provide guidance to avoid or minimize impacts to biological resources.

3.2.3.2 Environmental Consequences

Approach to Analysis

Washington State law identifies saltwater habitat of concern, such as eelgrass beds and intertidal wetlands and restricts times when work can be conducted to accommodate fish migration and breeding.

To complete the analysis of marine plants and wildlife in the Study Area, a systematic review of relevant literature was conducted, including scientific articles, technical reports published by Government agencies, work conducted by private businesses and consulting firms, DoD reports, operational manuals, and current and prior environmental documents for facilities and activities. The literature and other information sources cited are identified in Chapter 5.0, References.

Potential stressors to marine communities in the area that would result from the Proposed Action are limited to: (1) direct impacts to bottom-dwelling communities from materials expended during maintenance, or the accumulation of those materials; and (2) destruction of bottom habitat, partial or complete burial of bottom habitat, or detrimental effects to Federal and State species of concern or their habitats.

The analysis considered effects on biological species from:

- Noise, including sound transmission from activities within the SBX Radar Vessel during maintenance and repair activities;
- Presence of SBX Radar Vessel in port; and
- Expended materials, including those from welding, painting, or paint-chipping.

Results of Analysis

The BA prepared concurrent with this EA concluded that the Proposed Action may affect, but is not likely to adversely affect Puget Sound Chinook salmon or steelhead, Coastal/Puget Sound bull trout, ESA-listed killer whales, or listed marbled murrelets. The Proposed Action would not adversely affect EFH for Pacific salmon or Pacific ground species. Contractors and personnel working at NSE during the maintenance and repair period must obtain a copy of all environmental requirements and BMPs established for NSE (e.g., Environmental Safety Requirements for Contractors at NSE, 20 August 2007), which are included in Table 2-4.

Marine Vegetation

There are no known eelgrass beds within the water boundary of NSE. No effects to any vegetation from the shadow of the vessel are expected during its temporary stay at NSE. The SBX Radar Vessel would implement the BMPs discussed in Chapter 2.0 that would incorporate marine pollution control devices such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices. Pollutant concentration amounts released from underwater welding are infrequent and in small quantities and are not estimated/analyzed (U.S. Environmental Protection Agency, 1999). Mooring the SBX Radar Vessel would temporarily stir up silt/sediments that could result in short-term impacts to marine vegetation; however, no significant long-term adverse impacts are anticipated to marine vegetation.

Marine Invertebrates

Mooring the SBX Radar Vessel would temporarily stir up silt/sediments that could result in short-term impacts to marine invertebrates, especially to less mobile species.

Fish

U.S. Navy aircraft carriers, with a typical cooling water temperature rise of 10 to 15 degrees, generate thermal plumes that, under conditions of low harbor flushing, low wind velocities, and maximum cooling water flow rates (120,000 gallons per minute), exceed the regulatory thermal mixing zone limits of Washington. Thermal plume models from destroyers did not exceed regulatory limits. (U.S. Environmental Protection Agency and U.S. Department of the Navy, 1999) In contrast, the SBX Radar Vessel cooling water would have a much lower flow rate (7,400 gallons per minute), when using both seawater cooling pumps, and a lower typical temperature rise of 6 to 10 degrees (The Glosten Associates, 2010). The discharged water is considered clean because it is recirculated from the bay and no contaminants are added to the pumped water as part of the heat exchange process. Intake of water from and discharge to the East Waterway and Port Gardner Bay for the vessel's cooling system while in port is not anticipated to impact fish in the harbor since each strainer plate is slotted with holes measuring a maximum of 0.79 inches x 8.1 inches (The Glosten Associates, 2010).

The SBX Radar Vessel would incorporate marine pollution control BMPs (Table 2-4) such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices. Pollutant concentrations from underwater welding are released infrequently and in small quantities and are not estimated/analyzed (U.S. Environmental Protection Agency, 1999). As noted in the Phase I Final Rule and Technical Development Document of the Uniform National Discharge Standards (UNDS), metals from the underwater welding operation (may contain chromium, iron, nickel, beryllium, manganese, and trace quantities of other metals) will not be readily dissolved in the surrounding waters and will fall to the harbor floor (U.S. Environmental Protection Agency, 1999; 2003). No significant long-term adverse impacts are anticipated to regional fish.

Essential Fish Habitat

Since the SBX Radar Vessel would incorporate marine pollution control BMPs (Table 2-4) such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices for discharge incidental to the normal operation of Armed Forces' vessels in accordance with the Clean Water Act, no significant long-term adverse impacts are anticipated to the waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. Intake of water from and discharge to the East Waterway and Port Gardner Bay for the vessel's cooling system while in port is not anticipated to impact fish in the harbor as described above. Welding slag materials quickly sink to the bottom, and present little to no ingestion hazard. No significant long-term adverse impacts are anticipated to regional EFH.

Threatened and Endangered Fish Species

Natural mortality mainly results from marine mammal and bird predation, which is considered a minor factor in the overall abundance and distribution of salmonids. Additionally, water contaminants including pesticides, industrial pollutants, and sedimentation are also of concern for listed fish species.

Direct impacts from noise associated with maintenance and repair activities are possible, but are unlikely threats to ESA-listed salmonids. Effects would be possible, but have a low potential for occurrence given the size of the action area, limited time of sound producing events, and overall lack of responsiveness to underwater sounds. Noise associated with maintenance and repair activities under the Proposed Action is not expected to significantly impact ESA-listed salmonids.

While the SBX Radar Vessel would undoubtedly cast a shadow and therefore could potentially be a visual barrier or predator refuge, it is immediately adjacent to an area that is previously disturbed and shaded by the established piers, which cover a far larger area than the SBX platform. The presence of the SBX Radar Vessel would likely present only an incremental increase in shaded areas that could potentially interrupt salmonid migration. Additionally, the SBX Radar Vessel is a floating vessel, which would further reduce any physical barriers to migration paths. Physical and visual barriers associated with the presence of the SBX Radar Vessel under the Proposed Action are not expected to significantly impact ESA-listed salmonids.

Normal prohibited time for in-water construction to minimize effects to salmon and bull trout is from 15 February to 15 July. This "fish window" protects juvenile salmon and trout during their migration. (U.S. Coast Guard, 2004) Before welding, the area is cleaned with scrapers, chipping hammers, or hand-held brushes. Small amounts of welding consumables can enter the marine environment through the dry habitat or directly when wet welding is performed. Slag and spent welding rods may also be released. With implementation of BMPs for welding as listed in Chapter 2.0, the estimated metal release amounts are expected to be infrequent and in small quantities. In addition, these discharges are mostly insoluble and are unlikely to remain suspended in the water column or be dissolved.

While no studies have been conducted to evaluate the effects of welding slag ingestion by animals, the effects are expected to be insignificant and discountable based on the initial small quantity released, the rapid sinking of materials to depths, and low concentrations when dispersed. The materials quickly sink to the bottom, and present little to no ingestion hazard. Expended materials from sanding, painting, or underwater welding activities under the Proposed Action are not expected to significantly impact ESA-listed species.

Marine Mammals

Marine mammals are not expected to approach the vessel; it is not anticipated that they would be close enough to the SBX Radar Vessel to react to any visual or physical cues. Additionally, since the SBX Radar Vessel is a floating platform, the presence of this vessel does not present a physical barrier to marine mammal movements in the NSE action area. The SBX Radar Vessel would incorporate marine pollution control BMPs (Table 2-4) such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices; thus, no significant long-term adverse impacts are anticipated to area marine mammals.

Threatened and Endangered Marine Mammal Species

Killer whales are not anticipated to approach the vessel; it is not anticipated that they would be close enough to the SBX Radar Vessel to react to any visual or physical cues. Additionally, since the SBX Radar Vessel is a floating platform, the presence of this vessel does not present

a physical barrier to killer whale movements in the NSE action area. The presence of the moored SBX Radar Vessel would not impact ESA-listed killer whales.

Seabirds

Since the SBX Radar Vessel would incorporate marine pollution control devices such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices, no significant long-term adverse impacts are anticipated to seabirds.

Military readiness activities are exempt from the take prohibitions of the MBTA provided they do not result in a significant adverse effect on the population of a migratory bird species. While individual birds may be startled by intermittent noise (welding and sandblasting), proposed maintenance and repair activities are not expected to significantly impact a population of any of the migratory species that occur in the NSE area and thus would be exempt from the MBTA take prohibitions.

Threatened and Endangered Bird Species

Non-nesting murrelets typically spend most of their time at sea, with the exception of a few hours around sunrise, when they may fly inland. Adults tending chicks fly inland with food during the morning and evening twilight hours, and only rarely during daylight hours. During the non-breeding season, marbled murrelets spend most of their time at sea, but may fly inland to visit nesting areas during the early morning hours. This reduces the probability of collision with the SBX Radar Vessel.

Based on the high mobility of marbled murrelets and the static nature of the SBX Radar Vessel while in port, the probability of collisions is low. Direct collisions with vessels or a vessel's rigging could result in injury or mortality, but is unlikely based on the typical flight movements of marbled murrelets. Therefore, the presence of the SBX Radar Vessel is not expected to significantly impact marbled murrelets.

The SBX Radar Vessel operates its lighting systems 24/7. The vessel would use its external lights on the platform, the perimeter of the dome, and on top of the dome in the evening or nighttime hours. The lights are required for the operation of the ship and are in accordance to Occupational Safety and Health Administration (OSHA) and FAA requirements. The lights on the dome are considered "low-wattage lights" (see Figure 2-2). The light and glare produced from the external lights are not anticipated to have a significant impact on area birds, including the marbled murrelet.

Surveys have shown that few murrelets forage in the NSE area, and a very small portion of their foraging habitat would be affected by the proposed maintenance and repair activities. Thus, it is concluded that no impacts on nesting, feeding, or survivability of the marbled murrelet would result from the activities being proposed.

Critical Habitat

There is no designated critical habitat present in the NSE action area. Critical habitat for the marbled murrelet is located onshore and outside of the Action Area. There is critical habitat in the NSE vicinity for bull trout, Chinook salmon, and killer whales. Based on anticipated repair

and maintenance activities of the SBX Radar Vessel and the implementation of BMPs, none of the activities are expected to substantially change water quality conditions sufficiently to degrade existing water quality conditions; decrease or substantially alter prey species abundance sufficiently to significantly impact ESA-listed individuals or populations; or create barriers that would prevent or impede ESA-listed species passage through the critical habitat. Therefore, in accordance with ESA provisions to assess potential effects of proposed actions to critical habitat, it is concluded that repair and maintenance activities would not destroy or adversely modify critical habitat for the bull trout, Chinook salmon, marbled murrelet, or SRKW.

3.2.3.3 Mitigation Measures

Impacts to biological resources resulting from painting, outside and underwater welding, sanding, and plasma cutting would be below thresholds that could result in long-term degradation of water resources or affect water quality at the potential location. BMPs listed in Table 2-4 would be implemented; therefore, no additional mitigation measures would be needed to protect vegetative or wildlife species.

3.2.3.4 Summary of Effects

The SBX Radar Vessel would incorporate marine pollution control BMPs (Table 2-4) such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices. The presence of the SBX Radar Vessel is not expected to significantly impact biological resources including threatened or endangered species in the vicinity of NSE.

3.2.4 HAZARDOUS MATERIALS AND WASTE

3.2.4.1 Affected Environment

Existing Conditions

Existing conditions for hazardous materials and waste are related to activities onboard the SBX Radar Vessel. Significant quantities of oil and fuel are onboard when the SBX Radar Vessel comes into port, including:

- SBX Radar Vessel has a fuel capacity of 1.88 million gallons of diesel fuel
- Diesel fuel tanks (fuel oil, lube oil, and oily waste tanks that overflow through their vent lines) have a 42-gallon capacity catch basin on the deck beneath the vent
- Lubricating oils
- Hydraulic fluids
- Galley grease or cooking oils
- Waste oil from machinery rooms
- Fuel and lube oil purifying rooms
- Paint locker
- Hazardous material storage

The batteries used in the Uninterruptible Power Supply (UPS) systems onboard the SBX Radar Vessel are non-lead acid sealed-type batteries. There are four tanks associated with the sewage handling system, which discharges overboard through the wet deck. While in port, the sewage handling system would be connected to shore utilities. R22 is used as a coolant for equipment onboard the SBX Radar Vessel. The system includes two large capacity R22 compressors holding a total of 2,600 pounds of liquid R22. Carbon dioxide (CO_2) flooding systems are installed adjacent to both main machinery spaces, both fuel oil pump rooms and the emergency diesel generator space. There is no asbestos containing material or lead-based paint on the SBX Radar Vessel (Boeing, 2009).

All consumable hazardous materials are stored in the manufacturer's approved containers or repackaged into manageable containers and properly labeled. The SBX Radar Vessel has two hazardous materials flammable storage spaces and one paint storage space, each with installed fire detectors, installed CO_2 flooding systems, bracketed shelving, and weather deck access.

Current Requirements and Practices

To protect habitat and people from inadvertent and potentially harmful release of hazardous materials, hazardous material use, storage, and disposal would be managed in adherence with the NSE's *Spill Prevention, Control, and Countermeasures (SPCC) Plan* and *Hazardous Waste Management Plan* (Naval Station Everett, 2008b; 2009). Contractors follow NSE's *Environmental and Safety Requirements for Puget Sound Naval Shipyard & Intermediate Maintenance Facility Contractors* (Naval Station Everett, 2007). These plans provide a "safety net" intended to protect the ecosystems on which most living organisms depend.

Boeing, the SBX Radar Vessel management company, has developed procedures that address the following:

- Permitting required for topside welding, cutting, and soldering ensures appropriate safety precautions such as necessary fire watches are in place before welding operations involving fixed structures begin.
- Use and disposal of hazardous materials and painting supplies.
- Fire Fighting Plan, subject to Boeing review and approval, which includes specific assignments for the crew and all embarked personnel. In accordance with U.S. Coast Guard (USCG) regulation 46 CFR 109.213, the fire fighting procedure is exercised, and records are kept for audit by Boeing and ABS recertification inspectors.
- Verification of the proper operation of dynamic positioning equipment prior to underway refueling operations.
- A bunkering and transfer plan for bulk flammable liquids, which includes:
    - Smoking lamp extinguished and all hot work and grinding cease.
    - Voice communications among the bunking barge pump station, the main deck bunkering manifold and the fuel oil control station within the vessel.
    - Establishing a spill containment area on the vessel main deck in case of a spill.
    - In port—deployment of a spill containment boom.

3.2.4.2 Environmental Consequences

Approach to Analysis

To determine the hazardous materials and waste impacts of the maintenance and repair of the SBX Radar Vessel, site personnel were interviewed and documents were reviewed.

Results of Analysis

The maintenance and repair of the SBX Radar Vessel would use hazardous material and would generate hazardous wastes that are common to maintenance activities. Hazardous materials may include diesel fuel, anti-freeze, hydraulic fluid, lubricating oils, and coating systems. Hazardous waste would include solvent soaked rags, paint chips, dust fines, paint waste, and blast track residual (steel grit, paint chips, dust fines). Table 3.2.4-1 shows estimated hazardous material use and hazardous waste generation.

Table 3.2.4-1. Hazardous Materials and Waste Estimate, SBX Radar Vessel Maintenance and Repair

Materials	Quantity
Paint	1,500 gallons
Solvent	330 gallons
Diesel Fuel	1.4 million gallons (80% of tank capacity)
Waste (for disposal)	**Quantity**
Solvent Soaked Rags	17 drums
Paint Chips	2 drums
Dust Fines	3 drums
Paint Waste	3 drums
Blast Track residual (steel grit, paint chips, dust fines)	4 drums
Waste Petroleum product from thruster work	20 gallons

Note: Drum quantity = 55 gallons

The contractor hired to perform the SBX Radar Vessel maintenance would become responsible for the proper disposal of the hazardous waste generated from repairs. Waste disposal would be conducted in accordance with the installation's *Hazardous Waste Management Plan* and applicable Federal, State, and local regulations, resulting in no adverse impacts. NSE personnel would be on site during vessel maintenance on a regular basis and would ensure compliance with hazardous materials and waste management regulations.

3.2.4.3 Mitigation Measures

There are no mitigation measures.

3.2.4.4 Summary of Effects

Hazardous materials and waste management would be performed in accordance with standard construction management procedures as well as applicable Federal, State, and local regulations. With the implementation of the procedures discussed above, substantial impacts to

the environment are not expected from the proper handling of large quantities of petroleum products, hazardous materials, or wastes during the maintenance and repair of the SBX Radar Vessel. Hazardous substance release to the environment shall be minimized by following the BMPs listed in Table 2-4 and following the instructions in the *Environment and Safety Requirements for PSNS and IMF Contractors, Naval Station Everett*, 2007.

3.2.5 NOISE

This section describes existing noise conditions and potential effects on the human terrestrial environment associated with the Proposed Action. The primary noise concerns at NSE are the onboard generator and ship equipment noise and the close proximity of the project site to residential areas. The potential impacts of noise on marine biological resources are addressed in the Section 3.2.3, Biological Resources.

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although exposure to very high noise levels can cause hearing loss, the principal human response to noise is annoyance.

Noise measurements assessed relative to human exposure are usually expressed using an "A-weighted" scale that filters out very low and very high frequencies in order to replicate human hearing sensitivities. Human hearing ranges from approximately 20 A-weighted decibels (dB) or dBA (the threshold of hearing) to 120 dBA (the threshold of pain). Sound levels of typical noise sources and environments are presented in Table D-6.

Because noise levels vary widely during the day, they are commonly averaged over a period of time. The term Day-Night Level, or DNL, is used to describe the average noise level during a 24-hour day with a penalty of 10 dBA added to nighttime sound levels (10:00 p.m. to 7:00 a.m.). The Community Noise Equivalent Level (CNEL) adds a 5 dBA penalty for noise events that occur in the evenings (7:00 p.m. to 10:00 p.m.), as well as a 10 dBA penalty for noise events at night (10:00 p.m. to 7:00 a.m.). DNL and CNEL are often used as the basis for land use compatibility guidelines. Shorter measurement durations (typically 1 hour) are described as equivalent noise level, or L_{eq}, indicating the total energy contained by the sound over a given sample period.

3.2.5.1 Affected Environment

Existing Conditions

The SBX Radar Vessel maintenance and repair project would be located at Pier A at the southern end of NSE. NSE is an existing military-industrial environment characterized by noise from trucks and automobile traffic along Marine View Drive, ship-loading cranes, diesel-powered equipment, compressors, and construction activity. Pier A is already used for homeporting. Access onto NSE is provided by Marine View Drive via NSE's two access gates, the Main Gate and the Service Gate. NSE generates some 8,520 inbound and outbound vehicle trips per day, and an estimated 400 truck trips per day (U.S. Department of the Navy, 1999). Other sources of noise in the vicinity include the Kimberly-Clark Paper Company and the Burlington Northern Railroad tracks. There is no air traffic or related noise.

Noise sensitive receptors are defined as existing land uses associated with indoor or outdoor activities that may be subject to significant interference from noise. Sensitive receptors are shown on Figure 3.2.5-1 and include residential, hospitals, educational facilities, and sensitive biological species, and public parks. Pigeon Creek Beach is the closest public park to the project site, approximately 4,500 feet south of the project site (Pier A). Approximately 4,000 feet east of the Pier A is the business district, and 3,500 feet south from the project site is the closest single-family residential area.

To establish the ambient sound level in the area, a *Naval Station Everett Baseline Noise Assessment* (ManTech, 2010a) was completed for this EA in June 2010 while the aircraft carrier *USS Abraham Lincoln* was homeported at NSE. Three sound level meters were set up for long-term monitoring, 6 meters for hourly L_{eq} monitoring, and 8 meters for point monitoring, measuring 5-minute levels. Sites were selected around the Proposed Action location as shown on Figure 3.2.5-1.

The Noise Assessment concluded that the NSE in-port activities are not significant contributors to the noise environment outside the NSE boundary as shown by relatively low short-term recordings (hourly L_{eq} values) and DNLs. Noise levels from the exhaust fans on *USS Abraham Lincoln* were measured to be 72 dBA at 125 feet from the source. At a measured distance of 2,750 feet, this stimulus recorded between 47 and 51 dBA. Overall DNLs collected at the closest point to the in port carrier were 58.3 DNL at the edge of Port of Everett property (2,300 feet from the vessel) and 56.9 DNL at the closest residential area (Tulalip and 33rd Street—3,500 feet from the vessel).

The highest overall DNL, 72.6 DNL, was recorded at another residential area 1.5 miles north of the Pier, at Grand and 21st Street. Noise from the Kimberly-Clark paper plant, which operates on a 24-hour schedule, rail yard noise, and intermittent noise from the transportation corridor of Marine View Drive were contributors. These continuous non-Navy noise sources, especially those occurring during nighttime hours, contributed largely to community sound levels. Moving away from these continuous noise sources results in sites measuring lower DNL values (see Figure 3.2.5-2). The report concluded that ambient sound levels in the Everett area are highly dependent on their location. Ambient sound levels are primarily driven by vehicular and rail traffic; however, louder sound levels can be found near commercial plant areas. Sites farther to the south and farther away from commercial plant areas were more influenced by the presence of the in-port carrier, though not at levels exceeding community noise standards of Everett.

Current Requirements and Practices

Sound analysis at military installations follows the procedures outlined in the following documents:

- OPNAVINST 5090.1C contains guidance for considering time-averaged community sound levels in environmental evaluations (U.S. Department of the Navy 2007).
- Chapter 17, *Noise Prevention Ashore*, contains guidance for sound control and abatement of Navy shore activities.
- *Planning in the Noise Environment* (Department of Defense, 1978) provides compatibility criteria for various land uses. Separate evaluation criteria apply to impulsive sound events.
- The U.S. Army Public Health Command, formerly the Center for Health Promotion and

EXPLANATION

- Average Noise Levels (dBA)
- Naval Station Everett Boundary
- Hourly Recording Site
- Short-Term Recording Site
- Long-Term Recording Site

N

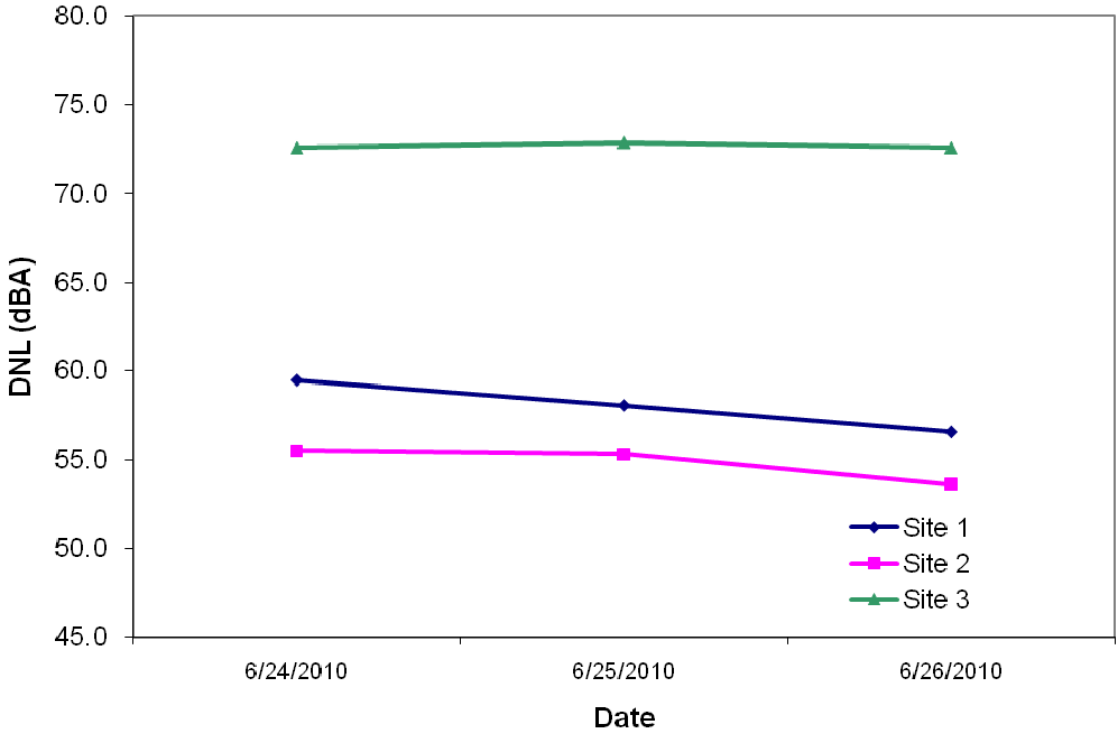
0 750 1,500 3,000 4,500 Feet

Ambient Noise Levels and Sensitive Sound Receptors

Everett, Washington

Figure 3.2.5-1

Preventive Medicine, has also developed DoD guidance for military operational noise, including Operational Noise Manual: An Orientation for Department of Defense Facilities (U.S. Department of the Army, 2005).



Site 1= Edge of Port of Everett property
Site 2= Tulalip and 33rd Street
Site 3= Grand and 21st Street

Figure 3.2.5-2. Ambient Noise (DNL) Measurements for Base Operations, Naval Station Everett

Sound standards for land use compatibility established by DoD and civilian jurisdictions are expressed in terms of the DNL or CNEL. Based on numerous sociological surveys and recommendations of Federal interagency councils, the most common benchmark for assessing environmental sound impacts is a CNEL of 65 dBA (DNL is normally within 1 dB of CNEL using the same 24-hour data). Sound levels up to 65 dBA CNEL are considered to be compatible with land uses such as residences, transient lodging, and medical facilities. Appropriate sound mitigation is recommended for new development in areas where the CNEL exceeds 65 dBA. A sound level of 75 dBA CNEL is a threshold above which individuals in the community may experience annoyance and minor health effects.

Many agencies, including the DoD, have adopted a DNL of 65 dBA as a criterion that still protects those most impacted by noise. In general, residential land uses are not compatible with an outdoor DNL above 65 dBA, and the extent of land areas and populations exposed to a

DNL of 65 dBA or higher provides one of the means for assessing and comparing the noise impacts of proposed actions.

See Appendix C for more details of the current requirements and practices listed above.

3.2.5.2 Environmental Consequences

Approach to Analysis

To assess the potential impacts of noise from the SBX Radar Vessel's onboard generators, a technical study, *SBX Radar Vessel Noise Assessment In Port at Pearl Harbor, Hawaii* (ManTech, 2010b), was prepared for this EA. The results of the sound levels collected in Hawaii are presented in Appendix D, Section D.2. The entire report is provided in Appendix G.

The goal of the Hawaii study was to determine the general overlay of sound from the SBX Radar Vessel that could be placed on alternate locations. Sound levels from shipboard generators as well as sound levels from typical shipyard maintenance activity were overlaid onto the existing environment in Everett, Washington and compared to sound standards for land use compatibility established by DoD and other governmental agencies discussed above.

Results of Analysis

Shipboard Diesel Generators

Noise levels from the 24-hour per day use of two shipboard diesel generators would be constant over the approximately 3 month project period. The SBX Radar Vessel Noise Assessment showed that beyond a measured distance of 2,750 feet from the stern, the sounds from the SBX platform (56.8 dBA) were not audible above the ambient noise environment during data collection periods, which in Hawaii was between 51.2 and 51.6 dBA. Likewise, beyond a measured distance of 1,000 feet from the bow, the sounds from the SBX platform (52.2 dBA) were not audible above ambient.

The data collected in Hawaii were overlain onto the NSE project site in order to see the equivalent noise levels at the sensitive noise receptors (residences and public parks) in Everett. The potential audible noise levels of the SBX Radar Vessel at NSE are identified in Figure 3.2.5-3.

As stated in Appendix D, consideration must be given to the directional characteristics of the noise from the diesel generators. The noise is louder and propagates further along the exhaust axis. Figure 3.2.5-3 shows the audible noise levels of the shipboard diesel generators. "Orientation 1" and "Orientation 2" are provided to illustrate the difference in the noise exposure when the SBX Radar Vessel is turned around in port.

As stated above, the closest residential neighborhood to the Proposed Action (Tulalip and 33rd Street) is approximately 3,500 feet from the project site. The maximum audible noise exposure to this neighborhood would be from Orientation 1: the noise level 3,500 feet from the stern of the vessel would be 63.3 DNL. The ambient noise environment at Tulalip and 33rd Street was 56.9

EXPLANATION

Orientation 1

- SBX Stern
- DNL Measurement (Long-Term)
- dBA Measurement (Short-Term)
- SBX Radar Vessel Audible Noise

Orientation 2

- SBX Stern
- DNL Measurement (Long-Term)
- dBA Measurement (Short-Term)
- SBX Radar Vessel Audible Noise

NORTH

0 500 1,000 2,000 Feet

Naval Station Everett with SBX Radar Vessel Audible Noise Overlay

Everett, Washington

Figure 3.2.5-3

overall DNL (ManTech, 2010a). At the same location, the minimum L_{eq} ambient measure was 41.5, which is usually associated with nighttime levels. Therefore, a received level of 63.3 DNL from the SBX Radar Vessel would be readily audible at night in the neighborhood for Orientation 1. Turning the orientation of the vessel would limit this impact. Orientation 2 would reduce the noise exposure of the shipboard generators to 57.8 DNL in the neighborhood, and the SBX Radar Vessel would barely be audible above ambient.

An overall DNL of 63.3 for shipboard generator noise in the nearby neighborhoods is within the standard that DoD has adopted (DNL of 65 dBA) as a criterion that still protects those most impacted by noise. In general, residential land uses are not compatible with a DNL above 65 dBA. A DNL of 63.3 is also in the range of low risk of complaints from the public (see Appendix D, Figure D-2).

Shipyard Equipment

A variety of noise generating equipment would be used— such as those listed in Chapter 2.0, Table 2-3—all of which would create temporary impulse noise. Noise levels from point sources such as these typically attenuate at a rate of about 6 dBA per doubling of distance. Table 3.2.5-1 shows the peak noise level of the equipment used for the Proposed Action. Based on these noise levels, the noise levels from the operation of shipyard equipment are below the 65 dBA DoD threshold within NSE property limits, and would also meet local noise ordinance Maximum Permissible Daytime Sound Levels of 60 dBA in surrounding single-family residential areas.

Table 3.2.5-1. Typical Noise Levels for Common Shipyard Equipment

Source	Peak Noise Level (dBA)	Distance from Source						
		100 feet	200 feet	500 feet	1,000 feet	2,000 feet	2,640 feet (0.5 mile)	5,280 feet (1 mile)
Portable or standby generators	96	86	80	72	66	60	58	52
Crane	90	80	74	66	60	54	52	46
Deck Grinding Units	86	76	70	62	56	50	48	42
Loud Speaker	97.2	87	81	73	67	61	59	53

Source: Golden et al., 1980; Occupational Safety and Health Administration, 2003; ManTech, 2010b; Noise Control Engineering 2010)

Sound levels were also collected from deck grinding activities as part of the SBX Radar Vessel Noise Assessment in Hawaii (ManTech, 2010b). The results are in Appendix D and are as follows:

- 300 feet south of the vessel, perpendicular to the moored position and directly in line of sight of the deck grinding activity, the received levels of the deck grinding were between 67 and 72 dBA.
- 350 feet southwest of the vessel, approximately 45 degrees off the stern of the vessel, the received levels of the deck grinding were between 62 and 68 dBA.
- 800 feet southwest of the vessel, approximately in line with the position at the dock, the received levels of the deck grinding were between 56 and 58 dBA. At this location, the

noise associated with the deck grinding was only marginally above the Hawaiian ambient levels recorded at the site.

Therefore, only areas within a few hundred feet of the project site would be expected to be exposed to unacceptable noise levels. Impacts would be temporary, but potentially significant. The shipyard equipment would have a less than significant adverse impact on residents of Everett because of the brevity of the maintenance sounds generated at the SBX Radar Vessel mooring site and the long distance to these sensitive receptors. The shipyard equipment noise will be minimized by scheduling any work done after 7:00 p.m. to be inside the vessel.

Loudspeaker Noise

One of the repairs to the SBX Radar Vessel while in port will be to optimize the platform public address system for external areas. The system has to be audible in topside areas where high levels of noise occur when the vessel is underway. MDA conducted a survey to determine how loud the upgraded public address system needed to be. The maximum noise level on the topside area was 97.2 dBA while the SBX Radar Vessel was at sea, with all systems running (Noise Control Engineering, 2010). The system would be tested at 97.2 dBA at peak level. Data from the survey was extrapolated in Table 3.2.5-1 to show that at a distance of 0.5 mile, the sound level would be 59 dBA, an insignificant impact on surrounding residential areas. As a precaution, the testing will be conducted during the daytime.

Traffic-related Noise

The temporary increase in personnel may increase vehicles and traffic noise temporarily. The shipyard workers will be onsite 6 days a week, from 5:30 a.m. until 10:00 p.m., for 2 to 3 months, with a work shift change expected to be twice per day, approximately 8 hours apart. A total of 224 shipyard workers would be commuting (83 on board the vessel are not counted in the commute), which means the average trips per shift (arrivals and departures) would be 112 workers.

Shipyard worker commute is a source of additional noise. Currently, the NSE generates 8,520 inbound and outbound vehicle trips per day onto West Marine View Drive in addition to truck traffic. Based on these levels, the sound levels for a residence 100 feet from Marine View Drive would be relatively high. The additional 224 trips per day on Marine View Drive from the Proposed Action would not significantly increase the level of noise already occurring on Marine View Drive. In addition, if the SBX Radar Vessel is moored at NSE, the aircraft carrier would not be in port; therefore, there would be less vehicle traffic overall.

3.2.5.3 Mitigation Measures

Noise impacts of the Proposed Action on nearby neighborhoods are negligible; therefore, no mitigation measures are proposed.

3.2.5.4 Summary of Effects

Proximity of the vessel to off-base sensitive noise receptors and alignment of the SBX Radar Vessel can have a major impact on noise exposure. Given the distance of the residences from the pier, it is unlikely that noise from the two generators would significantly impact the ambient

sound levels in the surrounding community. At a received level of 63.3 DNL (Orientation 1) and 57.8 DNL (Orientation 2), the SBX Radar vessel would be audible at night in the closest neighborhood (Tulalip and 33rd Street). However, both orientations would be within the standard that DoD has adopted (DNL of 65) as a criterion that still protects those most impacted by noise. The shipyard equipment noise would be minimized by scheduling any work done after 7:00 p.m. to be inside the vessel. Because of the low number of added vehicle trips proposed and their temporary nature, there would be no significant noise impact due to increased traffic.

3.2.6 SOCIOECONOMICS

This section describes existing socioeconomic conditions and potential effects associated with the Proposed Action. Socioeconomics includes an evaluation of the basic attributes and resources associated with the human environment, particularly population, and economic activity. Economic activity encompasses employment, personal income, and industrial growth. Impacts on these fundamental socioeconomic components influence other issues such as housing availability and provision of public services.

3.2.6.1 Affected Environment

The socioeconomic environment potentially affected by the Proposed Action extends to the city of Everett, Washington.

Existing Conditions

NSE is located within the city of Everett in Snohomish County, Washington. Everett, located approximately 30 miles north of the city of Seattle, had a population of 91,488 with a medium household income of $40,100 in 2000. In 2006/2008 the population was estimated at 102,050, with a medium household income of $49,392. (U.S. Census Bureau 2000a; 2006/2008a)

Local Economy

The major component of Snohomish County's economy is the aerospace industry. Boeing began operations in Everett in the 1960s, helping to stabilize and grow the city's economy. Economic forecasts presented in February 2010 for Snohomish County and its two largest cities, Everett and Marysville, include some positive aspects. Major employers for the city of Everett include Boeing, NSE, Esterline Control System, Fluke Electronics, Verizon, and Providence Regional Medical Center. (City of Everett, 2008)

NSE is one of Snohomish County's top 10 employers and second to Boeing, with well over 6,000 military and civilian personnel. Permanent military personnel at NSE number around 5,500. There may be approximately 1,000–5,500 military personnel serving at any given time on base, plus about 650 civilians. About 14,600 additional family members live and work in the surrounding communities. Payroll totals $230 million, with $200 million to military and $30 million to civilian employees. (Naval Station Everett, 2010)

Housing

In 2000 there were 38,512 total housing units in the city of Everett, and of those units 16,701 were owner-occupied housing units, 19,624 were renter-occupied housing units and 2,187 were vacant housing units. In 2000 a single-family owner-occupied home had a median dollar value

of $168,300. In 2006–2008 the U.S. Census Bureau estimated that the total number of housing units available in the city of Everett was 44,109, of which 18,973 were owner-occupied housing units, 21,800 were renter-occupied housing units, and 3,336 were vacant housing units. In 2006–2008 a single-family owner-occupied home had a median dollar value of $289,500. See Table 3.2.6-1 for the 2000 and 2006–2008 housing characteristics for the city of Everett.

Table 3.2.6-1. Housing Characteristics for the City of Everett in 2000 and 2006–2008

Housing Characteristics	2000	2006-2008	Percent Change from 2000
Owner-occupied	16,703	18,973	13.9% increase
Renter-occupied	19,624	21,800	11.0% increase
Vacant	2,187	3,336	52.5% increase
Total Units	38,512	44,109	14.5% increase
Median Dollar Value	168,300	289,500	72.0% increase

U.S. Census Bureau, 2000a; 2006-2008a

Schools

The school board is composed of five citizens elected by district voters for 6-year terms. Their authority is established by the Washington Legislature, and they act under the direction and restrictions of State law. The city of Everett operates 4 High Schools, 5 Middle Schools, and 17 Elementary Schools with more than 1,800 staff members and 18,000 students who, among them, speak more than 53 different languages. (Everett Public Schools, 2010)

Recreation and Tourism

The city of Everett is situated in the heart of Puget Sound and looks out onto a rich landscape of islands, mountains, and ocean. It has the largest public marina on the West Coast and nearly 50 miles of freshwater and saltwater shorelines. Everett offers hiking, kayaking, sailing, skiing, golfing, bicycling, bird watching, and whale watching. Downtown Everett offers a variety of boutiques, specialty shops, and local galleries. A short drive out of the city is a ferry to San Juan Islands or crossing to snow-capped mountains. See Section 3.2.7.1, Figure 3.2.7-1 for an overview of the tourist and recreational venues available in the Study Area.

Population Demographics

NSE and neighboring communities are located in the east and northeast portion of Snohomish County Washington. Table 3.2.6-2 provides the racial and ethnic composition for the city, state, and nation using the 2000 census and the 2006-2008 Census FactFinder.

Table 3.2.6-2. Racial and Ethnic Composition for the City, State, and Nation

Race / Ethnicity	City of Everett%		Washington%		United States%	
	2000	2006/2008	2000	2006/2008	2000	2006/2008
Population	91,488	102,050	5,894,121	6,453,083	281,421,906	301,237,703
White persons (%)	81.1	78.6	81.8	80.5	75.1	74.3
Black or African American persons (%	3.3	3.3	3.2	3.4	12.3	12.3
American Indian and Alaskan Native persons (%)	1.6	0.77	1.6	1.4	0.9	0.8
Asian persons (%)	6.3	7.8	5.5	6.5	3.6	4.4
Native Hawaiian and Pacific Islander (%)	0.4	1.0	0.4	0.4	0.1	0.15
Other race (%)	3.1	4.1	3.9	4.1	5.5	5.8
Two or more races (%)	4.2	4.4	3.6	3.6	2.4	2.18
Hispanic or Latino	7.1	12.3	7.5	9.5	12.5	15.1

Source: U.S. Census Bureau 2000a; 2006/2008a

Low-Income Populations

Table 3.2.6-3 lists median household income and poverty levels for the city of Everett, county, state, and nation using the 2000 census and the 2006-2008 Census FactFinder. In general the city of Everett has a greater percentage of persons below the poverty level than the State of Washington and the United States.

Table 3.2.6-3. Low-Income Population for the Study Area, State and Nation

Metrics	City of Everett		Washington		United States	
	2000	2006/2008	2000	2006/2008	2000	2006/2008
Population	91,488	102,050	5,894,121	6,453,083	281,421,906	301,237,703
Median household income	$40,100	$49,392	$45,766	$57,234	$41,994	$52,175
Persons below poverty (%)	12.9	16.6	10.6	11.6	12.4	13.2

Source: U.S. Census Bureau, 2000a; 2006/2008a

3.2.6.2 Environmental Consequences

Approach to Analysis

The socioeconomic analysis addresses the potential for MDA activities to affect, either positively or negatively, the basic attributes and resources associated with the human environment, particularly population and economic activity. This analysis investigates the potential for activities associated with the Proposed Action to noticeably affect (either adversely or beneficially) socioeconomic activity in the public waterfront area near Pier A and the city of Everett.

Study Area

In terms of socioeconomics, relevant portions of the Study Areas that the temporary mooring of the SBX Radar Vessel could potentially affect include the public waterfront area near Pier A and the city of Everett.

Source of Information

A systematic review of relevant literature was conducted to complete this analysis of socioeconomics in the potential location, including the 2000 census, the 2006-2008 Census FactFinder and current and prior environmental documents. The literature and other information sources cited are identified in Chapter 5.0, References.

Result of Analysis

All 307 potential personnel associated with the Proposed Action would have a temporary presence in the Study Area. Additionally, during this temporary time period *USS Abraham Lincoln* would not be in port, which represents a decrease of 1,000 personnel in the Study Area. The permanent personnel and shipyard workers assigned to the SBX Radar Vessel would only be in the area for approximately 3 months; therefore, it is not anticipated to have a direct or indirect impact on the housing characteristics, school enrollment, population demographics, roads, or infrastructure improvements for the city of Everett. The Proposed Action does not include an increase in personnel stationed at NSE. The potential for a positive impact may be had on the some aspects of the local economy (e.g. restaurants, hotels, recreation, and tourism).

The Proposed Action has a contractual potential of providing $9.4 million to awardees. Based on an economic impact forecasting system (EIFS) the Proposed Action would have a negligible impact on the Study Area. There would a 0.2 percent increase for sales, income, and employment and a 0 percent increase in population. Therefore, the socioeconomic impact from the Proposed Action would not be negative, but any positive impact would be considered negligible. Appendix F includes the outputs for the EIFS II Model.

3.2.6.3 Mitigation Measures

Impacts to the socioeconomic characteristic are negligible, no mitigation measures are proposed.

3.2.6.4 Summary of Effects

The Proposed Action would not have a long-term effect on the socioeconomic characteristics of the city of Everett. Short-term effects would negligible.

3.2.7 VISUAL AND AESTHETIC RESOURCES

This section addresses the visual and aesthetic resources of the waterfront area of NSE as discussed in Section 1.3.2. Visual resources consist of topographic features such as landforms and bodies of water, and man-made features as buildings, bridges, and recreational areas. The aesthetic quality of an area is evaluated by the extent that important visual resources are seen from view corridors (vantage points), or experienced from roadways, parks, or buildings (public or private).

3.2.7.1 Affected Environment

Existing Conditions

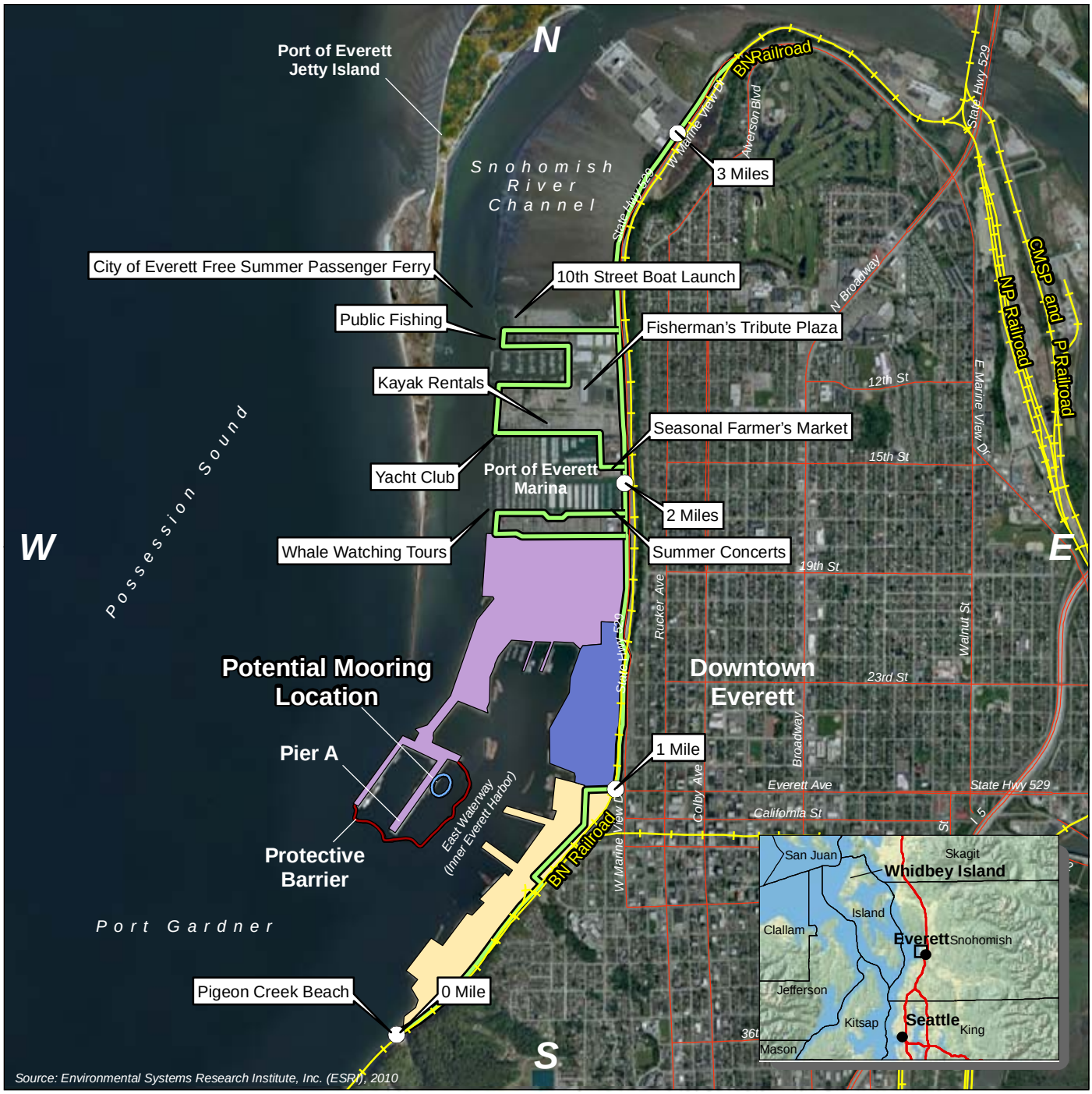
The NSE waterfront location is a very compact, functionally oriented base. The potential temporary mooring site for the SBX Radar Vessel is located along Pier A, which is the homeport location of *USS Abraham Lincoln*. Employees of NSE and other industrial sites, visitors to NSE and surrounding areas, visitors to the park, and homeowners overlooking the site may be affected by current visual and aesthetics features. (See Figure 3.2.7-1 for a view of the Everett waterfront.) (PortofEverett.com, 2010)

This potential temporary mooring site for the SBX Radar Vessel location is in close proximity to recreational, residential, and industrial areas. Approximately 0.75 mile south of the location (Pier A) is the Pigeon Creek Beach and Viewpoint and approximately 0.75 to 2 miles north of the site are other recreational areas. Private views of the NSE waterfront area are seen from residential neighborhoods on the surrounding bluffs above the east end of the proposed mooring location. Approximately 0.5 mile east of the location are single-family residential areas, and approximately 0.5 mile southeast to 1 mile northeast are core residential and multifamily homes. Views from Marine View Drive are blocked by industrial structures. Approximately 0.5 mile southeast of the proposed location is the Port of Everett Working Waterfront, 0.5 mile northeast is the Kimberly-Clark paper mill, and community business locations are located approximately 0.5 mile east of the proposed location. The Burlington Northern Santa Fe Railway railroad operates approximately 0.75 mile south of Pier A and continues more than 2 miles east of the proposed location. See Figure 3.2.7-1 for a view of the Everett waterfront.) (PortofEverett.com, 2010)

Current Requirements and Practices

The City of Everett's Municipal General Provisions 39.140.A (Performance Regulations-General: Light and Glare Regulation) states that "any artificial surface which produces light or glare which annoys, injures, endangers the health or safety of persons, or interferes with the use of property is a violation of this title" (City of Everett, 2009b).

The City of Everett has established regulations for control of noise in residentially zoned property (Chapter 20.08—Noise Control). See Section 3.2.5 for current requirements and practices for Noise.



EXPLANATION

- Mile Marker
- Railroads
- Street
- Walkway
- Protective Barrier
- Potential Mooring Location
- Kimberly-Clark
- Naval Station Everett
- Port of Everett Working Waterfront

NORTH 0 1,000 2,000 4,000 Feet

Visual and Aesthetics, Naval Station Everett

Everett, Washington

Figure 3.2.7-1

3.2.7.2 Environmental Consequences

Approach to Analysis

Study Area

In terms of visual and aesthetics, relevant portions of each Study Area are those in which the temporary mooring of the SBX Radar Vessel could potentially affect the topographic features such as landforms and bodies of water, and man-made features as buildings, bridges, and recreational areas. The Study Areas include NSE and the public waterfront area near Pier A. See Figure 3.2.7-1 for a view of the Everett waterfront.

Source of Information

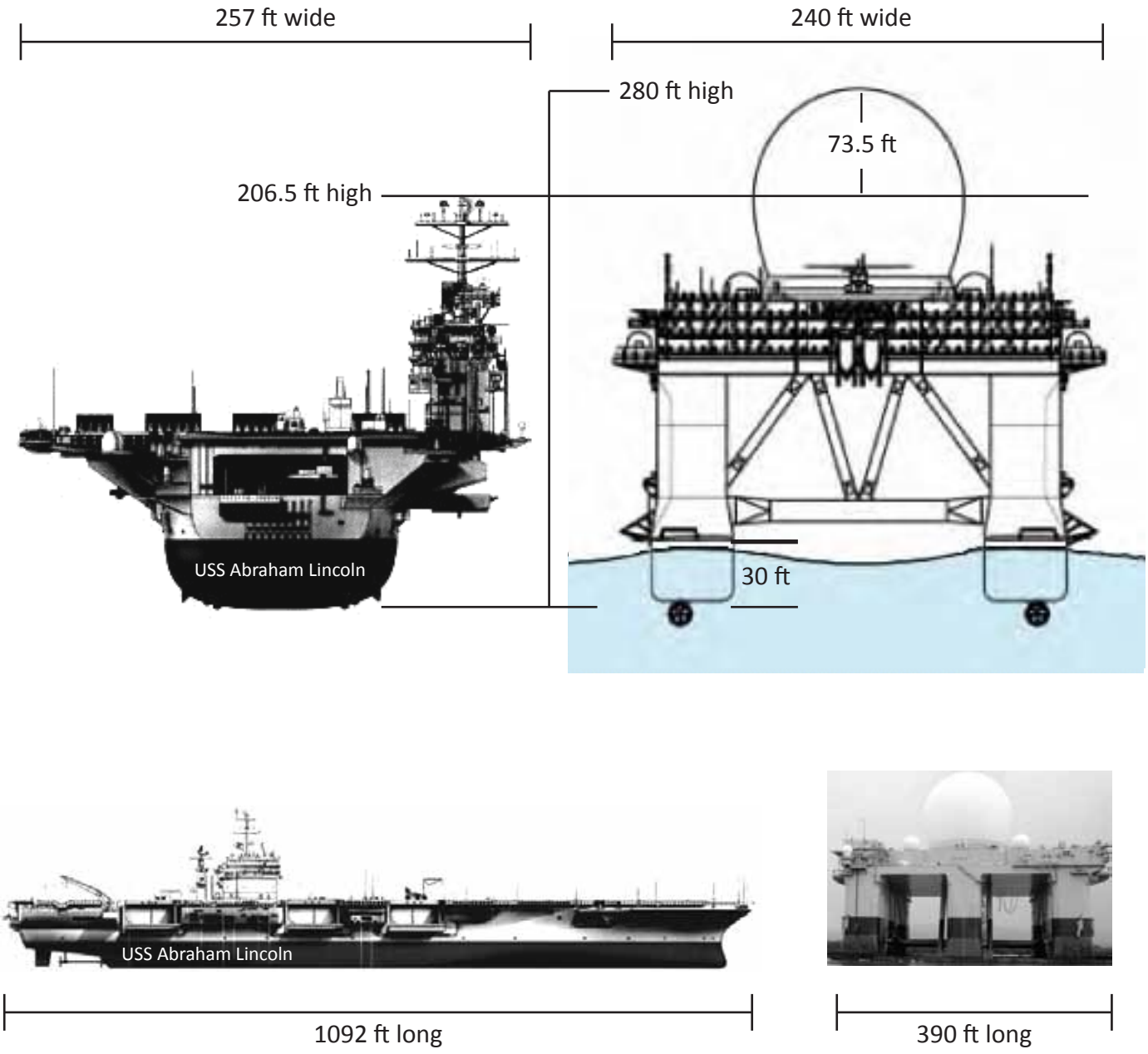
A systematic review of relevant literature was conducted to complete this analysis of visual and aesthetics in the potential location, including maps, technical reports published by Government agencies, work conducted by private businesses and consulting firms, and DoD reports, operational manuals, natural resource management plans, and current and prior environmental documents for facilities and activities in the Study Area. The literature and other information sources cited are identified in Chapter 5.0, References.

Results of Analysis

The SBX Radar Vessel would have a temporary effect (for approximately 3 months) on those areas not visually blocked by the industrial structures of the Kimberly-Clark paper mill. The vessel would be moored at the homeport site of *USS Abraham Lincoln*. The temporary mooring of the SBX Radar Vessel would be visually consistent with the Department of the Navy (homeporting of an aircraft carrier and visiting vessels) and marine-industrial activities of the Everett waterfront area (e.g., cargo ships, ferry). The SBX Radar Vessel is one-third the length of *USS Abraham Lincoln*. The dome of the SBX Radar Vessel extends 73.5 feet higher than the top of *USS Abraham Lincoln,* and the dome is approximately 61 feet wider at mast (see Figure 3.2.7-2). The overall appearance of the SBX Radar Vessel is unique and may be perceived as intrusive. However, the nature of the seascape consistently changes with vessels arriving and leaving the area. Therefore, since the SBX Radar Vessel is similar in size (although not shape) and character to the other naval vessels transiting the base, impact to the visual and aesthetics of the waterfront area from the temporary mooring of the SBX Radar Vessel would be negligible and temporary.

The SBX Radar Vessel operates its lighting systems 24/7. The vessel would use its external lights on the platform, the perimeter of the dome, and on top of the dome in the evening or nighttime hours. The lights are required for the operation of the ship and are in accordance to OSHA and FAA requirements. The lights on the dome are considered as “incandescent floodlights” and the trainable 500-watt (W) and 300-W incandescent floodlights are not operated while in-port” (see Figure 2-2). The light and glare produced from the external lights are anticipated to have a negligible effect on the Visual and Aesthetic resources of the area.

Any effects on the Study Area from noise are discussed in Section 3.2.5, Table 3.2.5-1.



Sea-Based X-Band Radar Size Compared to the USS Abraham Lincoln Aircraft Carrier

Figure 3.2.7-2

3.2.7.3 Mitigation Measures

Impacts from the SBX Radar Vessel on visual and aesthetics resources would be negligible and temporary. The lighting system on the vessel is in accordance with navigational rules, OSHA, and FAA regulations; therefore, no mitigation measures are proposed.

3.2.7.4 Summary of Effects

The Proposed Action would not have a long-term impact on the visual and aesthetic resources in the Study Area. Short-term effects on visual and aesthetic resources would be negligible, temporary, and visually consistent with the Department of the Navy and marine-industrial activities of the Study Area. There are no long-term affects anticipated.

3.2.8 WATER RESOURCES

This section describes the marine waters of NSE that could be affected by the Proposed Action.

3.2.8.1 Affected Environment

Existing Conditions

Water quality in the vicinity of the potential temporary mooring location (Pier A) is influenced mainly by Port Gardner Bay to the south and the East Waterway (Inner Everett Harbor) to the northwest. Possession Sound is to the west, and the Snohomish River is to the east of the proposed mooring area (Figure 2-6). The Snohomish River is formed by the confluence of the Skykomish and Snoqualmie rivers near Monroe. It flows southwest entering Port Gardner Bay, part of Puget Sound between Everett and Marysville. The Pilchuck River is its main tributary and joins the river at Snohomish. The river system drains the west side of the Cascade Mountains from Snoqualmie Pass to north of Stevens Pass. The Snohomish River system is important to anadromous fish, supporting salmonid species (Chinook and Coho) as well as bull trout and non-anadromous fish species. The Snohomish River enters Puget Sound through an estuarine system that was once much greater in area than at present. The estuary was reduced in size for agricultural purposes in the late 1800s into the early twentieth century (Naval Station Everett, 2008a). Waterways surrounding NSE are classified as Category 1, which are waters that meet tested standards for clean water; however, placement in this category does not necessarily mean that a water body is free from pollutants; Category 2, which are waters of concern where there is some evidence of water quality problems, but not enough to require production of a water quality improvement project; and Category 5, which are waters whose quality standards have been violated for one or more by pollutants. Additionally, NSE is at the end of a watershed and abuts the Kimberly-Clark Paper Mill and other industrial users (see Figure 3.2.7-1). See Table 3.2.8-1 for the 2008 water quality assessment for the Port Gardner Bay and East Waterway (Inner Everett Harbor).

Water Currents and Circulation

Circulation in the East Waterway and its vicinity depends on fresh water discharge from the Snohomish River, tidal currents in Possession Sound, salinity wedge density currents, and configuration of the harbor. Average currents in the water column from the East Waterway are low, typically in the range of 0.8 to 2 inches/second at the inner waterway, and 1 to 5 inches/second at the harbor entrance. (U.S. Department of the Navy, 1999)

Table 3.2.8-1. 2008 Water Quality Assessment for Port Gardner Bay and Inner Everett Harbor

WDOE Location ID	Parameter	Medium	Category
10150	Ammonia-N	Water	1
10151	Dissolved Oxygen	Water	2
10153	Temperature	Water	1
15705	Fecal Coliform	Water	2
504342	Sediment Bioassay	Sediment	2
504390	Sediment Bioassay	Sediment	5
504391	Sediment Bioassay	Sediment	2

Source: Washington State Department of Ecology (WDOE), 2008.

Notes:

Category 1: meets tested standards for clean water, however placement in this category does not necessarily mean that a water body is free from pollutants.

Category 2: waters of concern where there is some evidence of water quality problems, but not enough to require production of a water quality improvement project.

Category 5: polluted waters that require a Total Maximum Daily Load (TMDL). Water quality standards have been violated for one or more pollutants, and there is no TMDL or pollution control plan. TMDLs are required for the water bodies in this category.

Temperature

Temperature and salinity of site waters fluctuate due to periods of high fresh water outflow from the Snohomish River. Water quality analysis in Port Gardner Bay indicated a temperature range of 47.5°F to 63.5°F. (U.S. Department of the Navy, 1999)

Chemical Contaminants

Since the early 1900s, Port Gardner Bay and the lower Snohomish River have been used for commercial and industrial purposes, often related to timber and maritime industries (saw mills, paper production, and boat building). The southern Port Gardner Bay is a part of the Puget Sound Initiative, which is designed to clean up and restore Puget Sound (Washington Department of Ecology, 2010).

In the last 25 years, several sediment investigations have detected metals, semivolatile organic compounds, pesticides, and polychlorinated biphenyls (PCBs) at levels exceeding the Sediment Management Standards (SMS) at numerous locations throughout Port Gardner Bay. The most extensive contamination has been identified within the East Waterway. The East Waterway appears to be most impacted due to chemical contamination and impacts from wood debris accumulation. (Washington State Department of Ecology, 2010) Port Gardner Bay and inner Everett Harbor are included on the 2008 303(d) list of impaired waterbodies, based on sediment for sediment bioassay (Washington State Department of Ecology, 2008). Table 3.2.8-1 lists parameters from the 2008 Water Quality Assessment for Port Gardner Bay and East Waterway (Inner Everett Harbor).

Based on the 2009 Port Gardner Bay Sediment Characterization Study, the East Waterway (Inner Everett Harbor) sediments have the highest degree of impact from biological toxicity and chemicals in general. East Waterway is impacted by concentrations of mercury, zinc, and 4-methyl phenol above the Sediment Management Standards. The concentration of metals was generally low. Table 3.2.8-2 shows average metal concentrations from the flesh of the Port Gardner Bay Dungeness crab and the East Waterway English sole. Biological toxicity also exists in specific areas potentially due to organic enrichment from the accumulation of wood waste. Kimberly-Clark Paper Mill is located 0.5-mile northeast of the proposed location. Dioxin was detected in all four areas of the Bay with the highest concentration in the East Waterway area. Results from the 2009 study complement and support Ecology's decision to focus cleanup and restoration efforts in Port Gardner Bay; specifically, the East Waterway. It is expected that Ecology's cleanup efforts in this area would greatly contribute to an overall reduction in the risk these contaminants and impacts may pose (Washington State Department of Ecology, 2009a).

Table 3.2.8-2. Average Metal Concentrations from the Flesh of the Port Gardner Bay Dungeness Crab and the East Waterway English Sole

Metal in mg/kg ww	Dungeness Crab Tissue	English Sole	Contaminant of Concern
Arsenic	5	2	No
Cadmium	0.08	0.004	No
Chromium	0.05	0.3	No
Copper	12.4	1.02	No
Lead	0.04	0.04	No
Mercury	0.044	0.01	Yes
Selenium	N/A	N/A	No
Silver	0.11	0.022	No
Zinc	45.3	14.9	Yes

Source: Washington State Department of Ecology, 2009a
ww wet weight
mg milligram
kg kilogram
N/A Not Applicable

Current Requirements and Practices

Environmental compliance policies and procedures related to ocean and nearshore water quality are regulated by Federal and State programs including the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which prohibits certain discharges of oil, garbage, and other substances from vessels. The MARPOL convention is implemented by national legislation, including the Act to Prevent Pollution from Ships (33 United States Code [USC] 1901, et seq.); the Federal Water Pollution Control Act ("CWA"; 33 USC 1251, et seq.) with measures that reduce potential impacts to water resources which include creation and adherence to storm water management plans, erosion control, maintaining vegetative buffers adjacent to waterways, and enforcement of pollution permit requirements under the National Pollution Discharge Elimination System (NPDES; 33 USC 1342); and the Oil Pollution Act (33 USC 40 §2701 et seq.) which streamlined and strengthened USEPA's ability to prevent and respond to catastrophic oil spills. In addition, provisions in Executive Order 12856, *Federal Compliance With Right-To-Know Laws and Pollution Prevention Requirements*, and Executive

Order 13101, *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition*, reinforce the CWA's prohibition against discharge of harmful quantities of hazardous substances into U.S. waters out to 200 nautical miles, and mandate stringent hazardous waste discharge, storage, dumping, and pollution prevention requirements. For the Navy, these and other requirements are implemented by the *Navy Environmental and Natural Resources Program Manual* (OPNAVINST 5090.1C, 2007), and related Navy guidance documents governing waste management, pollution prevention, and recycling.

Shipboard waste-handling procedures governing the discharge of non-hazardous waste streams have been established for seagoing vessels. These categories of wastes include solids (garbage) and liquids such as "black water" (sewage), "grey water" (water from deck drains, showers, dishwashers, laundries, etc.), and oily wastes (oil-water mixtures).

Regulatory Requirements—Federal

The principal Federal laws protecting water quality are the Federal Water Pollution Control Act, more commonly known as the CWA (33 USC 1251, et seq.) and the Safe Drinking Water Act (42 USC 300f, et seq.). Both are enforced by the USEPA and various State Government agencies. In addition, the National Oceanic and Atmospheric Administration (NOAA; U.S. Department of Commerce) oversees coastal and marine water resources under CWA, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Coastal Zone Management Act, and the Oil Pollution Act (marine oil spills). NOAA also has responsibilities in managing and protecting coastal and marine habitats (and species) through the NMFS.

Discharges Incidental to Normal Operation of a Vessel of the Armed Forces

The CWA was amended in 1996 to allow for the Secretary of the Defense and Administrator of the USEPA to work in consultation with the U.S. Coast Guard and interested States to determine discharges incidental to the normal operation of a vessel of the Armed Forces for which it is reasonable and practicable to require use of a marine pollution control device. This amendment allowed for a comprehensive system for regulating discharges incidental to the normal operation of an Armed Forces' vessel operating in inland waters and the ocean out to 12 nautical miles. On 10 May 1999, USEPA and DoD published the final rule establishing regulations for undertaking to establish the Uniform National Discharge Standards for Vessels of the Armed Forces. This rule completed the first phase of a three-phase process to set the Uniform National Discharge standards. This Phase I rule determined the type of vessel discharges that require control by Marine Pollution Control Devices and those that do not, based on anticipated environmental effects of the discharge as well as factors listed in the CWA. A total of 25 vessel discharges that have the potential to cause an adverse impact on the environment requiring control standards have been identified under Phase I of the program (Uniform National Discharge Standards, 2008). Phase II involves developing performance standards and control procedures for those discharges. The Navy and USEPA have agreed to promulgate Phase II standards in batches. The batch rulemaking approach allows the Navy and USEPA to conduct technical analyses and develop discharge standards in batches (approximately five discharges per batch) rather than conducting analyses and developing standards for all 25 discharges at one time. To date, this Phase II process is ongoing.

Since the SBX vessel is a vessel of the Armed Forces, Section 33 USC 1322(n) applies concerning discharge incidental to the normal operation of a vessel. Certain discharges from the vessel in connection with maintenance and repair fall under the UNDS being developed by the Secretary of Defense and the Administrator of the USEPA, and are therefore not "pollutants" regulated by the CWA. Of the 25 discharges, Seawater Cooling Overboard Discharge and Underwater Ship Husbandry apply to the Proposed Action analyzed in this EA.

Seawater Cooling Overboard Discharge

This discharge consists of seawater from a dedicated system that provides noncontact cooling water for other vessel systems. The seawater cooling system continuously provides cooling water to heat exchangers, removing heat from main propulsion machinery, electrical generating plants, and other auxiliary equipment. The heated seawater is discharged directly overboard. With the exception of some small, non-self-propelled vessels and service craft, all Armed Forces vessels discharge seawater from cooling systems. Typically, the demand for seawater cooling is continuous and occurs both within and beyond 12 nautical miles from shore. Seawater cooling overboard discharge is primarily seawater that contains trace materials. The expected constituents of seawater cooling discharge include copper, iron, aluminum, zinc, nickel, tin, titanium, arsenic, manganese, chromium, lead, and possibly oil and grease from valves and pumps. Of the constituents expected to be present in this discharge, arsenic, chromium, copper, lead, nickel, and zinc are priority pollutants. None of the expected constituents is a bioaccumulator. (U.S. Environmental Protect Agency, 1999)

Underwater Ship Husbandry

Underwater ship husbandry includes underwater welding. The underwater ship husbandry discharge is composed of materials discharged during the inspection, maintenance, cleaning, and repair of hulls and hull appendages performed while the vessel is waterborne. Underwater ship husbandry includes activities such as hull cleaning, fiberglass repair, welding (underwater), sonar dome repair, propulsor lay-up, non-destructive testing, masker belt repairs, and painting operations. The primary constituents found in the discharge from underwater welding are metals in the slag associated with welding rods. These (slag and welding rods) may contain chromium, iron, nickel, beryllium, manganese, and trace quantities of other metals. Trace quantities are extremely small quantities or a barely perceivable indication. (U.S. Environmental Protect Agency, 1999)

Regulatory Requirements—State and Local

Water Quality and Pollution Standards

The State of Washington regulates the State Pretreatment Program and the General Permit Program.

Underwater Welding

All discharges from underwater welding done for maintenance activities on ships are covered under the UNDS program. Underwater welding is not an activity that is regulated under the 401 discharge program run by the Washington Department of Ecology.

Coastal Zone Management

Washington Department of Ecology also administers the State's coastal zone management program under the Coastal Zone Management Act (CZMA). Washington's program applies to the 15 coastal counties that front on saltwater. These counties include a significant portion of the land in the Study Area. Six laws comprise the State's program: (1) Shoreline Management Act of 1971 (Chapter 90.58, Revised Code of Washington [RCW]), including local government shoreline master programs; (2) the State Environmental Policy Act (Chapter 43.21c, RCW); (3) State responsibilities under the Federal Clean Air Act; (4) State responsibilities under CWA; (5) the Energy Facility Site Evaluation Council Law (Chapter 80.50, RCW); and (6) the Ocean Resource Management Act (Chapter 43.143, RCW). Much of the enforcement of these coastal management activities is delegated to local governments.

MDA separately submitted a Consistency Determination based on a review of the Washington Coastal Zone Management Program (CZMP) that determined which enforceable policies within six laws identified in the CZMP are applicable to the proposed Federal activity. MDA reviewed the proposed maintenance and repair actions to determine whether they would have reasonably foreseeable direct and/or indirect effects on a coastal use or resource within the coastal zone.

The SBX Radar Vessel maintenance and repair activity would occur in Snohomish County; one of 15 counties where the CZMP applies. However, only some of the enforceable policies within the six laws identified in the CZMP are applicable to the activity with some of the elements of the activity having reasonably foreseeable coastal effects. Accordingly, in compliance with CZMA, a Coastal Consistency Determination was prepared and submitted to the Coastal Zone management program. MDA found that the proposed project is consistent to the maximum extent practicable with the CZMP.

3.2.8.2 Environmental Consequences

Approach to Analysis

Study Area

In terms of water (surface, ground, flood hazard area), relevant portions of the Study Area are those in which the temporary mooring of the SBX Radar Vessel could potentially affect bodies of water. The Study Area includes the marine waters associated with the proposed location (Pier A) at NSE, Everett, WA.

Source of Information

A systematic review of relevant literature was conducted to complete this analysis of water resources in the potential location, including maps, technical reports published by Government agencies, work conducted by private businesses and consulting firms, and DoD reports, operational manuals, natural resource management plans, and current and prior environmental documents for facilities and activities in the Study Area. The literature and other information sources cited are identified in Chapter 5.0, References.

Results of Analysis

Painting, Outside Welding, Sanding, and Plasma Cutting

The SBX Radar Vessel would have a temporary effect (approximately 3 months) on the marine waters associated with Pier A at NSE. During the vessel's temporary mooring period, activities such as painting, outside welding, sanding, and plasma cutting would be performed. Standard BMPs listed in Table 2-4 would prevent any debris from entering the waterway and from being circulated in the bay. The standard BMPs would be applied to mitigate impacts to marine waters from such activities (i.e., enclose, cover, or contain work areas to prevent debris from reaching water). Therefore, the impacts on marine waters from these activities would be negligible.

Seawater Cooling Discharge Overboard

A Nature of Discharge Report was produced as part of the *Technical Development Document for Phase I Uniform National Discharge Standards for Vessels of the Armed Forces* (U.S. Environmental Protection Agency and U.S. Department of the Navy, 1999). The thermal effects of seawater cooling water overboard discharge were modeled using the Cornell Mixing Zone Expert System. This system was used to estimate the plume size and temperature rises in the water body receiving the discharge. Modeling included the cooling water discharge of three vessels in three harbors. Of the five States having a significant presence of Armed Forces' vessels, only Virginia and Washington have established thermal mixing zone dimensions. The models predicted that U.S. Navy aircraft carriers, with a typical cooling water temperature rise of 10 to 15 degrees, would generate thermal plumes that, under conditions of low harbor flushing, low wind velocities, and maximum cooling water flow rates (120,000 gallons per minute), would only exceed the regulatory thermal mixing zone limits of Washington. Thermal plume models from destroyers did not exceed regulatory limits (U.S. Environmental Protection Agency and U.S. Department of the Navy, 1999). In contrast, the SBX Radar Vessel cooling water would have a much lower flow rate (7,400 gallons per minute), and a lower typical temperature rise of 6 to 10 degrees (Department of Defense, Missile Defense Agency, 2005).

The Nature of Discharge Report also evaluated metals that enter the cooling water as it moves through the components of the cooling system. These metals include copper, nickel, lead, aluminum, tin, silver, iron, titanium, chromium, and zinc. The Nature of Discharge Report concluded that seawater cooling discharge from armed forces vessels has a potential to cause an adverse environmental effect due to exceedences of Federal water quality criteria for heavy metals and significant heavy metal mass loading (U.S. Environmental Protection Agency and U.S. Department of the Navy 1999). Although the SBX Radar Vessel seawater cooling discharge would contain some heavy metals, the quantity would be less than on typical armed forces vessels which utilize nickel-copper piping. While the SBX Radar Vessel uses some copper-nickel piping, it also uses a composite piping that does not contribute heavy metals. (Department of Defense, Missile Defense Agency, 2005)

Any water discharged from the vessel's Seawater Cooling System while in-port would have originated directly from the East Waterway. The review of the average metal concentrations from the flesh of the Port Gardner Bay Dungeness Crab and the East Waterway English Sole indicates that the heavy metals associated with the Seawater Cooling Discharge are not contaminants of concern (see Table 3.2.8-2). There is no thermal pollution anticipated due to any increase in temperature of the receiving ambient water (potentially 6-10 °F higher at point of entry). Additionally, the tidal influences on water flow in the SBX Radar Vessel area would aid

in minimizing the area of elevated water temperature by promoting rapid mixing of water return to ambient water temperature within a short distance of the outflow. It is anticipated that the change in temperature will not affect water quality or biological productivity. Therefore, impacts to current marine water quality from this activity are anticipated to be negligible.

Underwater Welding

Pollutant concentration amounts released from underwater welding are infrequent and in small quantities and are not estimated/analyzed (U.S. Environmental Protection Agency, 1999). As noted in the Phase I Final Rule and Technical Development Document of UNDS, metals from the underwater welding operation (which may contain chromium, iron, nickel, beryllium, manganese, and trace quantities of other metals) would not readily dissolve in the surrounding waters and would fall to the harbor floor (U.S. Environmental Protection Agency, 1999; 2003).

A review of the water quality for Port Gardner Bay and the East Waterway (Inner Everett Harbor) indicates that chromium is the only potential metal from underwater welding operations found in crustacean and fish flesh within the East Waterway (Inner Everett Harbor; see Table 3.2.8-2). Chromium is not listed as a contaminant of concern by the Washington Department of Ecology (Washington Department of Ecology, 2009a). Currently the level of chromium (0.05 milligram(s) per liter [mg/L]) is below the recommended limit set by USEPA, FDA, and OSHA of 1.0 mg/L. The remaining metals (nickel, iron, beryllium, manganese, and trace quantities of other metal) are not listed as contaminants detected within Port Gardner Bay and the East Waterway (Inner Everett Harbor). Although these metal constituents have the potential to oxidize and enter the water stream over time, the mooring of the SBX Radar Vessel is temporary at the proposed site and there is a low potential for the metal constituents to cause an adverse environmental effect. The underwater welding activities are temporary and a short performance time is anticipated therefore the level of the metals would continue to be negligible. Therefore, the impacts on marine waters from underwater welding activities would be negligible.

Oil

The small amount of oil remaining in the thruster wells (less than 5 gallons) would be removed from the thruster via a hose leading up to a surface tank. BMPs would be followed to prevent the spill of oil into the water during the transfer of the excess oil. Therefore, the impacts on marine waters from this activity would be negligible.

Storm Water Discharge

Storm water discharge activities being performed during the maintenance and repair period associated with pier side laydown equipment would adhere to the BMPs listed in Table 2-4 (e.g., Material Storage and Handing, Discharge to Storm Drain, Outdoor Work Operations) and the NSE's Storm Water Pollution Prevention Plan (SWPPP). Gray and black water would be prevented from entering the East Waterway; all gray and black water lines of the moored SBX Radar Vessel would be connected to the sewer risers on Pier A and diverted to the city of Everett's sewage system for treatment. Additionally, the SBX Radar Vessel would manage the discharge of all gray and black water by connecting to sewage risers and in accordance with any requirements of NSE and Navy Region Northwest. Adherence to the BMPs, any requirements of NSE and Navy Region Northwest, and the SWPPP would prevent the discharge of stormwater and gray and black into the East Waterway. Therefore, any impacts from storm water discharge and gray and black water would be negligible.

3.2.8.3 Mitigation Measures

Impacts to water resources resulting from painting, outside welding, sanding, and plasma cutting would not result in long-term degradation of water resources or affect water quality at the potential location. Current requirements and practices described in Section 3.2.8.1 would be considered, and all applicable BMPs listed in Table 2-4 would be implemented.

Although specific performance standards and potential pollution control device requirements have not been determined for seawater discharge, and specific requirements for the SBX Radar Vessel, have not been developed at this time, the continuing use of the composite piping on the SBX Radar Vessel is considered a pollution control device; therefore no mitigation measures are proposed.

Although chromium is the only potential metal from underwater welding operations found in crustacean and fish flesh within the East Waterway, impacts to water resources resulting from underwater wet welding activities have a low potential for causing an adverse environmental effect. To mitigate the potential of welding rods/electrodes from entering and accumulating on the floor of the Everett Harbor, underwater welders are required to log and track the number of rods used during the underwater process.

Contractors and personnel working at NSE during the maintenance and repair period must obtain a copy of all environmental requirements and BMPs established for the NSE (e.g., Environmental Safety Requirements for Contractors at NSE, 20 August 2007).

3.2.8.4 Summary of Effects

The Proposed Action would not have long-term impacts on marine water resources in the Study Area. Although underwater welding activities have the potential to introduce additional chromium into the East Waterway as well as metal constituents not currently tested (iron, nickel, beryllium, manganese, and trace quantities of other metals), these metal constituents are not readily dissolved in the surrounding waters and would fall to the harbor floor. Additionally, some heavy metals could be introduced though the seawater cooling discharge. Although these metal constituents have the potential to oxidize and enter the water stream over time, the temporary mooring of the SBX Radar Vessel in conjunction with the low potential for the metal constituents to cause an adverse environmental effect, a long-term effect is not likely. No long-term accumulations are expected, and therefore no impact is anticipated.

Short-term effects on water quality from the SBX Radar Vessel have the potential to introduce metals (underwater welding slag and rod may contain chromium, iron, nickel, beryllium, manganese, and trace quantities of other metals and seawater cooling discharge contains copper, iron, aluminum, zinc, nickel, tin, titanium, arsenic, manganese, chromium, lead, and possibly oil and grease from valves and pumps) into Port Gardner Bay and the East Waterway. These metals have a low potential for environmental effect in the surrounding water. Therefore, the Proposed Action is anticipated to have a negligible short-term impact on the water quality of Port Gardner Bay and the East Waterway.

3.3 NAVAL AIR STATION NORTH ISLAND (ALTERNATIVE 2)

Environmental Resources

Of the 14 broad areas of environmental consideration, the proposed maintenance and repair activities could have an effect on air quality, airspace, biological resources, hazardous materials and waste, noise, socioeconomics, transportation, visual and aesthetic resources, and water resources at NASNI. These resource areas are analyzed in the following sections.

The remaining resource areas were not analyzed for the following reasons:

1. Cultural—There are no known underwater archaeological sites or features within the deep water terminal area. In addition, there are no activities associated with the Proposed Action that could potentially affect either terrestrial archaeological sites or aboveground historic properties (e.g., buildings, structures).
2. Geology and Soils—There are no planned soil disturbances (i.e., dredging), land forms, or pier pilings. The erosional conditions that currently exist along First Street are a result of natural conditions and historical alterations to the bay. Although there is some debate about the effect of ship wakes on shoreline erosion, aircraft carrier and associated tug boat movements represent a negligible percentage of marine vessel traffic through the bay, such movement does not occur south of the turning basin, and they do not create substantial wakes. Therefore, the temporary presence of the SBX Radar Vessel is not anticipated to affect erosion rates along First Street.
3. Health and Safety—The radar would not be in use while the SBX Radar Vessel is in port. Any risk to divers performing underwater welding activities is covered by the established policy and procedures of the company providing the service. There are no other anticipated effects to public health and safety.
4. Land Use—There are no planned changes in the current facility designated land use patterns. The use of the facility (i.e., entrance of vessels into port, maintenance activities) is a normal facility operation.
5. Utilities—It is normal operational procedure for vessels (e.g., Aircraft Carriers, Oilers) to moor at NASNI and use pier side hook-up for potable water, waste water, and shore power. The current electrical capacity provided by NASNI for CVNs would be sufficient to operate the SBX Radar Vessel while moored at NASNI when it becomes capable of connecting to shore power.

3.3.1 AIR QUALITY

The primary air quality concerns at NASNI are the exhaust from the onboard generators and the emissions from painting operations.

3.3.1.1 Affected Environment

Existing Conditions

Climate

The climate of Southern California is characterized by warm, dry summers and mild, wet winters. One of the main determinants of the climatology is a semi-permanent high-pressure area (the Pacific High) in the eastern Pacific Ocean. In the summer, this pressure center is located well to the north, causing storm tracks to be directed north of California. This high-pressure cell maintains clear skies in Southern California for much of the year. When the Pacific High moves southward during the winter, this pattern changes, and low-pressure centers migrate into the region, causing widespread precipitation.

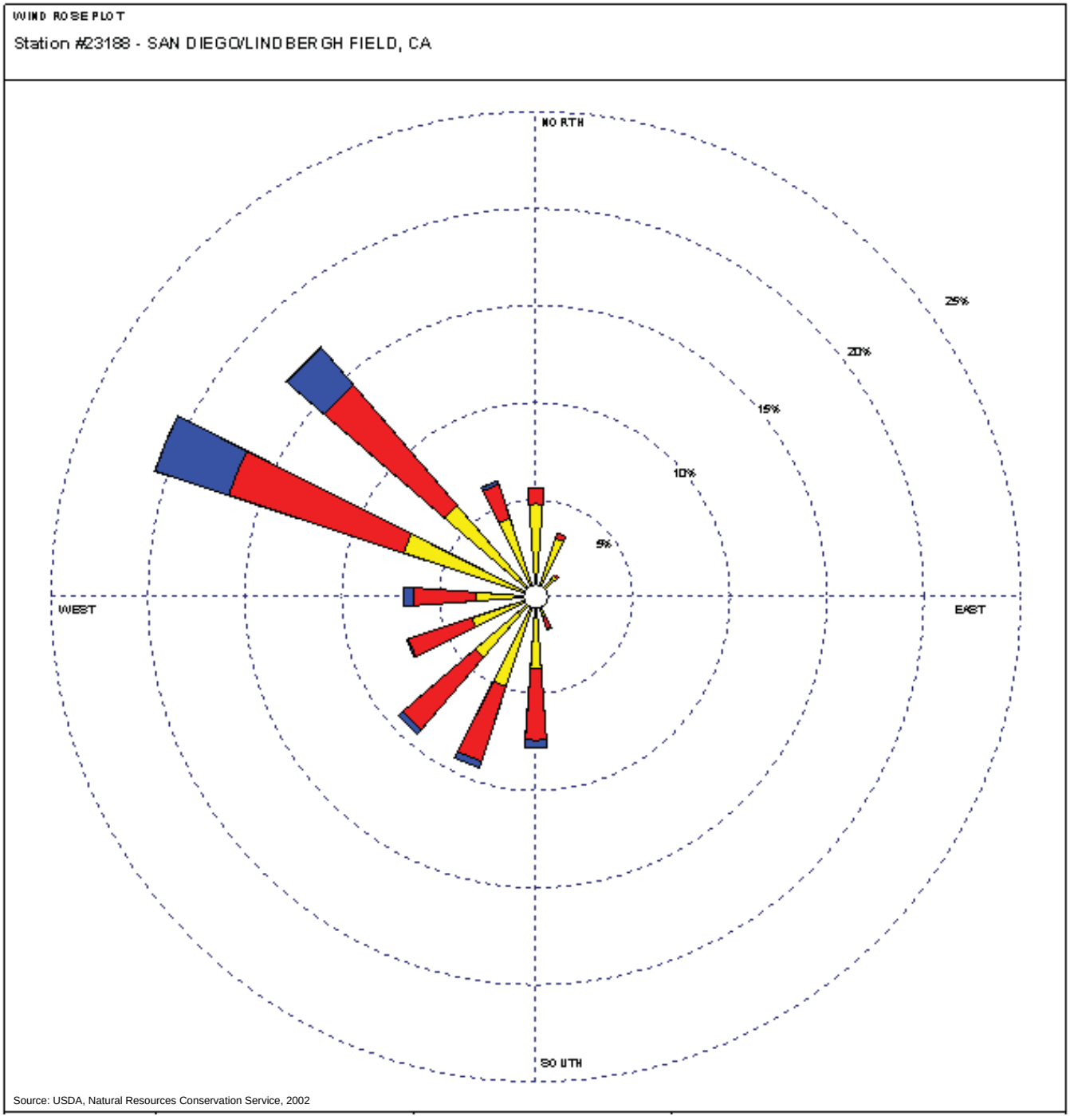
The Pacific High also influences the wind patterns of California. The predominant wind direction (blowing from) is northwest in San Diego during all four seasons. Dry easterly winds sometimes blow in the vicinity for several days at a time, bringing temperatures in the 90s and at times even in the 100s in the eastern sections of the city and outlying suburbs. These hot winds are predominant in the fall. Strong winds and gales associated with Pacific, or tropical storms, are infrequent due to this latitude (San Diego, 2010). The average wind speed is 8 miles per hour. The wind rose in Figure 3.3.1-1 also provides details on speeds from different directions.

A common atmospheric condition known as a temperature inversion affects air quality in Southern California. During an inversion, air temperatures become warmer with increasing height. Subsidence inversions occur during the warmer months (May through October) as descending air associated with the Pacific high-pressure cell comes into contact with cool marine air. The boundary between the layers of air represents a temperature inversion that traps pollutants below it. Inversion layers are important elements of local air quality because they inhibit the dispersion of pollutants, thus resulting in a temporary degradation of air quality.

Regional Air Quality

NASNI is located within San Diego County and is under the jurisdiction of the San Diego Air Pollution Control District (APCD). The San Diego APCD is the agency responsible for the administration of Federal and State air quality laws, regulations, and policies in the San Diego Air Basin (SDAB), which encompasses San Diego County.

San Diego's air quality is relatively poor. The SDAB is in "unclassified" nonattainment for the Federal 8-hour ozone standard (measured as VOC and NOx). June 15, 2010 was the deadline for SDAB to attain the new 8-hour ozone NAAQS, and it did not meet that deadline. Therefore, SDAB is expected to be newly designated as a serious nonattainment by early 2011. The SDAB is considered a maintenance area for the CO Federal standard and is currently in attainment for all other criteria pollutants. For California Ambient Air Quality Standards (CAAQS), the SDAB is classified as a nonattainment area for ozone, PM10, and PM2.5.



EXPLANATION

Wind Speed (mph)

- > 24.74
- 18.99 - 24.74
- 12.08 - 18.99
- 7.47 - 12.08
- 4.03 - 7.47
- 1.14 - 4.03

Wind Rose San Diego/ Lindbergh Field, California

Figure 3.3.1-1

The San Diego APCD operates a network of ambient air quality monitoring stations throughout San Diego County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets CAAQS and NAAQS.

The nearest air quality monitoring station to the project site is located in Downtown San Diego. Table 3.3.1-1 presents the ambient concentrations of pollutants in 2009, as recorded at the Downtown San Diego monitoring station, as well as the Federal and State air quality standards. These standards are at times exceeded for PM10.

Table 3.3.1-1. Background Ambient Air Quality 2009— Downtown San Diego, CA Monitoring Station

Pollutant	Averaging Time	Maximum Concentration (ppm) Downtown San Diego	CAAQS	NAAQS
Ozone (Smog)	8 hour	0.063 ppm	0.070 ppm	0.075 ppm
	1 hour	0.08 ppm	0.09 ppm	-
PM2.5	Annual Arithmetic Mean	11.78 µg/m^3	12 µg/m^3	15 µg/m^3
	24 hour	52.1 µg/m^3	35 µg/m^3	35 µg/m^3
PM10	Annual Arithmetic Mean	28.7 µg/m^3	20 µg/m^3	-
	24 hour	59 µg/m^3	50 µg/m^3	150 µg/m^3
Nitrogen Dioxide	Annual	0.017 ppm	0.030 ppm	0.053 ppm
	1 hour	0.078 ppm	0.18 ppm	-
Carbon Monoxide	8 hour	2.8 ppm	9.0 ppm	9.0 ppm
	1 hour	4.0 ppm	20 ppm	35 ppm
Sulfur Dioxide	Annual	0.002 ppm	-	0.030 ppm
	24 hour	0.006 ppm	0.04 ppm	0.14 ppm
	3 hour	0.01 ppm	-	0.5 ppm
	1 hour	0.02 ppm	0.25 ppm	-

Source: San Diego Air Pollution Control District, 2009

CAAQS = California Ambient Air Quality Standards
NAAQS= National Ambient Air Quality Standards
"-" = Standard revoked or does not exist
ppm = parts per million
µg/m^3 = micrograms per cubic meter

Current Requirements and Practices

Equipment used by military, Navy civilians, and contractors, including ships and aircraft, are properly maintained in accordance with applicable Navy requirements and industrial standards, thus reducing potential impacts to air quality. Operating equipment meets Federal and State emission standards, where applicable.

NASNI holds a Title V air permit for aerospace operations only. There are no restrictions or conditions for pier activity in their Title V. The SBX Radar Vessel would not be considered a stationary source at NASNI; therefore, neither a PSD review nor a Title V permit would be

required, and the California Airborne Toxic Control Measures for Stationary Compression Ignition Engines do not apply.

General Conformity Applicability

USEPA has published *Revisions to the General Conformity Regulations; Final Rule*, in the 5 April 2010 Federal Register (40 CFR Parts 51 and 93). The U.S. Navy published *Clean Air Act (CAA) General Conformity Guidance* in Appendix F, OPNAVINST 5090.1C, dated 30 October 2007. These publications provide implementing guidance to document CAA Conformity Determination requirements.

USEPA's general conformity rule and corresponding San Diego APCD Rule 1501 apply to Federal actions occurring in nonattainment or maintenance areas when the total indirect and direct emissions of the subject air pollutant exceed specific thresholds. The SDAB is moderate nonattainment for the 8-hour ozone standard. SDAB is also considered a maintenance area for the CO standard. Therefore, the general conformity *de minimis* level of 100 tons per year applies for VOCs, NOx, and CO. By early in 2011, SDAB will likely be newly designated as a serious nonattainment area for 8-hour ozone. One year after the effective date of the final nonattainment designation, the *de minimis* thresholds for General Conformity determinations will be reduced to 50 tons/year for VOC and NOx emissions. Table 3.3.1-2 shows the *de minimis* levels (in tons/year) for the air basin potentially affected by the Proposed Action at NASNI.

Table 3.3.1-2. *De minimis* Levels for Determination of Applicability of General Conformity Rule, Naval Air Station North Island

Air Quality Jurisdiction	De Minimis Emission, tons/year					
	VOC	NOx	CO	PM10	PM2.5	SO2
San Diego APCD	100*	100*	100	N/A	N/A	N/A

Source: 40 CFR 93.153

* By early in 2011, SDAB will likely be newly designated as a serious nonattainment area for 8-hour ozone and the *de minimis* for applicability analysis will be at 50 tons/year for VOC and NOx emissions.

Shipboard Generators

San Diego APCD's rules and regulations include procedures and requirements to control the emission of pollutants and to prevent adverse impacts (see Appendix C for details). San Diego APCD requires all ships to record any engine or boiler light-off (Commander Navy Region Southwest, 2005). The Commander, Navy Region Southwest (COMNAVREGSW) *Afloat Environmental Quick Response Guide* as well as a Compliance Advisory from San Diego APCD (dated 12 January 2000) further specifies that:

- All ships must record (log) any engine or boiler light-off. Ship's log shall indicate the start time, estimated duration, and reason for the light-off. Failure to maintain this log may result in issuance of a Notice of Violation. Ship's log is subject for review by San Diego APCD in the event of excess emissions from a ship's stack or when a complaint is received by San Diego APCD.

- No emissions shall exceed Ringelmann 2 (San Diego APCD Visible Emissions Rule 50 (d) (1) and California Health and Safety Code, Section 41701) and there shall be no nuisance emissions (such as odors or dust), and particulates (San Diego APCD,

Nuisance Rule 51). Therefore, during engine or boiler light-off, a column of black or white smoke may not be discharged that limits visibility by more than 40 percent for more than 3 minutes in any consecutive 60-minute period (Commander Navy Region Southwest, 2009). Operational testing is exempt from this rule.

In addition to local regulation, Senior Officer Present Afloat (SOPA), COMNAVREGSW, Instruction 5400.2 states that, "Navy ships at pier side shall implement operation and maintenance procedures to prevent stack emission in violation of State and local regulations." Navy Instruction 5090.1c, Chapter 20 also requires the emissions from major maintenance activities to be tracked and provided to NASNI to include as part of the base emissions inventory (Commander Navy Region Southwest, 2005).

Painting and Solvents

National emission standards for shipbuilding and ship repair (surface coating), listed in the CAA regulations, Subpart II of Part 63, NESHAPs, apply to major sources of HAP emissions. Major sources are shipbuilding and repair facilities/coating operations emitting over 10 tons per year of an individual HAP or over 25 tons per year of total HAP are regulated. The Proposed Action is not expected to be a major source of HAP (VOC) emissions.

San Diego APCD's Marine Coating Operations requirements, Rules 10, 11, and 67-18, will apply to painting proposed on the SBX Radar Vessel because of the volume of paint-use proposed. The contractor hired to perform the SBX Radar Vessel maintenance or MDA would have to apply for a permit with the San Diego APCD for Coating and Adhesive Application Equipment and Operations because of the amount of paint being used (San Diego Air Pollution Control District, 2010). SOPA COMNAVREGSW Instruction 5090.1b as well as the *Afloat Environmental Quick Response Guide* specifies other San Diego APCD marine coating requirements:

- VOC limits for marine-coating paint may not exceed 340 grams/liter or 2.8 pounds/gallon. VOC limits for specialty coatings are higher (between 340 and 780 grams per liter).
- Thinning of marine coatings/paints is prohibited.
- All coatings obtained overseas must comply with APCD requirements.
- Keep lids on paint cans or paint rag buckets when not in use (Commander Navy Region Southwest, 2009).

See Appendix C for more details of the current requirements and practices listed above.

3.3.1.2 Environmental Consequences

Approach to Analysis

The evaluation of potential air quality impacts includes the effects of air pollutant emissions from the proposed maintenance and repair activities occurring within the San Diego APCD area and in coastal waters within 3 nautical miles of a shoreline. These coastal waters are part of the same air quality jurisdiction as the contiguous land area.

The NEPA analysis involves estimating emissions generated from the proposed activities and assessing potential impacts on air quality, including an evaluation of potential exposures to toxic air pollutant emissions. The proposed activities as described in Chapter 2.0 that would change air emissions in the region could include:

- Shipboard generators—For purposes of this air quality section, 2½ months, or 75 days, of operation was used because the duration of the activity is estimated to be up to 3 months. After the installation of the equipment to supply power to the vessel from a shore connection, shore power could be used to reduce the use of diesel generators, but it is unknown when the installation will be complete. Therefore, those reductions could not be included in the emissions impact.
- Shipyard equipment—For purposes of this air quality section, the shipyard equipment listed in Chapter 2.0, Table 2-3, is reflective of maximum equipment requirements, but is not necessarily reflective of equipment needed on any given day. Each of the items was estimated to operate a total of 975 hours (75 days operating 13 hours per day). The length of time any particular piece of equipment is required is ultimately a function of the final maintenance schedule. For example, it is estimated that one welder will be necessary for 75 days; this could be accomplished through the use of one welder for 75 days, or two welders for 37.5 days. For the purposes of calculated emissions, the precise scheduling is not a critical factor; rather, the total operating hours for each piece of equipment is the relevant metric.
- Added personnel—Includes temporary commuting from the 224 shipyard workers; includes additional 50 miles of miscellaneous travel (mix of car, truck) by each of the 83 personnel living on the vessel while in port for 3 months.

Estimated emissions associated with these actions will be compared to *de minimis* threshold to screen for the need (if any) for a formal conformity determination, and will be compared to the current requirements and practices listed above to evaluate the magnitude of emissions that could occur from the proposed activities.

Results of Analysis

Appendix D contains the complete results for the screening level air quality modeling that was used to estimate net increases in air pollution. The results are summarized below.

General Air Conformity Applicability

Total air emissions for the SBX Radar Vessel maintenance and repair are assumed to occur within 1 year, which accurately represents the temporary nature of the Proposed Action. Table 3.3.1-3 shows the estimated air emissions of the subject pollutants resulting from the Proposed Action.

Table 3.3.1-3. Estimated Air Emissions from SBX Radar Vessel Maintenance and Repair, Naval Air Station North Island, CA

Emission Source	Air Emissions, Tons/Year		
	VOC	NOx	CO
Two diesel generators operations	5.93	53.76	14.28
Shipyard equipment	0.15	0.41	1.28
Shipyard worker commute	0.01	0.01	0.08
Government-owned vehicle miles travelled	0.	0.01	0.07
TOTAL Emissions	**6.09**	**54.19**	**15.71**
SDAB *de minimis* threshold[(1)]	100	100	100
Proposed Action Exceeds *de minimis* threshold?	No	No	No

Source: derived from U.S. Environmental Protection Agency, 1998; U.S. Air Force, 2010

[(1)]San Diego Air Basin (SDAB) is a moderate nonattainment area for the 8-hour Federal and State ozone standard; volatile organic compounds (VOCs) and nitrogen oxides (NOx) are precursors to the formation of ozone. SDAB is considered a maintenance area for the Federal carbon monoxide (CO) standard. SDAB is in attainment of the Federal sulfur dioxide (SO2), particulate matter with a mean aerodynamic diameter of 10 microns and 2.5 microns (PM10 and PM2.5) standards; therefore, emissions estimates and *de minimis* thresholds are not applicable or shown.

The estimated air emissions from air emission sources associated with the maintenance and repair of the SBX Radar Vessel would be below the *de minimis* threshold levels for conformity; i.e., VOC, NOx, and CO emissions are below 100 tons per year as shown on Table 3.3.1-3. Therefore, the Proposed Action would conform to the SDAB SIP and would not trigger a conformity determination under Section 176(c) of the CAA. A RONA for CAA conformity in accordance with Navy CAA Conformity Guidance, OPNAVINST 5090.1C, is provided in Appendix H.

Shipboard Generators Emissions

Air emissions will increase as a result of the limited use of shipboard generator. As shown on Table 3.3.1-3, the NOx emission from two diesel generators operations would be approximately 53.76 tons per year; or an additional 0.72 ton per day of NOx emissions to the air. For perspective, the 2010 Estimated Annual Average Emissions for the SDAB showed a total of 153 tons per day of NOx, almost entirely from on-road motor vehicles and other mobile sources (California Air Resources Board, 2010). Military aircraft and ship activities over and offshore of San Diego County currently emit approximately 10 tons per day of NOx (San Diego APCD, 2007). CO emissions are predicted to be 14.28 tons/year and VOC emissions 5.93 tons/year.

As shown in Appendix D, Table D-1, the ship generators are estimated to result in 0.83 ton per year of PM10, which does not represent meaningful emissions. In addition, the ship generators are estimated to result in greenhouse gas emissions (CO_2) of 2,772 tons per year. This does not represent "meaningful" greenhouse gas emissions as set forth in draft guidance by the Council on Environmental Quality (see Appendix C for more details).

The use of onboard generators may cause emissions of visible matter, or nuisance emissions (such as odors or dust), and particulates. This may impact air quality in the immediate vicinity of the project site, but these emissions are not anticipated to be noticeable by residents in downwind communities (see Figure 3.3.1-1). In every case, the Navy would be required to keep a ship's log indicating the start time, estimated duration, and reason for engine light-off and may be required to conduct opacity testing during engine light offs to stay compliant with San Diego's

visible and nuisance emissions rules. Because of the temporary nature of the use of generators, there would be no significant air quality impacts to the region.

Painting and Solvents Emissions

Over 250,000 square feet of the vessel would be prepared and painted, and this would require the use of approximately 1,500 gallons of paint and 330 gallons of solvents. VOC emissions will occur as solvents volatilize from the product. Implementation of BMPs for containment and filtering of emissions that are listed in Chapter 2.0 will minimize the impact to air quality. However, because of the large quantity of paint used during maintenance and repair of the SBX Radar Vessel, San Diego APCD regulations would require MDA or the contractor hired to perform the SBX Radar Vessel maintenance to obtain a permit for Coating and Adhesive Application Equipment and Operations. MDA/contractor must submit applications to the San Diego APCD for their review and approval. Once a permit is issued, the MDA/contractor will be responsible for compliance with the conditions specified in the permit. Because the painting and solvent activities would be permitted by an APCD permit, the emissions are exempt from conformity per 40 CFR 93.153(d) (1) and emissions from painting are not estimated in this analysis. See Appendix D, Section D.1.4 for further discussion.

In addition, San Diego APCD rules limit VOC content of paint: marine-coating paint cannot exceed 340 grams/liter or 2.8 pounds/gallon (specialty coatings VOC content is allowed to be higher). In order to comply, the MDA/contractor would use low VOC content paint, as specified on the MSDSs from the paint manufacture and shown in Table D-4. There will be no significant air impact from paint and solvent use.

Other Emissions

Shipyard equipment is listed in Chapter 2.0, Table 2-3. Estimates of emissions were based on estimated hours of usage as discussed in Appendix D. As shown on Table 3.2.1-3, potential CO, VOC, and NOx emissions from diesel-powered shipyard equipment are not expected to significantly impact air quality. The traffic-related air emissions resulting from the temporary shipyard worker commutes and Government-owned VMT would have no significant impact on air quality because of the low number of trips proposed and their temporary nature.

3.3.1.3 Mitigation Measures

By early in 2011, SDAB will likely be newly designated as a serious nonattainment area for 8-hour ozone. After a 1-year grace period, the thresholds for general conformity determination will be lowered to 50 tons/year for VOC and NOx emissions. If the air shed is newly designated to serious nonattainment and the SBX Radar Vessel maintenance is not completed during the 1-year grace period following the designation, MDA would need to mitigate the NOx air emissions from the on-board generators to meet the NOx emission requirements.

3.3.1.4 Summary of Effects

The analysis determined that the mooring of the SBX Radar Vessel for 75 days and the maintenance and repair would cause short-term impacts to air quality, but will not exceed General Conformity *de minimis* levels in the San Diego Air Pollution Control District, or NAAQS. The major ozone (measured by NOx and VOCs) and CO air pollutant emissions sources include shipboard diesel generators, employee commuting, diesel shipyard equipment (NOx and CO),

and surface coating (VOCs). The estimated air emissions from these sources associated with the maintenance and repair of the SBX Radar Vessel for NOx would be 54.19 tons per year, 6.09 tons per year of VOCs, and 15.71 tons per year of CO. These emissions will be temporary and will not significantly impact the San Diego Air Basin. If the air shed is newly designated to serious nonattainment, there would be significant impact from the use of shipboard generators that would need to be mitigated. The requirements imposed by the San Diego APCD through its procedures and the permit process for Marine Coating will ensure that the project would have no significant impact on air quality. This and the implementation of BMPs listed in Chapter 2.0 would ensure that the project would have no significant impact on air quality.

3.3.2 AIRSPACE

Airspace surrounding NASNI is analyzed in this EA because there is a potential for the SBX Radar Vessel to be an aircraft obstruction.

3.3.2.1 Affected Environment

Existing Conditions

Descriptions of airspace classes and other general information related to airspace issues are available in Appendix C.

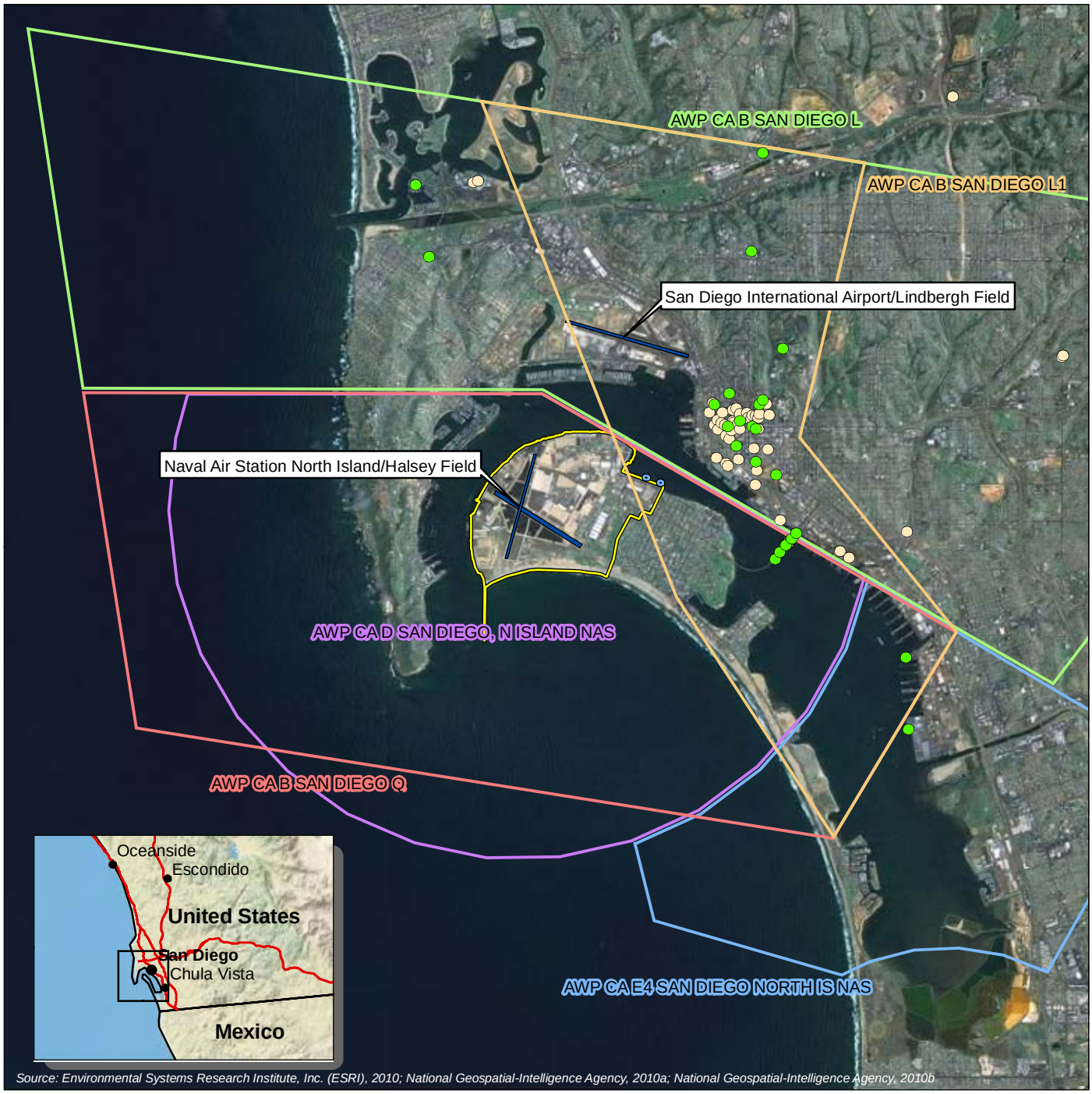
Controlled and Uncontrolled Airspace

Airspace encroachment is a serious issue at NASNI. The field's proximity to San Diego Lindbergh Field means that many activities are conducted on an "either/or" basis, with one facility having to defer to the other's traffic. NASNI must accommodate this situation by conducting almost all of its activity south of the field; however, this can worsen the tenuous noise relationship with its neighbors.

As shown on Figure 3.3.2-1, the airspace above San Diego Lindberg Field is designated Class B airspace—airspace that surrounds an airport with high density air traffic. It is developed to reduce the midair collision potential by providing an area in which all aircraft are subject to certain operating rules and equipment requirements. This Class B airspace, AWP CA B San Diego L, extends from the surface to 10,000 feet AMSL. NASNI is located in Class D airspace, AWP CA D San Diego, N Island NAS, which extends from the surface to 2,800 feet AMSL. Overlying the Class D airspace is Class B airspace, AWP CA B San Diego Q, which extends from 2,800 to 10,000 feet AMSL. There is a class B VFR corridor, AWP CA B San Diego L1, which extends through the other two San Diego Class B airspace areas from 3,300 to 4,700 feet AMSL. (National Geospatial Intelligence Agency, 2010a)

Aerial Obstructions

Generally, only man-made structures extending more than 200 feet AGL are depicted on aeronautical charts. Some objects less than 200 feet AGL, such as antennas, tanks, and lookout towers, are also included if very near an airport. There are a number of aerial obstructions to aircraft as identified in the Digital Vertical Obstruction files (National Geospatial-Intelligence Agency, 2010b). Figure 3.3.2-1 shows the aerial obstructions that are 200 to 249



EXPLANATION

- Aerial Obstruction (200' to 249')
- Aerial Obstruction (Greater than 250')
- Airfield Runway
- AWP CA D SAN DIEGO, N ISLAND NAS (Surface - 2,799')
- AWP CA E4 SAN DIEGO NORTH IS NAS (Surface - 2,800')
- AWP CA B SAN DIEGO L (Surface - 10,000')
- AWP CA B SAN DIEGO Q (2,800' - 10,000')
- AWP CA B SAN DIEGO L1 (3,301' - 4,699')
- Potential Mooring Location
- Naval Air Station North Island Boundary

NORTH

0 1 2 4 Miles

Aircraft Obstructions in the Region of Naval Air Station North Island, Naval Base Coronado

Coronado, California

Figure 3.3.2-1

feet AGL, similar to the SBX Radar Vessel, and those that are greater than 250 feet AGL. When navigating through this area pilots must be aware of these obstructions.

Airports/Airfields

San Diego International—Lindbergh Field is 3 nautical miles from NASNI. Lindbergh Field is a civilian airport with congested air traffic. The airport services 5,923,000 passengers annually. The aircraft circulation system at NASNI consists of two runways: Runway 11/29 (300 feet by 7,500 feet) and Runway 18/36 (200 feet by 8,000 feet). These Class B runways are oriented at approximately right angles to each other and are connected through an extensive taxiway system. Fixed wing landings and take-offs use Runway 11/29. Runway 18/36 is used for additional fixed wing take-offs as well as rotary-wing operations. Aircraft maintenance facilities are housed in aircraft maintenance hangars and associated parking aprons.

Air Traffic Control operates the existing airspace associated with San Diego International Airport and NASNI as though they are serving a single airport with three dependent runways. The two airports use the same terminal airspace. The primary arrival runways for these two airports converge. This requires air traffic control to sequence, or space, aircraft on final approach with aircraft on final approach for the other airport. (San Diego County Regional Airport Authority, 2003)

Current Requirements and Practices

NASNI follows all applicable U.S. Navy and FAA rules and regulations that control and regulate area airspace.

3.3.2.2 Environmental Consequences

Approach to Analysis

To complete the analysis of the effects to airspace in the NASNI area, a systematic review of relevant literature was conducted, including scientific articles, technical reports published by Government agencies, work conducted by private businesses and consulting firms, DoD reports, operational manuals, and current and prior environmental documents for facilities and activities. The literature and other information sources cited are identified in Chapter 5.0, References.

Results of Analysis

Controlled and Uncontrolled Airspace

No impacts to controlled and uncontrolled airspace are anticipated since the XBR would not be radiating.

Aerial Obstructions

The FAA requires an Obstruction Notification submittal for all objects that intersect a 100:1 slope up from the surface of a runway out to 20,000 feet from the runway. For example, on flat ground a 200-foot structure would require a notification submittal if located within 20,000 feet of an airport. Based on an initial analysis, MDA would be required to submit an Obstruction Notification to the FAA since both the NASNI and San Diego International Airport runways are

within 20,000 feet of the proposed SBX Radar Vessel location and the SBX extends 250 feet AGL.

The SBX Radar Vessel does include FAA approved warning lights to help pilots identify it when transiting through the area. During the day in clear weather the SBX is of sufficient size to easily identify and avoid. When navigating through this area pilots must already be aware of the existing aerial obstructions shown on Figure 3.3.2-1, and the addition of the SBX Radar Vessel would not result in an impact.

Airports/Airfields

The SBX Radar Vessel would not be located within the approach of any airport and would not impact aircraft transiting the area. San Diego International—Lindbergh Field is 3 nautical miles north and the NASNI runways are 1.5 miles west and southwest of the proposed SBX Radar Vessel Location. There would be no radiofrequency interference/electromagnetic interference issues with communication or radar at the airports since the XBR would not be used while the SBX Radar Vessel is in port.

3.3.2.3 Mitigation Measures

The appropriate lighting would be on the vessel as required by FAA to illuminate the height of the structure. It is anticipated that the MDA would submit an Obstruction Notification to the FAA due to the height of the SBX Radar Vessel and the proximity of several runways.

3.3.2.4 Summary of Effects

No impacts are anticipated to controlled and uncontrolled airspace since the XBR would not be radiating. No impacts are expected to area airports as a result of the SBX Radar Vessel being an aerial obstruction since it includes FAA approved lighting and the MDA would coordinate with the FAA regarding any required Obstruction Notification requirement.

3.3.3 BIOLOGICAL RESOURCES

Biological resources are analyzed in this EA because of the potential for impacts to biological species from temporarily mooring the SBX Radar Vessel at NASNI for maintenance and repair activities. These activities would result in increased noise, increased presence of personnel, lighting on the vessel required 24/7, the potential for water quality degradation, and expended materials, including those from welding, painting, or paint-chipping.

3.3.3.1 Affected Environment

The region of influence for biological resources includes areas that may potentially be affected by the use of NASNI for the SBX Radar Vessel maintenance and repair.

Existing Conditions

Marine Vegetation

Beds of eelgrass, a type of seagrass and a marine angiosperm, form an important and productive benthic habitat in San Diego Bay. Eelgrass beds in San Diego Bay have suffered

substantial losses and impacts due to their location in sheltered waters where human activity is concentrated, similar to what has occurred in bays and estuaries all along the Pacific coast and elsewhere in the world. In San Diego Bay, these beds extend from zero mean lower, low water (MLLW) to depths of at least 23 feet below MLLW, depending on levels of light and water turbidity. In south Bay the range is from 0 to –7 feet MLLW, central Bay 0 to –10 feet MLLW, and North Bay 0 to –13 feet MLLW. Near the mouth in North Bay, a different form of eelgrass (wider blades) grows from –16 to –23 feet MLLW. (Commander Navy Region Southwest, 2002)

Eelgrass beds are an important component of the San Diego Bay food web. Fish and invertebrates use eelgrass beds to escape from predators, as a food source, and as a nursery since eelgrass plants provide surfaces for egg attachment and sheltered locations for juveniles to hide and feed. Fish-eating birds, including the least tern, consume fish from these beds. Waterfowl, especially surf scoter, scaup, and brant are present in high numbers in late fall and winter. Black brant, in particular, rely heavily on eelgrass of central and south Bay, as they are one of the few birds that consume it directly. (Commander Navy Region Southwest, 2002)

Marine Invertebrates

Invertebrates consist of infaunal (those living in sediments) and epifaunal (those living on sediments). Common infauna include many polychaete families and genera. The most common epifauna are mollusks, cnidarians (hydroids and sea anemones), arthropods, and sponges. Other species occurring in low numbers include gorgonians and tunicates. (U.S. Department of the Navy, 1999)

Fish

The most common pelagic (open ocean) fish species include topsmelt, northern anchovy, and Pacific sardine. The most abundant demersal (living on or near the bottom) fish species located in San Diego Bay include round stingray, spotted sand bass, barred sand bass, yellowfin goby, diamond turbot, and California halibut. Few commercially important fish species are found in the Bay. (U.S. Department of the Navy, 1999)

Threatened and Endangered Species

No threatened or endangered fish species have been identified in San Diego Bay (Commander, U.S. Pacific Fleet, 2010).

Essential Fish Habitat

According to the Magnuson-Stevens Fisheries Conservation and Management Act, the U.S. Navy is responsible for evaluating whether projects or activities adversely impact EFH zones, broadly defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. Section 1802). The Act is further defined in Appendix C.

The Coastal Pelagic EFH includes surface waters or, more specifically, waters above the thermocline where sea surface temperatures range between 50°F to 79°F. Five species are included in the Fishery Management Plan for Coastal Pelagic Species, all of which have a wide distribution throughout California. The managed species that are most likely to occur at the

project location are northern anchovy, chub mackerel, and Pacific sardine. (Commander Navy Region Southwest, 2002)

The Groundfish EFH includes surface waters and benthos, encompassing all waters from the mean higher high water line and the upriver extent of saltwater intrusion in river mouths seaward to the 200-mile boundary. Species that could possibly be found at the proposed project location include California halibut and Pacific sanddab (both associated with the water column and soft bottom habitats) as well as lingcod and various rockfishes (associated with hard bottom features in nearshore coastal environments). (Commander Navy Region Southwest, 2002)

Marine Mammals and Sea Turtles

The U.S. stock of California sea lions and the California stock of Pacific harbor seals can be commonly found at haul-out sites on the mainland, on buoys, and on docks within California harbors including northern San Diego Bay. (Commander, U.S. Pacific Fleet, 2010)

The California Coastal stock of the Pacific bottlenose dolphin regularly inhabits the nearshore waters of southern California. This species regularly moves along the California coast and may transit the area since they remain close to shore (within 0.5 nautical mile). This particular stock has limited site fidelity and can be distributed anywhere between Monterey to northern Baja Mexico depending on localized abundance of prey. The Eastern Pacific stock of gray whale occurs off southern California during their annual migration between summer feeding areas in the Bering and southern Chukchi seas and winter calving areas in Baja California and mainland Mexico. While gray whales may occasionally be found within 1 nautical mile of shore during their migration periods, they are typically found further offshore. As such, gray whales would be infrequent transients through or seaward of the outer section of the region of influence. (Commander, U.S. Pacific Fleet, 2010)

Threatened and Endangered Species

None of the four marine mammal species that inhabit or regularly transit the area are listed as threatened or endangered under the ESA (Commander, U.S. Pacific Fleet, 2010). However, the green sea turtle (*Chelonia mydas*) is a federally endangered species that has been sighted in the San Diego Bay.

Green Sea Turtle. The east Pacific green turtle is a federally endangered species that has been sighted in the San Diego Bay, but beaches in the area are not considered suitable for nesting. Both adults and juveniles have been sighted, with individuals seen throughout the summer and winter at the San Diego Gas and Electric channel, South San Diego Bay, and around Coronado Bridge, near a thick stand of eelgrass. They do not breed or nest in San Diego Bay, since they need undisturbed beaches for nesting. The resident population of east Pacific green sea turtles in San Diego Bay is approximately 30 to 60 individuals, which increases to nearly 100 during peak migratory time periods. The Marine Turtle Research Program at Southwest Fisheries Science Center regularly monitors green turtles in San Diego using biological sampling, sonic tracking, and satellite telemetry (Southwest Fisheries Science Center, 2007). (Commander, U.S. Pacific Fleet, 2010)

Sea turtles are primarily herbivores (young turtles are carnivorous from hatchling until juvenile size and gradually becoming herbivorous) that graze on marine algae and grasses. Previous studies concluded that during the day, San Diego Bay turtles are located in the deeper portion of the South San Diego Bay Power Plant warm water discharge channel. At night they feed on eelgrass beds in South San Diego Bay, such as Coronado Cays (Commander, U.S. Pacific Fleet, 2010)

Birds

San Diego Bay is part of a network of Southern California bays that provide haven for a large diversity of birds due to their sheltered and nutrient-rich waters. The shallow water and shoreline provide roosting, foraging, and nesting areas for ducks, terns, shorebirds, pelicans, cormorants, gulls, herons, raptors (such as ospreys and northern harriers), and various passerines (perching birds) in the surrounding vegetation. (Commander, U.S. Pacific Fleet, 2010)

Most birds using San Diego Bay are migratory and may only use the bay as a stopover site to rest and eat before continuing their migration. Other bird species, termed summer or winter visitors, use the bay part of the year for either breeding or wintering. Species that migrate to San Diego Bay to nest are predominantly seabirds. South San Diego Bay is home to a large multi-species seabird colony annually from April through May. From late fall through the winter (November through February), the greatest numbers of waterfowl are present in the region of influence to rest and forage including ducks, geese, coots, and grebes. (Commander, U.S. Pacific Fleet, 2010)

The California brown pelican was previously listed by the USFWS as threatened and by the California Department of Fish and Game as endangered under the California ESA. However, the USFWS published the final rule to delist the Brown Pelican on 17 November 2009. The delisting went into effect on 17 December 2009. California brown pelicans are regularly observed at all coastal or bayside Navy installations in San Diego Bay including NASNI. The California brown pelican is known to fly over, and rest in, San Diego Bay. (Commander, U.S. Pacific Fleet, 2010)

Threatened and Endangered Species

Western Snowy Plover. The western snowy plover (*Charadrius alexandrius nivosus*) is a federally threatened bird species that nests in colonies on sandy beaches along the west coast of the United States and into southern Baja California. It is a small shorebird with pale gray-brown coloring above, white below, a white hind neck collar, dark lateral breast patches, forehead bar and eye patches. Its legs and bill are black. During the breeding season, the males develop a rufous crown, but the sexes are indistinguishable the remainder of the year. (Commander, U.S. Pacific Fleet, 2010)

Western snowy plovers occur on the beaches in the San Diego Bay area. Vegetation and driftwood are generally sparse or absent from plover nesting sites. Plovers may nest several times during the breeding season, which extends from March into mid-to-late September. There are usually three eggs per clutch, and the chicks hatch in approximately 27 days, leaving the nest within hours to search for food. Adults and chicks feed on terrestrial and aquatic invertebrates such as amphipods, sand hoppers, and flies. Kelp deposited on beaches provides

an abundant food source of the invertebrates that frequent these kelp piles. Mudflats are also used for foraging. (Commander, U.S. Pacific Fleet, 2010)

Its preference for nesting on sandy beaches has led to its decline along the west coast, since much of its habitat has been developed or is subject to moderate-to-heavy human use. Nesting areas can be vulnerable to trampling, especially since plover nests and chicks can be difficult to detect. (Commander, U.S. Pacific Fleet, 2010)

Predation by birds and mammals, especially ravens, crows, and red fox is the primary cause of reproductive failure for plovers. Areas where predators have been excluded from plover nesting sites have had dramatically higher nesting success than unprotected sites. Trash accumulation on the beaches can also act as an attractant to certain predators such as ravens and crows. (Commander, U.S. Pacific Fleet, 2010)

The majority (78 percent) of the coastal breeding colonies in California occur north of San Diego County from San Francisco Bay to Oxnard and the Channel Islands. An estimated 70 percent of the snowy plover population migrates in the winter, but the rest are present all year. The San Diego Bay area also serves as the over-wintering grounds for plovers from Monterey Bay and Oregon. During the nonbreeding season, plovers are often observed on the Bay-side of NASNI and along the ocean beach. (Commander, U.S. Pacific Fleet, 2010)

The San Diego Bay area now holds much of the remaining nesting grounds for snowy plovers in Southern California. Of the 174 nests in the county in 1997; approximately 37 percent were in the San Diego Bay area at several sites including NASNI. In 2001, 13 nests were located at NASNI. No critical habitat has been designated on NASNI. (Commander, U.S. Pacific Fleet, 2010)

California Least Tern. The California least tern (*Sterna antillarum browni)* is a Federal and State endangered species. It is a small tern, approximately 9 inches long with a 20-inch wingspan. Its coloring is primarily gray and white with black wingtips. They have black caps with white foreheads and their yellow beaks are tipped with black. (Commander, U.S. Pacific Fleet, 2010)

California least terns are inshore foragers and surface-feeding fish eaters. They are opportunistic in their search for prey, eating fish that are small enough to catch, including anchovies and smelt. There is some indication that piers, docks, sea walls, and other artificial structures along the shoreline may attract California least terns, as these structures act as artificial reefs for juvenile schooling fish, which terns feed upon. California least terns also frequently forage in the open waters of the ocean and San Diego Bay. The presence of eelgrass is important as habitat for several prey species of the least terns, such as northern anchovy, topsmelt, and jacksmelt. (Commander, U.S. Pacific Fleet, 2010)

Open sandy or gravelly shores with light-colored substrates, little vegetation, and nearby fishing waters are used for nesting. California least tern nests are simple depressions in the substrate either lined or unlined with shell debris. Average clutch size is about two eggs per nest, and the chicks hatch in 21 to 28 days. Another 20 days are required before fledging. During the nesting season adult terns and their young feed almost solely on small marine fish in the surface waters (top 6 feet) of the Bay, river mouths, and adjacent near-shore ocean waters. California least

terns generally will return each year to breeding sites that have been used successfully in the past. They are present in the San Diego Bay area from about mid-April to early September.

The U.S. Navy has undertaken substantial effort to mitigate for impacts and protect the endangered California least tern over the years. In 1977, California Least Terns were discovered nesting in cracks in the deteriorated asphalt of the old airfield "MAT" area at NASNI. In 1980, the U.S. Navy initiated a phased MAT repair plan at the site and formally consulted with the USFWS to address conservation of the least tern during project implementation. (Commander, U.S. Pacific Fleet, 2010)

As part of the U.S. Navy's management efforts, California least tern populations have grown on U.S. Navy lands. The number of nests at NASNI has fluctuated in the last decade, but has overall been gradually increasing. (Commander, U.S. Pacific Fleet, 2010)

Current Requirements and Practices

Adverse impacts to biological resources are governed by several Federal acts: ESA, Marine Mammal Protection Act, Migratory Bird Treaty Act, and Magnuson-Stevens Fishery Conservation and Management Act. Federal agencies are required to assess the effect of any project on threatened and endangered species under Section 7 of the ESA.

Appendix C contains a synopsis of laws, rules, and regulations that provide guidance to avoid or minimize impacts to biological resources.

3.3.3.2 Environmental Consequences

Approach to Analysis

To complete the analysis of marine plants and wildlife in the Study Area, a systematic review of relevant literature was conducted, including scientific articles, technical reports published by Government agencies, work conducted by private businesses and consulting firms, DoD reports, operational manuals, and current and prior environmental documents for facilities and activities. The literature and other information sources cited are identified in Chapter 5.0, References.

Potential stressors to marine communities in the area that would result from the Proposed Action are limited to: (1) direct impacts to bottom-dwelling communities from materials expended during maintenance, or the accumulation of those materials; and (2) destruction of bottom habitat, partial or complete burial of bottom habitat, or detrimental effects to Federal and State species of concern or their habitats.

The analysis considered effects on ESA-listed species from:

- Noise, including sound transmission from activities within the SBX Radar Vessel during maintenance and repair activities
- Presence of SBX Radar Vessel in port
- Expended materials, including those from welding, painting, or paint-chipping

Results of Analysis

Contractors and personnel working at NASNI during the maintenance and repair period must obtain a copy of all applicable environmental guidance documents and BMPs established for NASNI (e.g., Afloat Environmental Quick Response Guide, 2009; SOPA COMNAVREGSW Instruction 5400.2, 2005). Divers should follow California standards for commercial diving operations.

Marine Vegetation

There are no known eelgrass beds within the water boundary of the NASNI. No effects to any vegetation from the shadow of the vessel are expected during its temporary stay at NASNI. The SBX Radar Vessel would implement the BMPs discussed in Chapter 2.0 that would incorporate marine pollution control devices such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices. Pollutant concentration amounts released from underwater welding are infrequent and in small quantities and are not estimated/analyzed (U.S. Environmental Protection Agency, 1999). Mooring the SBX Radar Vessel would cause temporary siltation/sedimentation that could result in short-term impacts to marine vegetation; however, no significant long-term adverse impacts are anticipated.

Marine Invertebrates

The SBX Radar Vessel would implement the BMPs discussed in Chapter 2.0 that would incorporate marine pollution control devices such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices. Mooring the SBX Radar Vessel would cause temporary siltation/sedimentation that could result in short-term impacts to marine invertebrates, especially to less mobile species. No significant long-term adverse impacts are anticipated to marine invertebrates.

Fish

Activities associated with maintenance and repair of the SBX Radar Vessel would not involve renovations of existing infrastructure. No construction would occur.

Intake of water from and discharge to San Diego Bay for the vessel's cooling system while in port is not anticipated to impact fish in the harbor as discussed in Section 3.2.3.2. The discharged water is considered clean because it would be recirculated from the Bay and no contaminants are added to the pumped water as part of the heat exchange process. The SBX Radar Vessel would incorporate marine pollution control BMPs (Table 2-4) such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices. No significant long-term adverse impacts are anticipated to regional fish.

Pollutant concentrations from underwater welding are released infrequently and in small quantities and are not estimated/analyzed (U.S. Environmental Protection Agency, 1999). As noted in the Phase I Final Rule and Technical Development Document of the UNDS, metals from the underwater welding operation (may contain chromium, iron, nickel, beryllium, manganese, and trace quantities of other metals) will not be readily dissolved in the surrounding waters and will fall to the harbor floor (U.S. Environmental Protection Agency, 1999; 2003). No significant long-term adverse impacts are anticipated to regional fish.

Threatened and Endangered Species

No threatened or endangered fish species have been identified in San Diego Bay (Commander, U.S. Pacific Fleet, 2010).

Essential Fish Habitat

Since the SBX Radar Vessel would incorporate marine pollution control BMPs (Table 2-4) such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices for discharge incidental to the normal operation of Armed Forces' vessels in accordance with the Clean Water Act, no significant long-term adverse impacts are anticipated to the waters and substrate to fish for spawning, breeding, feeding or growth to maturity. Welding slag materials quickly sink to the bottom, and present little to no ingestion hazard. Activities associated with maintenance and repair of the SBX Radar Vessel would not involve renovations of existing infrastructure. No impacts to EFH from SBX Radar Vessel noise and lighting are anticipated. Concurrent with this EA, MDA submitted an Essential Fish Habitat Assessment, which determined that based on the temporary time the SBX Radar Vessel would be at NASNI (about three months); the scope of anticipated repair and maintenance activities; and the required implementation of BMPs, the Proposed Action is not expected to degrade water quality or decrease or substantially alter prey species abundance or affect other EFH features. The nature of the action precludes impacts to EFH and the nearshore and tidal environment.

Marine Mammals

The SBX Radar Vessel would incorporate marine pollution control BMPs (Table 2-4) such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices; thus, no significant long-term adverse impacts are anticipated to area marine mammals.

Threatened and Endangered Species

The green sea turtle has no natural predators in San Diego Bay. Mortalities tend to be caused by various natural and human induced causes including collisions with boats or ships (Commander, U.S. Pacific Fleet, 2010). Collisions with the SBX Radar Vessel are unlikely since it is slow moving and sea turtles should be able to avoid it. During the proposed maintenance and repair activities, the vessel would be moored. Noise from the maintenance and repair activities is not expected to significantly impact the green sea turtles since they are acclimated to underwater maintenance activities from the carriers and other vessels normally moored at the proposed site, as well as noise from recreational vessels.

Seabirds

Since the SBX Radar Vessel would incorporate marine pollution control devices such as keeping decks clear of debris, cleaning spills and residues, and engaging in spill and pollution prevention practices, no significant long-term adverse impacts are anticipated to seabirds.

Military readiness activities are exempt from the take prohibitions of the MBTA provided they do not result in a significant adverse effect on the population of a migratory bird species. While individual birds may be startled by intermittent noise (welding and sandblasting), proposed maintenance and repair activities are not expected to significantly impact a population of any of

the migratory species that occur in the NASNI area and thus would be exempt from the MBTA take prohibitions.

Threatened and Endangered Species

Direct effects from maintenance and repair noise are possible, but have a low potential for occurrence given its transient nature and low overall sound level and thus are highly unlikely threats to the western snowy plover or California least tern. Noise associated with maintenance and repair activities is not expected to impact these species.

Based on the high mobility of the California least tern and western snowy plover and the static nature of the SBX Radar Vessel while in port, the probability of collisions is low. Direct collisions with vessels or a vessel's rigging could result in injury or mortality, but are unlikely based on the typical flight movements of these listed birds. Personnel would be instructed on the avoidance of plover nests. Therefore, the presence of the SBX Radar Vessel is not expected to significantly impact threatened or endangered birds at NASNI.

Critical Habitat

Based on anticipated repair and maintenance activities of the SBX Radar Vessel and the implementation of BMPs, none of the activities are expected to substantially change water quality conditions sufficiently to degrade existing water quality conditions; decrease or substantially alter prey species abundance sufficiently to adversely impact ESA-listed individuals or populations; or create barriers that would prevent or impede ESA-listed species passage through the critical habitat. Therefore, in accordance with ESA provisions to assess potential effects of proposed actions to critical habitat, it is concluded that repair and maintenance activities would not destroy or adversely modify critical habitat in the region.

3.3.3.3 Mitigation Measures

Impacts to biological resources resulting from painting, outside welding, sanding, and plasma cutting would be below thresholds that could result in long-term degradation of water resources or affect water quality at the potential location. BMPs listed in Table 2-4 would be implemented; therefore, no additional mitigation measures would be needed to protect vegetative or wildlife species.

3.3.3.4 Summary of Effects

The presence of the SBX Radar Vessel is not expected to significantly impact biological resources, including threatened or endangered species in the vicinity of NASNI. None of the activities are expected to substantially change water quality conditions sufficiently to degrade existing water quality conditions or decrease or substantially alter prey species abundance sufficiently to adversely impact ESA-listed individuals or populations.

3.3.4 HAZARDOUS MATERIALS AND HAZARDOUS WASTE

3.3.4.1 Affected Environment

Existing Conditions

Existing conditions for hazardous materials and waste are related to activities onboard the SBX. Significant quantities of oil and fuel are onboard when the SBX Radar Vessel comes into port, including:

- SBX Radar Vessel has a fuel capacity of 1.88 million gallons of diesel fuel
- Diesel fuel tanks (fuel oil, lube oil, and oily waste tanks that overflow through their vent lines) have a 42-gallon capacity catch basin on the deck beneath the vent
- Lubricating oils
- Hydraulic fluids
- Galley grease or cooking oils
- Waste oil from machinery rooms
- Fuel and lube oil purifying rooms
- Paint locker
- Hazardous material storage

The batteries used in the UPS systems onboard the SBX Radar Vessel are non-lead acid sealed-type batteries. There are four tanks associated with the sewage handling system, which discharges overboard through the wet deck. While in port, the sewage handling system would be connected to shore utilities. R22 is used as a coolant for equipment onboard the SBX Radar Vessel. The system includes two large capacity R22 compressors holding a total of 2,600 pounds of liquid R22. CO_2 flooding systems are installed adjacent to both main machinery spaces, both fuel oil pump rooms and the emergency diesel generator space. There is no asbestos-containing material or lead-based paint on the SBX Radar Vessel (Boeing, 2009).

All consumable hazardous materials are stored in the manufacturer's approved containers or repackaged into manageable containers and properly labeled. The SBX Radar Vessel has two hazardous materials flammable storage spaces and one paint storage space, each with installed fire detectors, installed CO_2 flooding systems, bracketed shelving, and weather deck access.

Current Requirements and Practices

To protect habitat and people from inadvertent and potentially harmful release of hazardous materials, hazardous material use, storage, and disposal would be managed in adherence with the NASNI's *SPCC Plan* and *Hazardous Waste Management Plan*. These plans in addition to established legislation (e.g., Comprehensive Environmental Response, Compensation, and Liability Act and Resource Conservation and Recovery Act) effectively form a "safety net" intended to protect the ecosystems on which most living organisms depend.

Boeing, the SBX management company, has developed procedures which address the following on board the SBX Radar Vessel:

- Permitting for hot welding, cutting, and soldering ensures appropriate safety precautions, such as necessary fire watches, are in place before welding operations involving fixed structures begin.
- Use and disposal of hazardous materials and painting supplies.
- Fire Fighting Plan, subject to Boeing review and approval, which includes specific assignments for the crew and all embarked personnel. In accordance with USCG regulation 46 CFR 109.213, the fire fighting procedure is exercised and records are kept for audit by Boeing and ABS recertification inspectors.
- Verification of the proper operation of dynamic positioning equipment prior to underway refueling operations.
- A bunkering and transfer plan for bulk flammable liquids that includes:
  - Smoking lamp extinguished and all hot work and grinding cease.
  - Voice communications among the bunking barge pump station, the main deck bunkering manifold and the fuel oil control station within the vessel.
  - Establishing a spill containment area on the vessel main deck in case of a spill.
  - In port—deployment of a spill containment boom.

The COMNAVREGSW *Afloat Environmental Quick Response Guide,* as well as letter correspondence incorporated by reference, further specifies hazardous materials management for vessels in San Diego Bay. The contractor hired to perform the SBX Radar Vessel maintenance would act in a manner consistent with these instructions.

3.3.4.2 Environmental Consequences

Approach to Analysis

In order to determine the hazardous materials and waste impacts of the maintenance and repair of the SBX Radar Vessel, site personnel were interviewed and documents were reviewed.

Results of Analysis

The maintenance and repair of the SBX Radar Vessel would use hazardous material and would generate hazardous wastes that are common to maintenance activities. Hazardous materials may include diesel fuel, anti-freeze, hydraulic fluid, lubricating oils, and coating systems. Hazardous waste would include solvent soaked rags, paint chips, dust fines, paint waste, and blast track residual (steel grit, paint chips, dust fines). Table 3.3.4-1 shows estimated hazardous material use and hazardous waste generation.

Table 3.3.4-1. Hazardous Materials and Waste Estimate, SBX Radar Vessel Maintenance and Repair

Materials	Quantity
Paint	1,500 gallons
Solvent	330 gallons
Diesel Fuel	1.4 million gallons (80% of tank capacity)
Waste (for disposal)	**Quantity**
Solvent Soaked Rags	17 drums
Paint Chips	2 drums
Dust Fines	3 drums
Paint Waste	3 drums
Blast Track residual (steel grit, paint chips, dust fines)	4 drums
Waste Petroleum product from thruster work	20 gallons

Note: Drum quantity = 55 gallons

The contractor hired to perform the SBX Radar Vessel maintenance would become responsible for the proper disposal of the hazardous waste generated from repairs. Waste disposal would be conducted in accordance with the installation's *Hazardous Waste Management Plan* and applicable Federal, State, and local regulations, resulting in no adverse impacts. NASNI personnel would be on site during vessel maintenance on a regular basis and would ensure compliance with hazardous materials and waste management regulations.

3.3.4.3 Mitigation Measures

There are no mitigation measures.

3.3.4.4 Summary of Effects

Hazardous materials and waste management would be performed in accordance with standard construction management procedures as well as applicable Federal, State, and local regulations. With the implementation of the procedures discussed above, significant impacts to the environment are not expected from the proper handling of large quantities of petroleum products, hazardous materials, or wastes during the maintenance and repair of the SBX Radar Vessel. Hazardous substance release to the environment shall be minimized by following the best management practices listed in Table 2-4 and following the instructions in the COMNAVREGSW "Afloat Environmental Quick Response Guide."

3.3.5 NOISE

This section describes existing noise conditions and potential effects on the human terrestrial environment associated with the Proposed Action. The primary noise concerns at NASNI are the onboard generator and ship equipment noise and the close proximity of the project site to residential areas. The potential impacts of noise on marine biological resources are addressed in the Section 3.3.3, Biological Resources.

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although exposure to very high noise levels can cause hearing loss, the principal human response to noise is annoyance.

Noise measurements assessed relative to human exposure are usually expressed using an "A-weighted" scale that filters out very low and very high frequencies in order to replicate human sensitivities. Human hearing ranges from approximately 20 dBA (the threshold of hearing) to 120 dBA (the threshold of pain). Sound levels of typical noise sources and environments are presented in Table D-3.

Because noise levels vary widely during the day, they are commonly averaged over a period of time. The term DNL, is used to describe the average noise level during a 24-hour day with a penalty of 10 dBA added to nighttime sound levels (10:00 p.m. to 7:00 a.m.). The CNEL adds a 5 dBA penalty for noise events that occur in the evenings (7:00 p.m. to 10:00 p.m.), as well as a 10 dBA penalty for noise events at night (10:00 p.m. to 7:00 a.m.). DNL and CNEL are often used as the basis for land use compatibility guidelines. Shorter measurement durations (typically 1 hour) are described as L_{eq}, indicating the total energy contained by the sound over a given sample period.

3.3.5.1 Affected Environment

Existing Conditions

The SBX Radar Vessel maintenance and repair project would be located at Pier P or N, at the northeast side of NASNI in an industrial setting. The principal on-site sources of noise are typical of Navy installations including aircraft operations; truck and automobile traffic, and operations involving ship-loading cranes, diesel-powered equipment, and compressors. The San Diego International Airport is located 5 miles north of the project site and the center point of the NASNI runway is approximately 2.5 miles west from the project site.

Noise sensitive receptors are defined as existing land uses associated with indoor or outdoor activities that may be subject to significant interference from noise. Sensitive receptors are shown on Figure 3.3.5-1 and include residential, hospitals, educational facilities, sensitive biological species, and public parks. Bay View Park is the closest public park to the project site. The closest residential neighborhood, near the intersection of Alameda Blvd and First Street in Coronado, is approximately 600 feet east of Pier P. Noise from military aircraft is audible in this neighborhood; however, it is outside the 65 CNEL contour associated with the NASNI's airport noise (U.S. Department of the Navy, 1984). A variety of other on-base activities and traffic are audible.

Existing ambient traffic-related noise levels for the city of Coronado were measured for the *Supplemental Environmental Impact Statement EIS for Developing Homeport Facilities for 3 Nimitz-Class Aircraft Carriers in Support of US Pacific Fleet*, 2008. The measurement locations corresponded mainly to the residences adjacent to Third Street and Fourth Street, and several parks in the residential neighborhood. Noise levels in these areas were dominated by vehicle traffic along nearby roads rather than any noise generated on NASNI. The measured existing peak noise levels at the residences along main traffic routes range from 66 dBA to 78 dBA. These peak noise levels are considered typical for areas ranging from a busy daytime urban area to a typical commercial area (U.S. Department of the Navy, 2008).

EXPLANATION

Orientation 1

- SBX Stern
- DNL Measurement (Long-Term)
- dBA Measurement (Short-Term)
- SBX Radar Vessel Audible Noise

Orientation 2

- SBX Stern
- DNL Measurement (Long-Term)
- dBA Measurement (Short-Term)
- SBX Radar Vessel Audible Noise

NORTH

0 500 1,000 2,000 Feet

Naval Air Station North Island, Pier P Option, with SBX Radar Vessel Audible Noise Overlay and Sensitive Receptors

Coronado, California

Figure 3.3.5-1

NASNI ambient noise levels were measured in 2008 during the quaywall repair project. The project area was similar to the Proposed Action site, i.e., located along the length of NASNI's Pier, from Pier L to its end at the property line with the city of Coronado. Ambient sound levels were measured late at night with no work in progress. Sound levels utilized an Extech Digital Sound Level Meter Model 407730. Readings were taken at 500-foot increments and at the property line over a 5-minute interval at each location with the meter set to record and hold the maximum value. A level filter was enabled. Table 3.3.5-1 provides the results of the 2008 measurements. As shown on the table, the maximum ambient noise levels measured late at night at the property boundary with the city of Coronado were 61.5, 60.2, and 59.9 dBA.

Table 3.3.5-1. Nighttime Ambient Sound Levels, Base Operations, No Work in Progress, NASNI

Date, Timeframe	Location- Station	Max Noise Level in dBA
23 July 2008 0005–0049 hours	17+	63.5
	22+	66.5
	27+	65
	33+	78 (Chopper flying close to project site)
	33+ End of pier/property line with City of Coronado	61.5
23 July 2008 0307–0336 hours	17+	65.6
	22+	74.5 (Birds)
	27+	58
	33+ End of pier/property line with City of Coronado	60.2
28 August 2008 2300–2330 hours	17+	66.2
	22+	69.0
	27+	66.7
	33+ End of pier/property line with City of Coronado	59.9

Source: Department of Navy, 2010

Current Requirements and Practices

Sound analysis at military installations follows the procedures outlined in the following documents:

- *Chief of Naval Operations Instruction 5090.1* contains guidance for considering time-averaged community sound levels in environmental evaluations (Department of the Navy, 2007).
- Chapter 17, *Noise Prevention Ashore*, contains guidance for sound control and abatement of Navy shore activities.
- *Planning in the Noise Environment* (Department of Defense, 1978) provides compatibility criteria for various land uses. Separate evaluation criteria apply to impulsive sound events.

- The U.S. Army Public Health Command has also developed DoD guidance for military operational noise, including *Operational Noise Manual: An Orientation for Department of Defense Facilities* (U.S. Department of the Army, 2005).

Sound standards for land use compatibility established by DoD and civilian jurisdictions are expressed in terms of the DNL or CNEL. Based on numerous sociological surveys and recommendations of Federal interagency councils, the most common benchmark for assessing environmental sound impacts is a CNEL of 65 dBA (DNL is normally within 1 dB of CNEL using the same 24-hour data). Sound levels up to 65 dBA CNEL are considered to be compatible with land uses such as residences, transient lodging, and medical facilities. Appropriate sound mitigation is recommended for new development in areas where the CNEL exceeds 65 dBA. A sound level of 75 dBA CNEL is a threshold above which individuals in the community may experience annoyance and minor health effects.

Many agencies, including the DoD, have adopted a DNL of 65 dBA as a criterion that still protects those most impacted by noise. In general, residential land uses are not compatible with an outdoor DNL above 65 dBA, and the extent of land areas and populations exposed to a DNL of 65 dBA or higher provides one of the means for assessing and comparing the noise impacts of proposed actions. See Appendix C for details.

The City of Coronado has established a noise ordinance addressing construction-related noise. In accordance with *Title 41: Noise Abatement and Control Regulation, Chapter 41.10: Limits, Section 41.10.050: Construction Noise Limits*, the maximum allowable construction noise is an average sound level no greater than 75 dB during a 1-hour period any time between the hours of 7:00 a.m. to 7:00 p.m.

See Appendix C for more details of the current requirements and practices listed above.

3.3.5.2 Environmental Consequences

Approach to Analysis

To assess the potential impacts of noise from the SBX Radar Vessel's onboard generators, a technical study, *SBX Radar Vessel Noise Assessment In Port at Pearl Harbor, Hawaii* (ManTech, 2010b), was prepared for this EA. The results of the sound levels collected in Hawaii are presented in Appendix D, Section D.2. The entire report is provided in Appendix G.

The goal of the Hawaii study was to determine the general overlay of sound from the SBX Radar Vessel that could be placed on alternate locations. Sound levels from shipboard generators as well as sound levels from typical shipyard maintenance activity were overlaid onto the existing environment in San Diego and compared to sound standards for land use compatibility established by DoD and other governmental agencies discussed above.

Results of Analysis

Shipboard Diesel Generators

Noise levels from the 24-hour per day use of two shipboard diesel generators will be constant over the approximately 3-month project period. The *SBX Radar Vessel Noise Assessment* showed that beyond a measured distance of 2,750 feet from the stern, the sounds from the SBX

Radar Vessel (56.8 dBA) were not audible above the ambient noise environment during data collection periods, which in Hawaii was between 51.2 and 51.6 dBA. Likewise, beyond a measured distance of 1,000 feet from the bow, the sounds from the SBX Radar Vessel platform (52.2 dBA) were not audible above ambient.

The DNL sound level at 1,800 feet from the stern of the SBX Radar Vessel (closest data collection point in Hawaii for long-term measurements) is averaged at 62.6 DNL (ManTech, 2010b). The 62.6 DNL is within the standard that DoD has adopted (DNL of 65 dBA) as a criterion that still protects those most impacted by noise. In general, residential land uses are not compatible with an outdoor DNL above 65 dBA. The 62.6 DNL is also in the range of low risk of complaints from the public (see Appendix D, Figure D-2).

The data collected in Hawaii were overlain onto the NASNI project site in order to see the equivalent noise levels at the sensitive noise receptors (residences and public parks) in the city of Coronado. The potential audible noise levels of the SBX Radar Vessel at NASNI are identified in Figures 3.3.5-1 and 3.3.5-2. These are estimates and a wide variety of environmental factors could affect the actual received sound levels. Figure 3.3.5-1 shows the noise overlay with the vessel moored at Pier P. Figure 3.3.5-2 shows the noise overlay with the vessel moored at Pier N.

As stated in Appendix D, consideration must be given to the directional characteristics of the noise from the diesel generators. The noise is louder and propagates further along the exhaust axis. Figure 3.3.5-1 and Figure 3.3.5-2 show the audible noise levels of the shipboard diesel generators. "Orientation 1" and "Orientation 2" are provided on each figure to illustrate the difference in the noise exposure when the SBX Radar Vessel is turned around in port.

Pier P Option: As stated above, the closest residential neighborhood to the Proposed Action (Alameda Blvd and First Street in Coronado) is approximately 600 feet east of Pier P. The maximum audible noise exposure to this neighborhood would be Orientation 2: the noise level 500 feet east of the vessel would be 66.3 dBA, and the noise level at 725 feet east of the vessel would be 60.1 dBA. The ambient noise environment at the base boundary was measured between 59.9 and 61.5 dBA at night (Department of Navy, 2010). If the received sound level at the closest neighborhood is conservatively estimated at 63 dBA, this could be perceived by the neighbors as twice as loud as ambient nighttime environment (noise levels are typically *perceived* by receptors as doubling every 3 dBA*).* Orientation 1, by turning exhaust axis away from the nearby neighborhood, would reduce the noise: the received sound level at 500 feet east of the vessel would be 57.5 dBA.

The maximum audible noise exposures (Orientation 2) from the shipboard generators at Bay View Park would be between 56.1 and 60.1 dBA assuming Bay View Park is approximately 1,030 feet from Pier P. The ambient noise environment is on average 60 dBA at night close to that location, at the base boundary. The vessel will not be audible above ambient conditions at the Park. If the exhaust axis of the shipboard generators would be oriented away from Bay View Park (Orientation 1), the maximum audible noise in Bay View Park would be reduced to 52 dBA.

EXPLANATION

Orientation 1

- SBX Stern
- DNL Measurement (Long-Term)
- dBA Measurement (Short-Term)
- SBX Radar Vessel Audible Noise

Orientation 2

- SBX Stern
- DNL Measurement (Long-Term)
- dBA Measurement (Short-Term)
- SBX Radar Vessel Audible Noise

NORTH

0 500 1,000 2,000 Feet

Naval Air Station North Island, Pier N Option, with SBX Radar Vessel Audible Noise Overlay and Sensitive Receptors

Coronado, California

Figure 3.3.5-2

Pier N Option: If the SBX Radar Vessel is moored at Pier N, it would be approximately 1,380 feet from the intersection of Alameda Boulevard and First Street. Mooring at Pier N would allow for less of the noise from the vessel being heard from the intersection of Alameda Boulevard and First Street than if it was moored at Pier P. Figure 3.3.5-2 illustrates the Pier N Option, with both orientations, and shows that maximum audible noise exposures (Orientation 2) in the neighborhood from the SBX Radar Vessel would be 56.1 dBA. If the exhaust axis would be oriented away from the residential neighborhoods (Orientation 1), the estimated noise level in the nearby neighborhood would be estimated at 52.6 dBA. Therefore, mooring at Pier N would reduce the impact on the noise environment for the residential area closest to Alameda Boulevard and First Street.

The maximum audible noise exposures (Orientation 2) at Bay View Park would be 56 dBA, assuming Bay View Park is approximately 2,100 feet from Pier N. The ambient noise environment is on average 60 dBA at night close to that location, at the base boundary. The vessel will not be audible above ambient conditions. If the exhaust axis of the shipboard generators would be oriented away from Bay View Park (Orientation 1) the estimated noise level at Bay View Park would be an estimated 53 dBA, and the sounds from the generator exhaust would not be audible above ambient.

Mooring at Pier N rather than at Pier P would reduce the level of noise in the nearby residential neighborhood. However, NASNI determines berthing locations based on carrier in port schedules.

Shipyard Equipment

A variety of noise generating equipment would be used—such those listed in Chapter 2, Table 2-3—all of which would create temporary impulse noise. Noise levels from point sources such as these typically attenuate at a rate of about 6 dBA per doubling of distance. Table 3.3.5-3 shows the peak noise level of the equipment used for the Proposed Action. Based on these noise levels, the noise levels from the operation of shipyard equipment are below the 75 dBA threshold within NASNI property limits.

Table 3.3.5-3. Typical Noise Levels for Common Shipyard Equipment

Source	Peak Noise level (dBA)	Distance from Source						
		100 feet	200 feet	500 feet	1,000 feet	2,000 feet	2,640 feet (0.5 mile)	5,280 feet (1 mile)
Portable or Standby Generators	96	86	80	72	66	60	58	52
Crane	90	80	74	66	60	54	52	46
Deck Grinding Units	86	76	70	62	56	50	48	42
Loud Speaker	97.2	87	81	73	67	61	59	53

Source: Golden et al., 1980; Occupational Safety and Health Administration, 2003; ManTech, 2010b; Noise Control Engineering, 2010.

Sound levels were also collected from deck grinding activities as part of the *SBX Radar Vessel Noise Assessment in Hawaii* (ManTech, 2010b*)*. The results are provided in Appendix D and are as follows:

- 300 feet south of the vessel (ST2), perpendicular to the moored position and directly in line of sight of the deck grinding activity, the received levels of the deck grinding were between 67 and 72 dBA.
- 350 feet southwest of the vessel (ST3), approximately 45 degrees off the stern of the vessel, the received levels of the deck grinding were between 62 and 68 dBA.
- 800 feet southwest of the vessel (ST4), approximately in line with the position at the dock, the received levels of the deck grinding were between 56 and 58 dBA. At this location, the noise associated with the deck grinding was only marginally above the Hawaiian ambient levels recorded at the site.

From Pier P, residences are about 600 feet east of the source of noise. At 600 feet distance (worst case), deck grinding activity sound levels would be attenuated to approximately 58 dBA, well below the 1-hour average 75 dBA limit for construction noise levels at the city boundary (City of Coronado Noise Abatement and Control Ordinance, Title 41, section 41.10.050). Therefore, only areas within a few hundred feet of the project site would be expected to be exposed to unacceptable noise levels. The shipyard equipment would have a less than significant adverse impact on residents of Coronado because of the brevity of the maintenance sounds generated at the SBX Radar Vessel mooring site. The influence of the shipyard equipment noise on the community will be minimized by scheduling any work done after 7:00 p.m. to be inside the vessel.

Loudspeaker Noise

One of the repairs to the SBX while in port will be to optimize the platform public address system for external areas. The system has to be audible in topside areas where high levels of noise occur when the vessel is underway. MDA conducted a survey to determine how loud the upgraded public address system had to be. The maximum noise level on the topside area was 97.2 dBA while the SBX was at sea, all systems running (Noise Control Engineering, 2010). The system would be tested at 97.2 dBA at peak level. Data from the survey was extrapolated in Table 3.2.5-1 to show that at a distance of 0.5 mile, the sound level would be 59 dBA, an insignificant impact on surrounding residential areas. As a precaution, the testing will be conducted during the daytime.

Traffic-related Noise

The temporary increase in personnel may increase vehicles and traffic noise temporarily. The shipyard workers will be onsite 6 days a week, from 5:30 a.m. until 10:00 p.m., for 2 to 3 months, with a work shift change expected to be twice per day, approximately 8 hours apart. A total of 224 shipyard workers would be commuting (83 on board the vessel are not counted in the commute), which means the average trips per shift (arrivals and departures) would be 112 workers.

Shipyard workers commute is the source of additional noise. Traffic-related noise in the vicinity of NASNI is an ongoing issue in Coronado, California. Currently, the NASNI generates thousands of inbound and outbound vehicle trips per day. The additional commutes that result from the Proposed Action traffic-related noise would occur at shift changes, which are 5:30 a.m., 1:30 p.m., and 10:00 p.m. This does not coincide with current NASNI traffic, which peaks between 6:15 a.m. and 7:15 a.m., and 2:30 p.m. and 3:30 p.m. However, any consolidation of workforce would be encouraged to lessen traffic-related noise.

Wind Speed

Wind speed may impact the sound heard from the Proposed Action. Higher wind speed is highly correlated to elevated hourly L_{eq} values. As shown in the wind rose provided in the Air Quality Section, Figure 3.3.5-1, the winds in San Diego are predominately from the northwest at an average of 8 miles per hour. The wind speeds during *the Noise Assessment of the SBX Radar Vessel in Hawaii* averaged 13 miles per hour. Therefore, it is assumed that a worst case impact of wind on sound levels was well captured in the Hawaii environment (ManTech, 2010b).

3.3.5.3 Mitigation Measures

Because noise impact will affect residential areas, mitigation is recommended. Alternate alignments of the SBX Radar Vessel would reduce the noise levels produced by the Proposed Action. As a means of reducing the short-term noise impact from the two diesel generators, alignment of the generators' exhaust away from residences would provide the greatest buffering of the noise-sensitive receptors.

3.3.5.4 Summary of Effects

The proximity of the vessel to off-base sensitive noise receptors and alternate alignment of the SBX Radar Vessel while in port can have a major impact on noise exposure. The potential noise from the Proposed Action would not significantly alter the ambient noise environment in the city of Coronado if moored in either orientation at Pier N. There would be effects to the noise environment from the shipboard generators if moored in Orientation 2 at Pier P. Alignment of the generators' exhaust away from residences (Orientation 1) would mitigate this impact. Shipyard equipment noise would be below the City of Coronado's construction noise ordinance within NASNI property limits. The shipyard equipment noise will be minimized by scheduling any work done after 7:00 p.m. to be inside the vessel. Because of the low number of added vehicle trips proposed and their temporary nature, there would be no significant noise impact due to increased traffic.

3.3.6 SOCIOECONOMICS

This section describes existing socioeconomic conditions and potential effects associated with the Proposed Action. Socioeconomics includes an evaluation of the basic attributes and resources associated with the human environment, particularly population, and economic activity. Economic activity encompasses employment, personal income, and industrial growth. Impacts on these fundamental socioeconomic components influence other issues such as housing availability and provision of public services.

3.3.6.1 Affected Environment

The socioeconomics environment potentially affected by the Proposed Action extends to the city of Coronado and the city of San Diego. NASNI lies within the county of San Diego as well as within the city of Coronado.

Existing Conditions

The city of Coronado is in San Diego County, California and is a resort and residential city. The total population was 24,100 at the 2000 census and 23,307 at 2006-2008 in the 3-year estimation report (U.S. Census Bureau, 2000b: 2006-2008b. NASNI is located adjacent to Coronado on the northern section of Coronado Island.

The city of San Diego is in San Diego County, California. The total population was 1,223,400 at the 2000 census and was estimated at 1,251,184 in the 2006-2008 3-year estimation report (U.S. Census Bureau, 2000b: 2006-2008b).

Local Economy

The Naval Base Coronado employs over 36,000 military and civilian personnel and is considered the largest workforce in San Diego County (U.S. Department of the Navy 2008).

City of Coronado

Downtown Coronado boasts unique shops and many restaurants serving residents and visitors. Coronado's award-winning beach was recently ranked second best in the country by the Travel Channel. U.S. News and World Report lists Coronado as one of the most expensive places to reside in the United States. Tourism is an essential component of Coronado's economy. The city is home to three major resorts (Hotel Del Coronado, Coronado Island Marriott, and Loews Coronado Bay Resort) as well as several other hotels and inns (Coronado Island Adventure, 2010). Businesses based in Coronado include Benetrends and Cybernetics Leadership Center.

City of San Diego

San Diego's economy, once dominated by military and defense endeavors (now the city's second largest economic sector) is led by manufacturing, particularly in the areas of shipbuilding and repair, industrial machinery and computers, metals production, and the manufacture of toys and sporting goods. In 2002, manufacturing contributed $25 billion to the county's economy. International trade is an important part of San Diego's economy, accounting for 37 percent of its manufacturing dollars. In 2001, goods moving through San Diego customs totaled $33.6 billion. The border between the San Diego area and Tijuana is the busiest in the world. (San Diego Economy, 2009)

Since the founding of San Diego, the city's economy has been tied to San Diego Bay, a natural harbor which today is one of California's five major ports. It is an important link in the nation's international shipping trade; the port's two marine cargo facilities are the National City Marine Terminal, which is a primary port of entry for Honda, Acura, Volkswagen, Isuzu, Mitsubishi Fuso, and Hino Motors vehicles; and Tenth Avenue Marine Terminal, which handles a wide variety of commodities. The port also has a growing cruise ship operation, with more than 180 cruise ships docking annually. (San Diego Economy, 2009)

San Diego's harbor has had the most significant impact on the local economy. San Diego Bay is the Navy's principal location for West Coast and Pacific Ocean operations. Increases in military and homeland defense spending during the early 2000s have contributed to economic growth in San Diego. The military/defense industry is the city's second largest economic sector, bringing more than $13 billion into the local economy annually. The Marine Corps Base Camp Joseph H. Pendleton, the Marine Corps Recruit Depot, Marine Corps Air Station at Miramar, NASNI, Naval Station San Diego, and Naval Submarine Base, San Diego, are among San Diego's military installations. (San Diego Economy, 2009)

Housing

City of Coronado

In 2000 there were 9,494 total housing units in the city of Coronado, and of those units 3,987 were owner-occupied, 3,987 were renter-occupied and 1,760 were vacant. In 2000 a single-family owner-occupied home had a median dollar value of $683,400. In 2006-2008 the U.S. Census Bureau estimated the total number of housing units available in the city of Coronado were 9,412, with 3,962 owner-occupied, 3,705 renter-occupied, and 1,775 vacant. In 2006-2008 a single-family owner-occupied home had a median dollar value of $1 million or more. Table 3.3.6-1 provides the 2000 and 2006-2008 housing characteristics for the city of Coronado.

Table 3.3.6-1. Housing Characteristics for the City of Coronado in 2000 and 2006-2008

Housing Characteristics	2000	2006-2008	Percent Change
Owner-occupied	3,987	3,962	0.62% decrease
Renter-occupied	3,742	3,705	0.99% decrease
Vacant	1,760	1,745	0.85% decrease
Total Units	9,494	9,412	0.86% decrease
Median Dollar Value	$683,400	$1,000,000+	31.7% increase

Source: U.S. Census Bureau, 2000b; 2006-2008b

City of San Diego

In 2000 there were 469,689 total housing units in the city of San Diego, and of those units, 223,280 were owner-occupied, 227,411 were renter-occupied, and 18,988 were vacant. In 2000 a single-family owner-occupied home had a median dollar value of $469,689. In 2006-2008 the U.S. Census Bureau estimated that the total number of housing units available were 503,941, with 232,204 owner-occupied, 232,360 renter-occupied, and 39,377 vacant. In 2006-2008 a single-family owner-occupied home had a median dollar value of $550,300. Table 3.3.6-2 provides the 2000 and 2006-2008 housing characteristics for the city of San Diego.

Table 3.3.6-2. Housing Characteristics for the City of San Diego in 2000 and 2003-2008

Housing Characteristics	2000	2006-2008	Percent Change
Owner-occupied	223,280	232,204	3.9% decrease
Renter-occupied	227,411	232,360	2.2% increase
Vacant	18,988	39,377	107% increase
Total Units	469,689	503,941	7.3% increase
Median Dollar Value	$233,100	$550,300	136% increase

Source: U.S. Census Bureau, 2000b; 2006-2008b

Schools

City of Coronado

The Coronado Unified School District manages five schools in the city of Coronado with 3,037 students. The five schools are Coronado High School, Palm Academy, Coronado Middle School, Strand Elementary, and Village Elementary. There is a locally elected five member Board of Education; the superintendent is employed by the Board. (Coronado Unified School District, 2008-2009)

City of San Diego

The San Diego Unified School District is the second largest school district in the State and eighth largest urban school district in the country. Its nonpartisan five-member board is elected every 4 years, and the superintendent is hired by the board. (San Diego Economy, 2009)

Recreation and Tourism

City of Coronado

The city of Coronado has more than 2 million visitors annually. With 15 hotels, including three world class resorts, 1,792 hotel rooms, and 71 highly acclaimed restaurants, this island community has 29,229 residents as well as a flourishing tourist population. On 15 June 2010, the City Council adopted Ordinance No. 2013 to formally establish the Coronado Tourism Improvement District. (City of Coronado, 2010)

City of San Diego

San Diego's tourism industry is the third largest segment of its economy, with more than 26 million visitors to the county bringing more than $5.6 billion in annual revenues. Service industries have seen continued growth in recent years, specifically in areas such as dining, lodging, shopping and recreation services. San Diego regularly ranks as a top-10 U.S. vacation destination for international travelers. (San Diego Economy, 2009)

Population Demographics

NASNI and neighboring communities are located in the east and northeast portion of San Diego County California. Table 3.3.6-3 provides the racial and ethnic composition for the cities, state, and nation using the 2000 census and the 2006-2008 census FactFinder.

Table 3.3.6-3. Racial and Ethnic Composition for the City, State, and Nation

Race / Ethnicity	City of Coronado		City of San Diego		California		USA	
	2000	2006/ 2008	2000	2006/ 2008	2000	2006/ 2008	2000	2006/ 2008
Population	24,100	23,307	1,223,400	1,251,184	33,873,638	36,418,499	281,421,906	
White persons (%)	84.4	89.9	60.2	67.4	59.5	60.9	75.1	74.3
Black or African American persons (%)	5.1	4.2	7.9	6.7	6.7	6.2	12.3	12.3
American Indian and Alaskan Native persons (%)	0.7	0.6	0.6	0.7	1.0	0.8	0.9	0.8
Asian persons (%)	3.7	2.2	13.6	14.7	10.9	12.3	3.6	4.4
Native Hawaiian and Pacific Islander (%)	0.3	0.2	0.5	0.4	0.3	0.4	0.1	0.15
Other race (%)	3.1	0.3	12.4	6.5	16.8	16.0	5.5	5.8
Two or more races (%)	2.6	2.6	4.8	3.6	4.7	3.4	2.4	2.18
Hispanic (%)	9.8	13.3	25.4	27.3	32.4	36.1	12.5	15.1

Sources: U.S. Census 2000b; 2006-2008b

Low-Income Populations

Table 3.3.6-4 depicts median household income and poverty levels for the cities, county, state and nation using the 2000 census and the 2006-2008 census FactFinder. In general the city of Coronado has a smaller percentage (approximately 65 percent less for 2000 and approximately 51 percent in 2006/2008)) of persons below the poverty level than the State of California and the United States. In general the city of San Diego has a greater percentage of persons below the poverty level than the State of California and the United States.

Table 3.3.6-4. Low-Income Population for the Study Area

Metrics	City of Coronado		City of San Diego		California		USA	
	2000	2006/2008	2000	2006/2008	2000	2006/2008	2000	2006/2008
Population	24,100	23,307	1,223,400	1,251,184	33,871,648	36,418,499	281,421,906	301,237,703
Median household income	$66,544	$85,461	$45,733	$63, 181	$47,493	$61, 154	$41,994	$52,175
% Persons below poverty	5.0	6.2	14.6	13.4	14.2	12.9	12.4	13.2

Source: U.S. Census 2000b, 2006-2008b

3.3.6.2 Environmental Consequences

Approach to Analysis

The socioeconomic analysis addresses the potential for MDA activities to affect, either positively or negatively, the basic attributes and resources associated with the human environment, particularly population and economic activity. This analysis investigates the potential for

activities associated with the Proposed Action to noticeably affect (either adversely or beneficially) socioeconomic activity in the public waterfront area near Pier N and Pier P and the cities of Coronado and San Diego.

Study Area

In terms of socioeconomics, relevant portions of the Study Area which the temporary mooring of the SBX Radar Vessel could potentially affect include the city of Coronado and the city of San Diego.

Source of Information

A systematic review of relevant literature was conducted to complete this analysis of socioeconomics in the potential location, including the 2000 census, the 2006-2008 census FactFinder and current and prior environmental documents. The literature and other information sources cited are identified in Chapter 5.0, References.

Result of Analysis

All 307 potential personnel associated with the Proposed Action would have a temporary presence in the Study Area. The permanent personnel and shipyard workers assigned to the SBX Vessel would only be in the area for approximately 3 months; therefore, it is not anticipated to have a direct or indirect impact on the housing characteristics, school enrollment, population demographics, roads, or infrastructure improvements for the cities of Coronado and San Diego. The Proposed Action does not include an increase in personnel stationed at NASNI. The potential for a positive impact may be had on some aspects of the local economy (e.g., restaurants, hotels, recreation, and tourism).

The Proposed Action has a contractual potential of providing $9.4 million to awardees. Based on an Economic Impact Forecasting System (EIFS) the Proposed Action would have a negligible impact on the study area. There would a 0.05 percent increase for sales, income, and employment and a 0 percent increase in population for the City of Coronado and a 0.04 percent increase for sales, income, and employment and a 0 percent increase in population for the city of San Diego. Therefore, the socioeconomic impact from the Proposed Action would not be negative, but any positive impact would be considered negligible. The outputs for the EIFS II Model are presented in Appendix F.

3.3.6.3 Mitigation Measures

Impacts to the socioeconomic characteristic are negligible, no mitigation measures are proposed.

3.3.6.4 Summary of Effects

The Proposed Action would not have a long-term effect on the socioeconomic characteristics of the city of Coronado and the city of San Diego. Short-term effects would be negligible.

3.3.7 TRANSPORTATION

This section addresses the traffic movement within the city of Coronado and NASNI, including the current status of various types of ground transportation that serve the proposed project site. Operating conditions on roadways and intersections under various traffic volume loads are described in terms of LOS. The LOS is a qualitative measure of the effect of a number of factors, including roadway geometries, speed, travel delay, freedom to maneuver, and safety. LOS provides an index to the operational qualities of a roadway segment or an intersection. LOS designations range from A to F, with LOS A representing free flowing operating conditions and LOS F representing heavy congestion and delay.

3.3.7.1 Affected Environment

Existing Conditions

City of Coronado

The 2008 Supplemental EIS traffic evaluation considered traffic generated by three CVNs homeported at NASNI, with 3,217 personnel associated with each carrier (U.S. Department of the Navy, 2008). Based on these considerations, it was concluded that direct traffic impacts associated with three CVNs have not changed significantly since they were studied in the 1999 Final Environmental Impact Statement (FEIS) (U.S. Department of the Navy, 1999). Table 3.3.7-1 and Figure 3.3.7-1 summarize baseline roadway segment daily LOS with three homeported CVNs. Roadway segment analysis was based on the comparison of Average Daily Traffic (ADT) volumes to the city's roadway classification, capacity, and LOS standards. ADT is the average number of vehicles that use a roadway segment within a 24-hour period.

Traffic Conditions on NASNI

The NASNI gates at Alameda Boulevard / Third Street and Alameda Boulevard / Fourth Street were realigned in 2007. Traffic counts taken in 2007 for the 2008 Traffic Study indicate that the traffic volume on Alameda Boulevard between Third and Fourth Streets has declined over 75 percent since the gate realignment, from 20,000 ADT to 4,542 ADT. The previous main access to NASNI was provided via Fourth Street, which turns into McCain Boulevard on the installation. The majority of the inbound traffic originates from Third Street. Inbound traffic from Third Street required a left-turn at Alameda Boulevard and a right-turn at Fourth Street to enter NASNI. For outbound traffic, the majority of the traffic continued onto Fourth Street from NASNI. The segment of Alameda Boulevard between Third Street and Fourth Street was configured for southbound one-way traffic. The Navy has finished the construction of the NASNI Base Main Gate at Stockdale Boulevard (Third Street) and McCain Boulevard (Fourth Street) and it was opened to the public on 9 July 2007. The gate serves the majority of traffic to and from NASNI, with Stockdale Boulevard processing inbound traffic and McCain Boulevard discharging outbound traffic. (U.S. Department of the Navy 2008)

Table 3.3.7-1. 2007 Baseline Conditions Roadway Segment Daily LOS Summary

Location		Daily Capacity	3 CVNs[1]	
			ADT	LOS
First St.	Alameda Blvd	8,000	7,271	E
	H Ave. to Orange Ave.	8,000	8,619	F
Third St.	Alameda Blvd. to H Ave.	30,000	18,885	C
	H Ave. to Orange Ave.	30,000	19,865	C
	Orange Ave. to Pomona Ave.	30,000	39,506	F
Fourth St.	Alameda Blvd. to H Ave.	30,000	17,224	B
	H Ave. to Orange Ave.	30,000	18,433	C
	Orange Ave. to Pomona Ave.	30,000	32,519	F
Sixth St.	H Ave. to Orange Ave.	8,000	2,131	A
Ocean Blvd.	Marina Ave. to Alameda Blvd	15,000	8,081	C
	Alameda Blvd. to Orange Ave.	15,000	10,469	D
Alameda Blvd.	First St. to Third St.	15,000	4,608	A
	Third St. to Fourth St.	15,000	5,308	B
	Fourth St. to Sixth St.	15,000	8,388	C
	Sixth St. to Tenth St.	15,000	5,678	B
	Tenth St. to Ocean Blvd.	15,000	5,390	B
Orange Ave.	First St. to Third St.	30,000	12,193	B
	Third St. to Fourth St.	40,000	24,154	C
	Fourth St. to Sixth St.	40,000	32,113	D
	Sixth St. to Tenth St.	40,000	33,022	D
	Tenth St. to R.H. Dana Pl.	40,000	28,297	C
	R.H. Dana Pl. to Pomona Ave.	40,000	35,100	E
Silver Strand Blvd. (SR-75)	Pomona Ave. to Tarawa Rd	40,000	39,053	E
	Tarawa Rd. to Tulagi Rd.	40,000	25,566	C
	Tulagi Rd. to Leyte Rd.	40,000	30,327	D
Pomona Ave	Fourth St. to Glorietta Blvd	15,000	6,155	B
	Glorietta Blvd. to Silver Strand Blvd.	15,000	12,786	D

Source: U.S. Department of the Navy, 2008

Notes: [1] CVN's without staggering: roadway segment analysis is based on 24 hour ADT and would not show the effects of staggering

EXPLANATION

- Street
- North Island Naval Air Station Boundary
- LOS A, B, or C
- LOS D
- LOS E
- LOS F
- AM / PM Signalized Intersection
- AM / PM Non-Signalized Intersection

NORTH 0 1,000 2,000 4,000 Feet

Baseline Roadway Segment Daily Level of Service (LOS)

Coronado, California

Figure 3.3.7-1

With the completion of the Main Gate, Alameda Boulevard from Third Street to Fourth Street has been converted to two-way traffic. Both the intersection of Third Street and Alameda Boulevard and the intersection of Fourth Street and Alameda Boulevard are now operating as a two-way stop-controlled intersection, with traffic along Alameda Boulevard required to stop. Traffic signals are already planned for these two intersections. On NASNI, McCain Boulevard and Stockdale Boulevard have been reconfigured to function similarly to a one-way segment from the gate to Quentin Roosevelt Boulevard. Although both McCain Boulevard and Stockdale Boulevard allow two-way traffic west of North R Avenue, the primary travel routes are McCain Boulevard for eastbound traffic and Stockdale Boulevard for westbound traffic (Table 3.3.7-2). (U.S. Department of the Navy 2008)

Table 3.3.7-2. 2007 Count for Data Entering Traffic at NASNI

GATE	ADT Entering NASNI		Average Distribution
	July 2007 Tube Counts [1]	July 2007 Manual Counts [2]	
First St (Gate 2)	3,350	2,967	16%
Third St	14,234	14,264	73%
Ocean Blvd (Gate 5)	2,424	2,319	11%
Total Entering Traffic	**20,008**	**19,550**	**100%**
Est. Total Traffic [3]	40,016	39,100	----

Source: U.S. Department of the Navy, 2008
[1] July 2007 tube counts were taken between 22 and 28 July 2007 by National Data & Surveying Services, with one CVN in port.
[2] July 2007 manual counts were taken between July 16, 2007 and July 30, 2007 by NASNI security personnel working at the gates, with one CVN in port.
[3] These are estimates of total traffic entering and exiting NASNI, derived by doubling the counts of entering traffic.

Current Requirements and Practices

The City of Coronado has developed acceptable LOS threshold standards to determine impacts to intersections and roadway segments. As indicated in the *City of Coronado General Plan Circulation Element* (October 1995), all signalized and unsignalized intersections are expected to operate at LOS D or better (Table 3.3.7-3). The City's goal for roadway segments is LOS C or better (Table 3.3.7-4). These standards for acceptable intersection and roadway segment operation were applied in all traffic-related analyses presented in the Supplemental EIS traffic analysis.

Table 3.3.7-3. Intersection LOS and Delay Ranges

LOS	Delay (seconds per vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤10.0	≤10.0
B	>10.0 to ≤20.0	>10.0 to ≤15.0
C	>20.0 to ≤35.0	>15 to ≤25.0
D	>35.0 to ≤55.0	>25 to ≤35.0
E	>55.0 to ≤80.0	>35.0 to ≤50.0
F	>80.0	>50.0

Source: High Capacity Manual, 2000

Table 3.3.7-4. City of Coronado Level of Service Thresholds for Roadways Segments

Classification (# Lanes)	Level of Service [1]					
	A	B	C	D	E	F
Principal Arterial (6)	25,000	35,000	50,000	55,000	60,000	>60,000
Principal Arterial (4)	15,000	21,000	30,000	35,000	40,000	>40,000
Principal Arterial (1-way) (3)	12,500	17,500	25,000	27,500	30,000	>30,000
Minor Arterial (4)	10,000	14,000	20,000	25,000	30,000	>30,000
Principal Arterial (2)	5,000	7,000	10,000	13,000	15,000	>15,000
Collector (2)	2,500	3,500	5,000	6,500	8,000	>8,000

Source: City of Coronado, 1995 (General Plan Circulation Element)
[1] Roadway level of service threshold are based on 2-way traffic volumes during a 24-hour period.

3.3.7.2 Environmental Consequences

Approach to Analysis

Study Area

In terms of transportation, relevant portions of the Study Area are those in which the temporary mooring of the SBX Radar Vessel could potentially affect principal and minor arterial and local roadways leading to NASNI via the city of Coronado. See Figure 3.3.7-1 for city of Coronado roadways associated with the Proposed Action.

Source of Information

A systematic review of relevant literature was conducted to complete this analysis of transportation in the potential location, including maps, technical reports published by Government agencies, work conducted by private businesses and consulting firms, DoD reports, operational manuals, and current and prior environmental documents for facilities and activities in the Study Area. The literature and other information sources cited are identified in Chapter 5.0, References.

Results of Analysis

The Navy prepared a 2008 Traffic Study to establish new baseline conditions for key elements of the Coronado transportation network. This study was based upon traffic counts collected in July and September 2007, and an understanding of current lane configuration at intersections and on roadway segments of the impacted traffic network. The July traffic counts were collected to represent the month with the highest traffic demand on Coronado based on historical traffic data. The September traffic counts were collected to represent traffic while schools are in session and to serve as a comparison to the summer traffic. The collected traffic data demonstrated that ADT volumes are higher in the summer than in the fall, resulting in higher levels of congestion at intersections and on roadway segments during the summer. The analysis results reflect worst-case conditions of three CVNs being in port during the temporary mooring period of the SBX Radar Vessel (approximately 3 months).

There is the potential for 307 temporary personnel to use principal and minor arterials and local roads leading to NASNI via the City of Coronado for approximately 3 months. For the purposes of analysis, assuming the worst case scenario of three CVNs in port with 73 percent of the traffic entering the Third Street Gate (Stockdale Gates) by using Orange Ave to Pomona Ave (39,506 ADT), 307 additional personnel have the potential to temporarily increase the ADT by 0.8 percent. Additionally, based on the 2008 traffic study, the 2008 Supplemental EIS concluded that direct traffic impacts associated with three CVNs have not changed significantly. Therefore, when three CVNs and the SBX Radar Vessel are in port the 0.8 percent increase of ADT would have a negligible impact on the overall ADT leading to NASNI via the City of Coronado. Even though three CVNs is the worst case scenario, there may not be three carriers in-port. Using the same analysis with the SBX Radar Vessel, and two CVNs in-port, with 73 percent of the traffic entering the Third Street Gate (Stockdale Gates) by using Orange Ave to Pomona Ave (approximately 26,337 ADT), 307 additional personnel would temporary increase the potential ADT by 1.2 percent.

Any impacts from traffic-related noise are discussed in Section 3.3.5.

3.3.7.3 Mitigation Measures

In the 2000 Record of Decision (ROD), the Navy agreed to provide staggered work shift timing when three carriers are in port simultaneously (U.S. Department of the Navy, 2000). In addition to the staggering of work times, the 2000 ROD also committed the Navy to encourage carpools and vanpools and subsidize the use of public transportation by military personnel and civilian employees in an effort to reduce traffic congestion on local roads (i.e., bus and ferry service). In compliance with the ROD requirement, the Navy provides a transit subsidy program to help offset some of the costs for employees commuting with the use of mass transit and vanpools. This level of participation is the equivalent of approximately 700 vehicles per day not traveling the roadways of San Diego County and Coronado. In the 2009 ROD the Navy identified potential traffic improvements both internal (on-base) and external (off-base) to NASNI. All mitigation measures established in the 2009 ROD will continue to be considered, and no further mitigation measures would be needed in the Study Area.

Mitigation measure in the 2009 ROD included the following:

Recommended Internal Improvements for NAS North Island: Several internal (on-base) traffic improvements were analyzed. At First Street and Alameda Boulevard, the potential traffic improvement requires reconfiguring the First Street Gate to support four inbound only traffic lanes during the Navy a.m. peak hour, with normal 2-way traffic flow (inbound and outbound) at all other times. Naval Base Coronado Commanding Officer will implement this traffic improvement when three CVNs are in port and voluntarily at other times deemed necessary to manage traffic entering NASNI when it does not impair accomplishment of the defense mission. At Fourth Street and Alameda Boulevard, the traffic improvement assumes the City will install a planned traffic signal and requires adding an internal (on-base) exclusive eastbound right-turn lane along McCain Boulevard for vehicles turning right onto Alameda Boulevard. These two traffic measures improve the overall traffic flow entering and exiting NASNI. The Navy will coordinate with the City of Coronado and/or the California Department of Transportation (CALTRANS) District 11 regarding internal (on-base) improvements that could affect external (off-base) roadways.

Potential External Intersection Improvements: Potential improvement measures were identified and evaluated for those intersections external to NASNI to improve traffic congestion and address pedestrian safety. Five intersections were identified as appropriate candidates for potential traffic improvements. Four of the five intersections can achieve acceptable level of service conditions through combination of internal (on-base) and external (off-base) traffic improvement measures. One intersection cannot achieve an acceptable level of service through intersection widening and the City of Coronado is investigating other options within their jurisdiction to implement at the intersection of Fourth Street and Orange Avenue. All external (off-base) traffic improvements are under the jurisdiction of either the City of Coronado or CALTRANS and require funding and implementation through the appropriate State of California Transportation Organizations. State and/or local governments would determine whether improvements identified off-base in the 2008 Final SEIS should be implemented. The Navy remains committed to cooperate to the maximum extent allowable by law with these agencies if any of these proposed improvement measures are implemented. The DoD and its component branches have no authority to manage or fund road improvements outside its property, except as may be authorized by law under the Defense Access Roads (DAR) Program. DAR is the only authority the Navy has to address these recommended improvements and the Navy will submit requests for consideration under this program. For each project that is certified by the DAR program, the Navy commits to seek funding from DoD. Execution will be subject to availability of funding through the DoD budget process.

Additional Traffic Management Measures: The following measures are within the Navy's purview to accomplish and will be implemented when these measures do not impair accomplishment of the defense mission. The Navy will manage NASNI related traffic during peak hours of the workday commute by optimizing the timing of existing on-base Navy bus routes, by staggering work hours when two CVNs and three CVNs are in-port, and by implementing the internal (on-base) traffic improvements as previously discussed. The Navy will monitor traffic conditions during peak hours. Based on the assessment of need by Naval Base Coronado Commanding Officer, the Navy may voluntarily stagger work hours when 1 CVN is in port as a temporary measure to improve traffic flow. The Navy will work cooperatively with San Diego Association of Governments on regional transportation initiatives to leverage the Navy's Transportation Incentive Program and will promote incentives to the Navy's military members and civilian workforce with a goal of increasing mass transit ridership and carpooling. The Navy will also continue to work with City of Coronado and CALTRANS to find mutually acceptable solutions to traffic concerns.

Any mitigation measure associated with traffic-related noise is discussed in Section 3.3.5.

3.3.7.4 Summary of Effects

The Proposed Action would not have a long-term impact on ground transportation in the Study Area. Short-term effects on ground transportation are negligible and would decrease as the number of CVNs in port increases.

3.3.8 VISUAL AND AESTHETIC RESOURCES

This section addresses the visual and aesthetic resources of the waterfront area of NASNI as discussed in Section 1.3.1. Visual resources consist of topographic features such as landforms and bodies of water, and man-made features as buildings, bridges, and recreational areas. The aesthetic quality of an area is evaluated by the extent that important visual resources are seen from view corridors (vantage points), or experienced from roadways, parks, or buildings (public or private).

3.3.8.1 Affected Environment

Existing Conditions

NASNI is on a prominent peninsula within the San Diego Bay. It is located adjacent to the city of Coronado, in San Diego County California. NASNI is surrounded by water on three sides (the Pacific Ocean to the west and San Diego Bay to the north and east. It is visible from two major roadways: Harbor Drive skirting the bay, and the Coronado Bay Bridge. A variety of commercial and recreational uses along the bay provides view corridors of NASNI. The installation and the City are separated by Alameda Boulevard, McCain Boulevard, and South O Street, with NASNI being on the west side and the city lying on the east side of the Pier P area. A residential area to the east side of First Street is in direct view of the potential temporary mooring location. See Figure 3.3.8-1 for a view of NASNI and adjacent city areas.

The dominant waterfront across the San Diego Bay and east of Pier P and Pier N includes parks, open space, and recreation areas, as well as commercial and industrial, retail, and services areas (marina, USS Midway Museum, San Diego Convention Center, Petco Park). Multiple-use and multiple-family residential areas are adjacent to multiple and commercial use areas northeast of Harbor Drive. See Figure 3.3.8-1 for a view of NASNI and waterfront areas.

Current Requirements and Practices

The county of San Diego has established guidelines governing dark skies polices and glare impacts from light sources (County of San Diego, 2009). The guidelines specifically address the potential for a proposed project creating a new source of substantial light or glare which would adversely affect day or nighttime views, including skyglow, light trespass, and glare, in the area in relation to recreation and community character, human health, and astronomical research. Additionally, San Diego County Code-Division 9-Light Pollution Code (LPC-59.105) restrict the permitted use of outdoor light fixtures emitting undesirable light rays into the night sky which have a detrimental effect on astronomical research.

3.3.8.2 Environmental Consequences

Approach to Analysis

Study Area

In terms of visual and aesthetics, relevant portions of the Study Area are those in which the temporary mooring of the SBX Radar Vessel could potentially affect the topographic features such as landforms and bodies of water, and man-made features such as buildings, bridges, and recreational areas. The study areas include NASNI and the public waterfront area adjacent to Pier P. See Figure 3.3.8-1 for a view of the waterfront areas adjacent to Pier N and Pier P.

EXPLANATION

- Highway
- Potential Mooring Location
- Naval Air Station North Island Boundary

NORTH 0 1,000 2,000 4,000 Feet

Visual and Aesthetics, Naval Air Station North Island, Naval Base Coronado

Coronado, California

Figure 3.3.8-1

Source of Information

A systematic review of relevant literature was conducted to complete this analysis of visual and aesthetic resources in the potential location, including maps, technical reports published by Government agencies, work conducted by private businesses and consulting firms, DoD reports, operational manuals, natural resource management plans, and current and prior environmental documents for facilities and activities in the Study Area. The literature and other information sources cited are identified in Chapter 5.0, References.

Results of Analysis

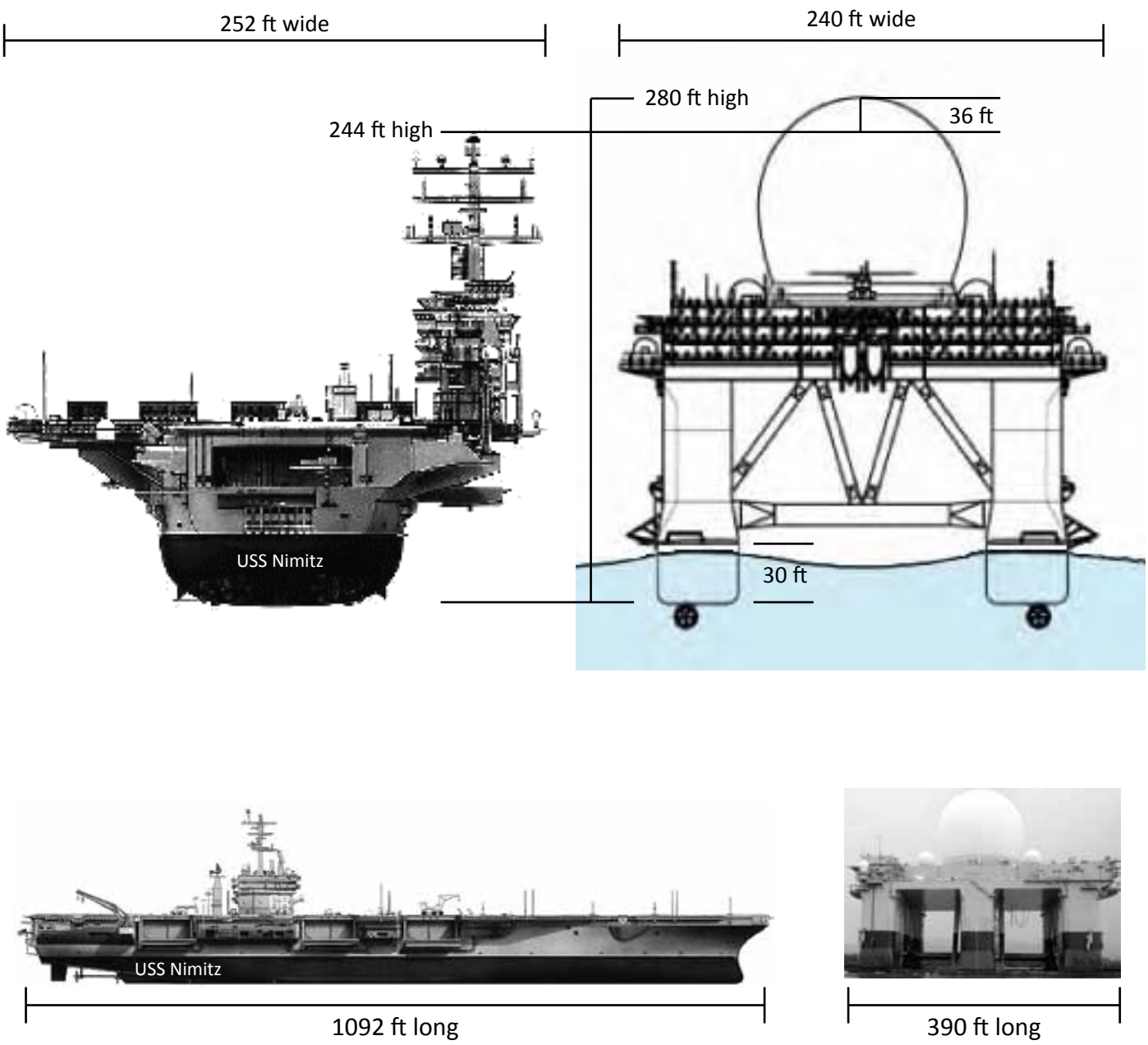
The SBX Radar Vessel would be moored at NASNI for approximately 3 months. There would be no dredging or construction activities that would impact visual and aesthetics. The dome of the SBX Radar Vessel does extend 36 feet higher than the top of *USS Nimitz* and the dome is approximately 22 feet wider at mast (see Figure 3.3.8-2). The overall appearance of the SBX Radar Vessel is unique and may be perceived as intrusive. As illustrated in Figure 3.3.8-2, the SBX Radar Vessel is similar in size, although not shape, and character to the other naval vessels (Aircraft Carriers, Oilers) transiting the base.

To provide a perspective on distance views for the city of Coronado, if the SBX Radar Vessel is moored at Pier N it would be approximately 1,380 feet from the intersection of Alameda Boulevard and First Street and approximately 2,000 feet from Bay View Park, approximately 4,200 feet from Centennial Park and approximately 5,100 feet from Coronado Ferry Landing. If the SBX Radar Vessel is moored at Pier P it would be approximately 600 feet from the intersection of Alameda Boulevard and First Street and approximately 1,200 feet from Bay View Park, approximately 3,700 feet Centennial Park and approximately 4,000 feet from Coronado Ferry Landing (See Figure 3.3.8-1). Mooring at Pier N would allow for less of the vessel being viewed from the intersection of Alameda Boulevard and First Street than if it was moored at Pier P. Therefore, being moored at Pier N would lessen the impact on the visual and aesthetic resources for some of the residential area closest to Alameda Boulevard and First Street. Although the overall appearance of the SBX Radar Vessel is unique and may be perceived as intrusive, the mooring of the SBX Radar Vessel at either Pier N or Pier P would be temporary (approximately three months) and comparable to the visual impact of other Navy vessels at these berthing locations.

To provide a perspective on distance views for the city of San Diego, if the SBX Radar Vessel is moored at Pier N it would be approximately 4,065 feet from the deck of the Fish Market Restaurant and approximately 5,100 feet from the Cruise Ship Terminal. If moored from Pier P it would be approximately 4,065 feet from the deck of the Fish Market Restaurant and 6,400 feet from the Cruise Ship Terminal (See Figure 3.3.8-1). The mooring of the SBX Radar Vessel at either Pier N or Pier P would be temporary (approximately three months) and comparable to the visual impact of other Navy vessels at these berthing locations.

Lighting System

The SBX Radar Vessel operates its lighting systems 24/7. The vessel would use its external lights on the platform, the perimeter of the dome, and on top of the dome in the evening or nighttime hours. The lights on the dome are considered ""incandescent floodlights" and the trainable 500-W and 300-W incandescent floodlights are not operated while in-port (see Figure 2-1). Therefore, the light and glare produced from the external lights are anticipated to have a negligible effect on the visual and aesthetic resources of the area.



Sea-Based X-Band Radar Size Compared to the USS Nimitz Aircraft Carrier

Figure 3.3.8-2

Any effects from noise associated with aesthetics resources are discussed in Section 3.3.5.

3.3.8.3 Mitigation Measures

Impacts from the SBX Radar Vessel on visual and aesthetics would be negligible and temporary. The lighting system on the vessel is in accordance with navigational rules, OSHA, and FAA regulations. No further mitigation measures would be needed to protect visual and aesthetic resources in the Study Area, and no additional mitigation measures are proposed.

3.3.8.4 Summary of Effects (Naval Air Station North Island)

The Proposed Action would not have a long-term impact on the visual and aesthetic resources in the Study Area. Short-term effects on visual and aesthetic resources may be perceived as intrusive, but would be negligible and temporary.

3.3.9 WATER RESOURCES

This section describes the marine waters of NASNI that could be affected by the Proposed Action.

3.3.9.1 Affected Environment

Existing Conditions

As illustrated on Figure 2-6, NASNI is encircled by San Diego Bay, with Glorietta Bay being approximately 2 miles south of the potential temporary mooring locations (Pier N or Pier P). Beneficial uses and specific water quality objectives for San Diego Bay are described in the Basin Plan, prepared by the Regional Water Quality Control Board (RWQCB), San Diego Region (1998). The Basin Plan lists 12 beneficial uses: (1) industrial service supply; (2) navigation; (3) water-contact recreation; (4) non-water-contact recreation; (5) commercial/sport fishing; (6) preservation of biological habitats of special significance; (7) estuarine habitat; (8) wildlife habitat; (9) rare, threatened, or endangered species; (10) marine habitat; (11) migration of aquatic organisms; and (12) shellfish harvesting. The Basin Plan specifies numerical water quality objectives for a limited set of water quality parameters (e.g., nutrients, bacteria, and pH) and descriptive criteria for other parameters including floating material, oil and grease, pesticides, radioactivity, suspended and settleable solids, sediment, taste and odor, temperature, toxicity, toxic pollutants, and turbidity. In most cases, these descriptive criteria prohibit harm or adverse impacts to the beneficial uses.

Water Currents and Circulation

Circulation patterns in the central portion of San Diego Bay are primarily influenced by tides. Tides within the bay are mixed, semi-diurnal (two high and two low tides per day), with an average and maximum tidal range of 5.6 feet and 9.8 feet, respectively. The volume of water exchanged during a tidal cycle is approximately 1/3 of the volume of the entire bay. Water currents in the main channel offshore from the project site flow at a speed of approximately 0.4 knots. Relatively slower currents typically occur near shore in shallower areas outside of the main channel, although diver-conducted studies adjacent to the project area (east, in the vicinity of Pier J/K) reported currents of 1-2 knots. (U.S. Department of the Navy, 2008) Waves within the bay typically are generated by local winds, and are generally less than 2 to 3 feet in height

(San Diego Unified Port District, 1980). The project area is well protected from waves generated by predominant northwest winds.

Marine Water Quality

Water quality conditions within San Diego Bay are influenced by circulation patterns, flushing or exchange of bay and ocean waters, and the duration of the flushing cycle or water residence times. Water quality conditions in San Diego Bay vary between the northern and southern portions of the bay due to differences in the influences of mixing with ocean waters. Freshwater inputs to the bay are minimal, except during periods of heavy rainfall, and conditions rapidly return to pre-storm levels after the rain event. Processes affecting marine water quality at the proposed project site, such as circulation and exchange of bay and ocean waters, are not substantially different from processes affecting water quality in other portions of the central bay. Thus, because water quality parameters have not been measured within the immediate vicinity of the project site, the water quality conditions are characterized using existing information from adjacent areas of the bay.

Temperature

Water temperatures in the bay range from approximately 57.2°F to 80.6°F, and salinities (salt content) can range from 31 to 39 parts per thousand (U.S. Department of the Navy, 1992). Higher water temperatures and slightly higher salinities occur in summer than in winter, particularly due to seasonal differences in evaporation, heating, and freshwater inputs to the south bay. A smaller range in temperature and salinity conditions occurs at the project site because mixing of bay and ocean waters moderates the effects of these processes. (U.S. Department of the Navy, 2008)

Chemical Contaminants

In May 2008, the Navy obtained permit approval from the U.S. Army Corps of Engineers and RWQCB to begin repair of the quaywall immediately northeast of the proposed mooring site (improvements at Pier L). As part of the permit application process, the Navy tested sediment quality within the proposed quaywall repair project dredge footprint. The analytical results were compared with sediment quality guidelines derived by the NOAA from studies of sediment testing throughout the country. The NOAA sediment quality guidelines are reported as two values: the Effects-Range Low (ERL) and the Effects-Range Medium (ERM). The ERL value represents the concentration below which adverse biological effects rarely occur and the ERM value represents the concentration above which adverse biological effects frequently occur. The sediment was determined not to be toxic and bioaccumulation test results were within the range of acceptability for ocean disposal. Table 3.3.9-1 presents the results of the bulk chemistry tests of the upper quaywall sample and the lower quaywall sample.

Table 3.3.9-1. Bulk Sediment Contaminant Along Quaywall

	Criteria		Samples	
Contaminant	**ERL**	**ERM**	**QWU**	**QWL**
Arsenic (mg/kg)	8.2	70	6.48	2
Cadmium (mg/kg)	1.2	9.6	0.537	ND
Chromium (mg/kg)	81.0	370	33.9	9.54
Copper (mg/kg)	34.0	270	123	6.12
Lead (mg/kg)	46.7	218	37.9	2.14
Mercury (mg/kg)	0.15	0.71	**0.411**	ND
Nickel (mg/kg)	20.9	51.6	9.29	3.09
Selenium (mg/kg)	NA	NA	0.816	ND
Silver (mg/kg)	1.0	3.7	0.621	ND
Zinc (mg/kg)	150	410	211	34.3
TRPH (mg/kg)	NA	NA	230	28
Organotins (µg/kg)	NA	NA	34.2	ND
Total Pesticides (µg/kg)	NA	NA	ND	ND
Total PCBs (µg/kg)	22.7	180	**65**	ND
Total PAHs (µg/kg)	4022	44,792	1639	ND

Source: U.S. Department of the Navy, 2008

***Notes*:**

Bold values in shaded rows indicate exceedance of an ERL value, but within range.
mg/kg – milligrams per kilogram
µg/kg – micrograms per kilogram
NA – not available/not applicable
ND – not detected above the method reporting limit
ERL – Effects Range-Low
ERM – Effects Range-Medium
PAH – polynuclear aromatic hydrocarbon
PCB – polychlorinated biphenyl
TRPH – total recoverable petroleum hydrocarbons
QWU – quaywall upper
QWL – quaywall lower

Current Requirements and Practices

Environmental compliance policies and procedures related to ocean and nearshore water quality are regulated by Federal and State programs including the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), which prohibits certain discharges of oil, garbage, and other substances from vessels. The MARPOL convention is implemented by national legislation, including the Act to Prevent Pollution from Ships (33 USC 1901, et seq.); the Federal CWA (33 USC 1251, et seq.) which is a measure that reduce potential impacts to water resources, which includes creation and adherence to storm water management plans, erosion control, maintaining vegetative buffers adjacent to waterways, and enforcement of pollution permit requirements under the NPDES (33 USC 1342), and the MARPOL convention implemented by the Oil Pollution Act (33 USC 40 §2701 et seq.) which streamlined and strengthened EPA's ability to prevent and respond to catastrophic oil spills. In addition, provisions in Executive Order 12856, *Federal Compliance With Right-To-Know Laws and Pollution Prevention Requirements*, and Executive Order 13101, *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition*, reinforce the CWA's prohibition

against discharge of harmful quantities of hazardous substances into U.S. waters out to 200 nm, and mandate stringent hazardous waste discharge, storage, dumping, and pollution prevention requirements. For the Navy, these and other requirements are implemented by the *Navy Environmental and Natural Resources Program Manual* (OPNAVINST 5090.1C, 2007), and related Navy guidance documents governing waste management, pollution prevention, and recycling.

Shipboard waste-handling procedures governing the discharge of non-hazardous waste streams have been established for commercial and Navy vessels. These categories of wastes include solids (garbage) and liquids such as “black water” (sewage), “grey water” (water from deck drains, showers, dishwashers, laundries, etc.), and oily wastes (oil-water mixtures).

The San Diego Regional Board's Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan: (1) designates beneficial uses for surface and ground waters; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's antidegradation policy; (3) describes implementation programs to protect the beneficial uses of all waters in the Region; and (4) describes surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan [California Water Code sections 13240 thru 13244, and section 13050(j)]. Additionally, the Basin Plan incorporates by reference all applicable State and Regional Board plans and policies.

Regulatory Requirements—Federal

The principal Federal laws protecting water quality are the Federal Water Pollution Control Act, (33 USC 1251, et seq.) and the Safe Drinking Water Act (42 USC 300f, et seq.). Both are enforced by the USEPA and various State Government agencies. In addition, the NOAA (U.S. Department of Commerce) oversees coastal and marine water resources under CWA, the CERCLA, the CZMA, and the Oil Pollution Act (marine oil spills). NOAA also has responsibilities in managing and protecting coastal and marine habitats (and species) through the National Marine Fisheries Service.

Discharges incidental to Normal Operation of a Vessel of the Armed Forces

The Clean Water Act was amended in 1996 to allow for the Secretary of the Defense and Administrator of the USEPA to work in consultation with the USCG and interested States to determine discharges incidental to the normal operation of a vessel of the Armed Forces for which it is reasonable and practicable to require use of a marine pollution control device. This amendment allowed for a comprehensive system for regulating discharges incidental to the normal operation of an Armed Forces' vessel operating in inland waters and the ocean out to 12 nautical miles. On 10 May 1999, USEPA and DoD published the final rule establishing regulations for undertaking to establish the UNDS for Vessels of the Armed Forces. This rule completed the first phase of a three-phase process to set the UNDS. This Phase I rule determined the type of vessel discharges that require control by Marine Pollution Control Devices and those that do not, based on anticipated environmental effects of the discharge as well as factors listed in the Clean Water Act. A total of 25 vessel discharges that have the potential to cause an adverse impact on the environment requiring control standards have been identified under Phase I of the program (Uniform National Discharge Standards, 2008). Phase II involves developing performance standards and control procedures for those discharges. The Navy and USEPA have agreed to promulgate Phase II standards in batches. The batch

rulemaking approach allows the Navy and USEPA to conduct technical analyses and develop discharge standards in batches (approximately five discharges per batch) rather than conducting analyses and developing standards for all 25 discharges at one time. To date, this Phase II process is still ongoing.

Since the SBX vessel is a vessel of the Armed Forces, Section 33 USC 1322(n) applies concerning discharge incidental to the normal operation of a vessel. Certain discharges from the vessel in connection with maintenance and repair fall under the UNDS being developed by the Secretary of Defense and the Administrator of the USEPA and are therefore not "pollutants" regulated by the CWA. Of the 25 discharges, Seawater Cooling Overboard Discharge and Underwater Ship Husbandry apply to this EA.

Seawater Cooling Overboard Discharge

This discharge consists of seawater from a dedicated system that provides noncontact cooling water for other vessel systems. The seawater cooling system continuously provides cooling water to heat exchangers, removing heat from main propulsion machinery, electrical generating plants, and other auxiliary equipment. The heated seawater is discharged directly overboard. With the exception of some small, non-self-propelled vessels and service craft, all Armed Forces vessels discharge seawater from cooling systems. Typically, the demand for seawater cooling is continuous and occurs both within and beyond 12 nautical miles from shore. Seawater cooling overboard discharge is primarily seawater that contains trace materials. The expected constituents of seawater cooling discharge include copper, iron, aluminum, zinc, nickel, tin, titanium, arsenic, manganese, chromium, lead, and possibly oil and grease from valves and pumps. Of the constituents expected to be present in this discharge, arsenic, chromium, copper, lead, nickel, and zinc are priority pollutants. None of the expected constituents is a bioaccumulator. (U.S. Environmental Protect Agency, 1999)

Underwater Ship Husbandry

Underwater ship husbandry includes underwater welding. The underwater ship husbandry discharge is composed of materials discharged during the inspection, maintenance, cleaning, and repair of hulls and hull appendages performed while the vessel is waterborne. Underwater ship husbandry includes activities such as hull cleaning, fiberglass repair, welding (underwater), sonar dome repair, propulsor lay-up, non-destructive testing, masker belt repairs, and painting operations. The primary constituents found in the discharge from underwater welding are metals in the slag associated with welding rods. These (slag and welding rods) may contain chromium, iron, nickel, beryllium, manganese, and trace (small/barely perceivable) quantities of other metals. (U.S. Environmental Protect Agency, 1999) All discharges from underwater welding done for maintenance activities on ships are covered under the UNDS program and is not an activity that is regulated under the 401 discharge program run by the California Regional Quality Control Board.

Regulatory Requirements—State and Local—California

Water Quality and Pollution Control

In California, water quality is governed by the State Water Resources Control Board and nine regional water quality control boards, including point and nonpoint source pollution provisions of the Federal CWA, and groundwater and surface waters within the 3-mile State jurisdictional limit (California Water Code–Division 7, §13000, et seq.). The State board adopted the Ocean

Waters of California Water Quality Control Plan—the "Ocean Plan"—in 2005. This plan established beneficial uses and water quality objectives for waters of the Pacific Ocean adjacent to the California coast outside of enclosed bays, estuaries, and coastal lagoons. The plan also identifies "Areas of Special Biological Significance" that are approved by the State board.

Underwater Welding

All discharges from underwater welding done for maintenance activities on ships are covered under the UNDS program and is not an activity that is regulated under the 401 discharge program run by the California Regional Water Quality Control Board.

Coastal Zone Management

The California Coastal Act defines the coastal zone as the area of the State which extends three miles seaward and (generally) about 1,000 yards inland. The act also sets forth specific uses that may be permitted in the coastal zone, provides for additional review and approvals for proposed actions, and directs local governments within the coastal zone to prepare a "local coastal program" for certification. California Coastal Act activities are overseen by the California Coastal Commission (California Public Resources Code §30000, et seq.). Under the California Ocean Resources Management Program, the California Resources Agency is charged with comprehensive management and stewardship of the State's ocean resource, including review of oil and gas development on the continental shelf and coordination of resources management in the exclusive economic zone (California Public Resources Code §36000, et seq.).

Storm Water Discharge

NASNI is under a NPDES permit for storm water discharge into San Diego Bay. The Discharger submitted a Report of Waste Discharge, dated November 2007, and applied for a NPDES permit renewal to discharge steam condensate; diesel engine cooling water; pier boom cleaning wastewater; utility vault and manhole dewatering wastewater; pier washing wastewater; Reverse Osmosis Water Purification Unit product water; boat rinsing wastewater; swimmer rinsing wastewater; marine mammal enclosure cleaning wastewater; miscellaneous wastewater; and industrial storm water at numerous discharge locations from Naval Base Coronado. The application was deemed complete on 27 March 2008.

3.3.9.2 Environmental Consequences

Approach to Analysis

Study Area

In terms of water (surface, ground, flood hazard area), relevant portions of the each Study Area are those in which the temporary mooring of the SBX Radar Vessel could potentially affect the bodies of water. The study area includes the marine waters associated with the proposed optional locations (Pier N or Pier P) at NASNI.

Source of Information

A systematic review of relevant literature was conducted to complete this analysis of water resources in the potential location, including maps, technical reports published by Government agencies, work conducted by private businesses and consulting firms, DoD reports, operational manuals, natural resource management plans, and current and prior environmental documents

for facilities and activities in the Study Area. The literature and other information sources cited are identified in Chapter 5.0, References.

Results of Analysis

Painting, Outside Welding, Sanding, and Plasma Cutting

The SBX Radar Vessel would have a temporary effect (approximately 3 months) on the marine waters associated with the Pier N and Pier P area at NASNI. During the vessel temporary mooring period, activities such as painting, outside welding, sanding, and plasma cutting will be performed. Standard BMPs listed in Table 2-4 would prevent any debris from entering the waterway and from being circulated in the bay. The standard BMPs would be applied to mitigate impacts to marine waters from such activities (i.e., enclose, cover, or contain work areas to prevent debris from reaching water). Therefore, the impacts on marine waters from these activities would be negligible.

Seawater Cooling Discharge Overboard

A Nature of Discharge Report was produced as part of the *Technical Development Document for Phase I Uniform National Discharge Standards for Vessels of the Armed Forces* (U.S. Environmental Protection Agency and U.S. Department of the Navy, 1999). The thermal effects of seawater cooling water overboard discharge were modeled using the Cornell Mixing Zone Expert System. This system was used to estimate the plume size and temperature rises in the water body receiving the discharge. Modeling included the cooling water discharge of three vessels in three harbors. Of the five States having a significant presence of Armed Forces' vessels, only Virginia and Washington have established thermal mixing zone dimensions. The models predicted that U.S. Navy aircraft carriers, with a typical cooling water temperature rise of 10 to 15 degrees, would generate thermal plumes that, under conditions of low harbor flushing, low wind velocities, and maximum cooling water flow rates (120,000 gallons per minute), would only exceed the regulatory thermal mixing zone limits of Washington. Thermal plumes models from destroyers did not exceed regulatory limits (U.S. Environmental Protection Agency and U.S. Department of the Navy, 1999). In contrast, the SBX cooling water would have a much lower flow rate (7,400 gallons per minute), and a lower typical temperature rise of 6 to 10 degrees (Department of Defense, Missile Defense Agency, 2005).

The Nature of Discharge Report also evaluated metals that enter the cooling water as it moves through the components of the cooling system. These metals include copper, nickel, lead, aluminum, tin, silver, iron, titanium, chromium, and zinc. The Nature of Discharge Report concluded that seawater cooling discharge from armed forces vessels has a potential to cause an adverse environmental effect due to exceedences of Federal water quality criteria for heavy metals and significant heavy metal mass loading (U.S. Environmental Protection Agency and U.S. Department of the Navy 1999). Although the SBX Radar Vessel seawater cooling discharge would contain some heavy metals, the quantity would be less than on typical armed forces vessels which utilize nickel-copper piping. While the SBX Radar Vessel uses some copper-nickel piping, it also uses a composite piping that does not contribute heavy metals. (Department of Defense, Missile Defense Agency, 2005)

Any water discharged from the vessel's Seawater Cooling System while in-port would have originated directly from San Diego Bay. The review of the bulk sediment contaminant along the quaywall indicates that the heavy metals associated with the Seawater Cooling Discharge are not contaminants of concern (see Table 3.3.9-1). There is no thermal pollution anticipated due to any increase in temperature of the receiving ambient water (potentially 6-10 degrees Fahrenheit higher at point of entry). Additionally, the tidal influences on water flow in the SBX Radar Vessel area would aid in minimizing the area of elevated water temperature by promoting rapid mixing of water return to ambient water temperature within a short distance of the outflow. It is anticipated that the change in temperature will not affect water quality or biological productivity. Therefore, impacts to current marine water quality from this activity are anticipated to be negligible.

Underwater Welding

Pollutant concentrations from underwater welding are released infrequently and in small quantities and are not estimated/analyzed (U.S. Environmental Protection Agency, 1999). As noted in the Phase I Final Rule and Technical Development Document of UNDS, metals from the underwater welding operation (which may contain chromium, iron, nickel, beryllium, manganese, and trace quantities of other metals) will not be readily dissolved in the surrounding waters and will fall to the harbor floor (U.S. Environmental Protection Agency, 1999; 2003).

A review of the bulk sediment contaminants concentration along the quaywall immediate northeast of the Pier N and Pier P indicates that chromium and nickel were found (See Table 3.3.9-1). These metals (chromium and nickel) were determined not to be toxic and the levels are below values which adverse environmental affects occur (U.S. Department of the Navy, 2008). The remaining metals (iron, beryllium, manganese, and other trace metal) are not listed as contaminants detected within the area. Although these metal constituents have the potential to oxidize and enter the water stream over time, the mooring of the SBX Radar Vessel is temporary at the proposed site, and there is a low potential for the metal constituents to cause an adverse environmental effect. The underwater welding activities are temporary and have a short performance time. It is anticipated that levels of the metals would continue to be negligible. Therefore, the impacts on marine waters from these underwater welding activities would be negligible.

Oil

The small amount of oil remaining in the thruster wells (less than 5 gallons) would be removed from the thruster via a hose leading up to a surface tank. BMPs would be followed to prevent the spill of oil into the water during the transfer of the excess oil. Therefore, the impacts on marine waters from this activity would be negligible.

Storm Water Discharge

Storm water discharge activities being performed during the maintenance and repair period associated with pier side laydown equipment would adhere to the BMPs listed in Table 2-4 (e.g., Material Storage and Handing, Discharge to Storm Drain, Outdoor Work Operations) and the NASNI's SWPPP. Additionally, the SBX Radar Vessel would manage the discharge of all gray and black water by connecting to sewage risers provided on Pier N or Pier P and in accordance to the requirements of the 2009 Afloat Environmental Quick Guide established for naval ship operating in Navy Region Southwest. Adherence to the BMPs, the 2009 Afloat Guide and the SWPPP would prevent the discharge of stormwater and gray and black water into the San

Diego Bay. Therefore, any impacts from storm water discharge and gray and black water would be negligible.

3.3.9.3 Mitigation Measures

Impacts to water resources resulting from painting, outside welding, sanding, and plasma cutting would not result in long-term degradation of water resources or affect water quality at the potential location. Current requirements and practices described in Section 3.3.8.1 would be considered, the 2009 Afloat Environmental Quick Guide established for naval ship operating in Navy Region Southwest and all applicable BMPs listed in Table 2-4 would be implemented.

Although specific performance standards and potential pollution control device requirements have not been determined for seawater discharge, and specific requirements for the SBX Radar Vessel, have not been developed at this time, the continuing use of the composite piping on the SBX Radar Vessel is considered a pollution control device; therefore, no mitigation measures are proposed.

Although chromium and nickel are the only potential metals from underwater welding operations found in the study area, impacts to water quality resources resulting from underwater wet welding activities have a low potential for causing an adverse environmental effect. To mitigate potential loss of welding rods/electrodes from entering and accumulating on the floor of the San Diego Bay, underwater welders are required to log and track the number of rods used during the underwater process.

Contractors and personnel working at NASNI during the maintenance and repair period must obtain a copy of all environmental equipments and BMPs established for NASNI (e.g. Afloat Environmental Quick Response Guide, 2009; SOPA COMNAVREGSW Instruction 5400.2, 2005; SWPPP).

3.3.9.4 Summary of Effects

The Proposed Action would not have long-term impacts on marine water resources in the study area within San Diego Bay. Although underwater welding activities have the potential to introduce additional chromium and nickel into the water of the Study Area, as well as metal constituents not currently tested for (iron, nickel, beryllium, manganese and trace quantities of other metals) into waters associated with Pier N and Pier P, these metal constituents are not readily dissolved in the surround waters and will fall to the harbor floor. Additionally some heavy metals could be introduced though the seawater cooling discharge. Although these metal constituents have the potential to oxidize and enter the water stream over time, the temporary mooring of the SBX Radar Vessel in conjunction with the low potential for the metal constituents to cause an adverse environmental effect, a long-term affect is not likely. No long-term accumulations are expected, and therefore no impact is anticipated.

Short-term effects on water quality from the SBX Radar Vessel has the potential to introduce metals (underwater welding slag and rod may contain chromium, iron, nickel, beryllium, manganese, and trace quantities of other metals and seawater cooling discharge contains copper, iron, aluminum, zinc, nickel, tin, titanium, arsenic, manganese, chromium, lead, and possibly oil and grease from valves and pumps) into San Diego Bay. These metals have a low

potential for environmental affect in the surrounding water. Therefore, the Proposed Action is anticipated to have a negligible short-term effect on the water quality of San Diego Bay.

3.4 FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS (EXECUTIVE ORDER 12898)

This section addresses the Proposed Action's potential to generate disproportionately high and adverse human or environmental effect on minority and low-income populations, as required under Executive Order 12898. As part of this directive, the Federal agency must promote enforcement of all health and environmental strategies in areas where minority and low-income populations reside. Identifying differential patterns of natural resource consumption and ensuring greater public participation is required. Guidance provided by the Council on Environmental Quality (1997) has been considered in developing the environmental justice analysis presented below.

Federal Requirements

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Population,* focuses on identification and analysis of disproportionately high and adverse human health or environmental effects of actions on minority and low-income populations in the United States. The USEPA and the Council for Environmental Quality have emphasized the importance of incorporating environmental justice review in the analyses conducted by Federal agencies under NEPA and of developing protective measures that avoid disproportionate environmental effects on minority and low-income populations. For this Proposed Action, analysis for Executive Order 12898 requires assessment of readily available demographic data on the local, regional, and national populations, including race and ethnicity, age, income, and poverty metrics. Information to support this analysis is derived from U.S. Census Bureau readily accessible documents and internet sites. The U.S. Decennial Census, which is completed every 10 years, forms the basis of the data for 2000, with the next scheduled census occurring in 2010. The U.S. Census Bureau also conducts ongoing surveys to supplement the decennial survey, and the most recent U.S. Census American FactFinder for 2006-2008 data is used to document the most recent conditions.

3.4.1 NAVAL STATION EVERETT

The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. Table 3.2.6-2 indicates that traditional minority populations comprise a small percentage of the total population for the City of Everett.

3.4.2 NAVAL AIR STATION NORTH ISLAND

The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. Table 3.3.6-2 indicates that traditional minority populations comprise a small percentage of the total population for the cities of Coronado and San Diego.

3.5 FEDERAL ACTIONS TO ADDRESS PROTECTION OF CHILDREN FROM ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS (EXECUTIVE ORDER 13045, AS AMENDED BY EXECUTIVE ORDER 13229)

In compliance with Executive Order 13045*, Protection of Children From Environmental Health Risks and Safety Risks*, this EA examines demographic data on the local, regional, and national populations; and, in particular on children. This EA also evaluated the number and distribution of children in the region and whether these children are exposed to environmental health and safety risks from the Proposed Action.

This Executive Order focuses on environmental health risks and safety risks that may affect children. This Executive Order was prompted by the recognition that children are more sensitive than adults to adverse environmental health and safety risks because they are still undergoing physiological growth and development. For this EA, analysis for Executive Order 13045 required the assessment of readily available information regarding demographic data on the local, regional, and national populations, and, in particular, children less than 18 years old, as well as the evaluation of the number and distribution of children in the region and whether these children are exposed to environmental health and safety risks from the Proposed Action. Information to support this assessment is derived from the U.S. Census Bureau (2006-2008 American Community Survey) and identified locations with potentially high concentrations of children, such as schools, recreational areas for children, and residential Areas.

3.5.1 POPULATION OF CHILDREN

Table 3.5-1 depicts the percentage of population less than 18 years of age and average family size for the applicable cities, county, state, and nation, using the 2006/2008 update data.

Table 3.5-1. Population of Children in Study Areas

	City of Everett, WA	City of Seattle, WA	City of Coronado, CA	City of San Diego, CA	State	USA
Population	102,050	571,293	23,307	1,251,184	6,453,083(WA) 36,418,499(CA)	301,237,703
Population less than 18 years of age (%)	23.5%	15.3%	18%	22.6%	23.8%(WA) 25.7%(CA)	24.5%
Average family size	3.05	2.90	2.93	3.31	3.08(WA) 3.53(CA)	3.20

Source: U.S. Census Bureau, 2006-2008d

In compliance with Executive Order 13045, as amended by Executive Order 13229, this EA has not identified any environmental health and safety risks at either of the two alternative locations that may disproportionately affect children. Additionally, no adverse socioeconomic effects were identified; therefore, no proposed mitigation measures are warranted.

3.6 GOVERNMENT–TO–GOVERNMENT CONSULTATION AND COORDINATION WITH NATIVE AMERICAN TRIBES

3.6.1 NAVAL STATION EVERETT

American Indian and Alaskan Native persons comprise 1.6 percent of the population for the city of Everett. Government-to-Government coordination was executed with Federally recognized Tribal governments (Lummi, Stillaguamish, Suquamish, Swinomish and Tulalip Tribes) with the potential to be impacted by activities at NSE (See Appendix I). It was determine that the Proposed Action would not result in adverse impacts on these recognized Tribal governments.

3.6.2 NAVAL AIR STATION NORTH ISLAND

There were no Federally recognized Tribes identified in the NASNI study area therefore no Government-to-Government coordination was conducted at this location.

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4.0 Cumulative Impacts

4.0 CUMULATIVE IMPACTS

4.1 PRINCIPLES OF CUMULATIVE IMPACTS ANALYSIS

Cumulative impacts are impacts on the environment that result from:

> ". . . the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 Code of Federal Regulations [CFR] 1508.7)

The Proposed Action would be implemented over approximately 3 months. Thus, each resource is analyzed in terms of its ability to accommodate additional effects of the Proposed Action in combination with past, present, or reasonably foreseeable future projects within this timeframe.

The cumulative effects analysis encompasses the region of influence associated with the resources analyzed in Chapter 3.0. While this single project may have minor impacts, when it is considered together with other projects in the region, the effect may be collectively significant. The other projects likely to result in cumulative impacts in those regions over the next year and into the future are listed in Tables 4-1 and 4-2. Table 4-1 lists projects in the vicinity of Naval Station Everett (NSE), and Table 4-2 lists projects in vicinity of Naval Air Station North Island (NASNI).

Table 4-1. Cumulative Project List, Naval Station Everett, Washington

Number	Project	Description of Impacts	Status
1	Naval Station Everett (NSE) Homeport	NSE is home to two destroyers, three frigates, one nuclear-powered aircraft carrier, and a Coast Guard buoy tender. There are about 6,000 Sailors and Civil Service persons assigned to commands located at NSE. NSE itself has about 350 Sailors and Civilians assigned.	Past
2	NSE Restricted Area Expansion	Project to amend the existing Naval Restricted Area (RA) at NSE by extending the RA outwards 250 yards from Alpha and Bravo gates. This will allow the opening of the booms and ensure clear traffic for ships entering and leaving NSE, while providing a 100-foot buffer for security movement of tugs and ships. The purpose is to ensure public safety and satisfy the security, safety, and operational requirements as they pertain to U.S. Navy vessels at NSE by establishing an area into which unauthorized vessels and persons may not enter. U.S. Army Corps of Engineers (USACE) project number NWS-2009-311.	Current

Table 4-1. Cumulative Project List, Naval Station Everett, Washington

Number	Project	Description of Impacts	Status
3	Small Craft Launch, NSE	An Environmental Assessment is being prepared for the proposed construction of a small craft launch at NSE. The purpose of the project is to provide unrestricted access to an on-site small craft launch for waterfront services in support of operational forces assigned to NSE. A boat ramp would allow the Navy to expeditiously respond to events such as oil spills, security threats, or other situations in the East Waterway that require immediate response by boat. The project is needed because NSE does not currently have a small craft launch facility. All launches of small craft are conducted off-base at the Port of Everett public launch, located 1 mile north of the installation.	Present
4	New Central Utility Plant for the Providence Everett Medical Center (north of NSE)	Providence Everett Medical Center, located between 13 and 14 Street from Colby to Oakes Avenues in Everett, has added a new central utility plant Noise mitigation techniques associated with a new central utility plant were installed because of the noise sources and because the hospital property is located adjacent to single family homes.	Present
5	P-8A Multi-Mission Aircraft (MMA)	The Navy is preparing an Environmental Impact Statement (EIS) for providing facilities and functions to support the homebasing of 12 P-8A MMA squadrons and one fleet replacement squadron at established maritime patrol homebases. The P-8A would replace the P-3C aircraft. Currently, P-3C patrol squadrons are based at Naval Air Station (NAS) Jacksonville, Florida; NAS Whidbey Island; NAS Brunswick, Maine; and Marine Corps Base Hawaii Kaneohe Bay, with periodic detachments at NAS North Island, California. Under the preferred alternative, four P-8A MMA fleet squadrons would be homebased at NAS Whidbey Island. The transition would begin no later than 2012 and be complete in 2019.	Future
6	EA-18G Growler	The EA-18G Growler is an Airborne Electronic Attack aircraft that operates from either an aircraft carrier or from land bases. The Growler has been developed as a replacement for the U.S. Navy EA-6B Prowler aircraft that entered service in 1971 and is approaching the end of operational life. The EA-18G Growler fleet will be based at NAS Whidbey Island, Washington. The transition is underway and is expected to be completed by 2013.	Future
7	The Crescent Bay Salt Marsh and Salmon Restoration Project	The Restoration Project will restore 200 acres of juvenile salmon rearing habitat and other wetland functions to the Crescent Bay marsh, once the largest open barrier island salt marsh (approximately 300 acres) on Whidbey Island in Puget Sound. The restoration site is located on Naval Air Station Whidbey Island. The initial phase of the project includes baseline ecological assessment, restoration design, construction, and 1 year of post-construction monitoring. A second phase will cover implementation of 10 years of post construction monitoring and adaptive management.	Future

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Table 4-1. Cumulative Project List, Naval Station Everett, Washington (Continued)

Number	Project	Description of Impacts	Status
8	Waterfront Repairs, NSE	Various repairs are required for Piers A and B and the South Wharf at NSE. Damaged pre-cast and cast in-place concrete on the under-deck of Pier A would be repaired. Timber protection piles and related support systems would be replaced at five locations on Piers A and B. The repair activities require pile driving; therefore, a USACE permit approval will be obtained. Construction will be scheduled during the approved in-water work windows.	Future
9	Debris Deflector, NSE	Plans to modify a floating debris deflector at NSE located at the northwest corner of the South Wharf. The project involves construction of a floating barrier to effectively deflect debris from the Snohomish River and include anti-terrorism/force protection requirements, sizing of the debris deflector (barrier) to resist wave loadings from a 100-year storm event, and incorporating steel piles into the support system for the structure.	Future
10	Training at Explosive Ordnance Disposal (EOD) Crescent Harbor	Although most activities in the in-shore area will increase, mine countermeasure activities will decrease. No more than two underwater detonations per year (a decrease of 56 detonations) will take place at Crescent Harbor, and no more than two underwater detonations per year will take place at Floral Point, for a maximum of four detonations per year. The charges will be no larger than 2.5 pounds at Crescent Harbor and 1.5 pounds at Floral Point.., Record of Decision signed for the Ongoing and Proposed Use of the Northwest Training Range Complex, October, 2010.	Future
11	Riverfront Redevelopment, Port of Everett, City of Everett	The proposed action includes construction of a mixed-use commercial/residential development, shoreline and habitat restoration, and rehabilitation of a former, mostly industrial site. The proposed Master Plan includes the construction of up to 900,000 square feet of mixed commercial use; 200,000 square feet of hotel space; and up to 1,400 residential units (multi- and single-family). The ultimate mix of uses constructed will be determined by market demand and the land use capacity of the site (type, location, and size of uses and structures, and infrastructure capacity). A Final Environmental Impact Statement (FEIS) was issued on 11 June 2008. On 24 November 2008, the City issued an Addendum to the Riverfront Redevelopment EIS. On 8 January 2010, the City issued a second Addendum to the Everett Riverfront Redevelopment FEIS to address the Riverfront Public Amenities Master Plan. On 4 March 2010, the City issued Addendum No. 3 to the Everett Riverfront Redevelopment FEIS to address new information regarding the Wetland and Stream Compilation and Review Report.	Future
12	Everett Smelter Site Cleanup Action Plan Area	Construction of an asphalt and concrete batch plant and barge off-load facility on a 22.07 acre site.	Future

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Table 4-2. Cumulative Project List, Naval Air Station North Island, California

Number	Project	Description of Impact	Status
1	Wastewater Master Plan	A City of Coronado plan for sewer main replacement, rehabilitation of the Cays main pump station, and Margarita Avenue sewer main replacement.	Past
2	Development of Home Port Facilities for the Three NIMITZ-Class Aircraft Carriers in Support of the *U.S. Pacific Fleet, Coronado, California; Bremerton, Washington; Everett, Washington; and Pearl Harbor, Hawaii*,	Documented in an Environmental Impact Statement (EIS) dated 1999 and Supplemental EIS (SEIS) dated December 2008, construction and operation of facilities and infrastructure needed to support the capacity to homeport three NIMITZ-class nuclear-powered aircraft carriers at Naval Base Coronado (NBC). The SEIS included a cumulative impacts analysis that projected traffic increases as a result of future actions at NBC. Actions to mitigate cumulative traffic impacts on NBC and in the city of Coronado were identified in the SEIS.	Past
3	USFWS Refuges Comprehensive Conservation Plan (CCP)	The CCP addresses topics of resource management, visitor use, refuge operations, and development in general terms.	Past
4	Roadway Preventive Maintenance	Slurry seal of one-sixth of the city of Coronado's streets. Slurry seal is a thin mixture consisting of fine sand, water, and emulsified asphalt applied to asphalt.	Past, Present, and Future
5	Coronado Cays Storm Drain Rehabilitation Phase III	Repair of storm drains in the Coronado Cays that show failed joint lines, non-storm related flow, and heavy debris and soil build up within the lines.	Past, Present, and Future
6	The Marina at Naval Amphibious Base Coronado, NBC	Erosion control, restoration of deteriorated marina facilities, and enhancement and expansion of existing recreational functions of the marina at NBC.	Present
7	Fiber Optic Cabling Connection Project	The City of Coronado plans an interconnection of the main sewer pump stations for monitoring purposes and future automated control.	Present
8	U.S. Navy Lighterage	Construction of a Waterfront Command and Control Facility for Amphibious Construction Battalion One facilities to support the introduction of the improved Navy Lighterage System at NBC.	Present
9	Current, Emerging, and Future Training Operations in the Southern California (SOCAL) Range Complex	Within the SOCAL Range Complex, continuation of training, an increase in training activities, force structure changes associated with introduction of new weapons systems, new classes of ships, and the introduction of new types of aircraft into the Fleet.	Present, Future
10	Mobile Security Forces and Naval Special Clearance Team-One Pier and Boat Ramp	Provision of facilities for the co-location of two new commands at Naval Air Station North Island (NASNI), the Mobile Security Forces and the Naval Special Clearance Team-One, including construction of a pier, boat ramp, and several buildings; paving; site improvements with security fencing and lighting, landscaping and irrigation; and a paved vehicle storage yard.	Future

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Table 4-2. Cumulative Project List, Naval Air Station North Island, California (Continued)

Number	Project	Description of Impact	Status
11	Final Environmental Impact Statement (FEIS) for the Introduction of the P-8A Multi-Mission Maritime Aircraft (MMA) into the U.S. Navy Fleet	This FEIS evaluates the environmental consequences associated with homebasing 12 P-8A Fleet squadrons and 1 Fleet Replacement Squadron at established maritime patrol home bases. The FEIS analyzes personnel transition, new construction and renovation of structures, and all airfield operations necessary to accommodate the basing of P-8A MMA. The P-8A is being introduced to replace the aging P-3C Orion aircraft. Currently, P-3C patrol squadrons have periodic detachments at NASNI. The Notice of Record of Decision was published in the Federal Register on 2 January 2009.	Future
12	Silver Strand Training Complex (SSTC), San Diego, CA	Draft EIS prepared January 2010 covers future Navy training exercises. At SSTC-South, training would increase the number of intrusive noise events.	Future
13	Helicopter Wings Realignment and MH-60R/S Helicopter Transition, Naval Base Coronado, CA	Proposed realignment of the Helicopter Wings. Noise from additional aircraft and traffic from additional personnel are the main impacts to be analyzed. Analysis of traffic impact is covered in #2, SEIS Home Port Facilities for the Three NIMITZ-Class Aircraft Carriers in Support of the Pacific Fleet, NBC. The additional aircraft will have little effect on existing noise contours because predicted helicopter operations at end-state are less than historic air operations used in modeling, and fixed-wing aircraft dominate the noise environment.	Future
14	NASNI, NBC Lodge Expansion	Demolition of four existing Navy Lodge buildings and several smaller structures and the construction of a lodge building and cottages to increase room capacity. Construction of recreation facilities, parking lots and road upgrades, retail shops, a restaurant, and landscaping and utility upgrades.	Future
15	Sixth and Orange Drainage Improvements	The City of Coronado is planning the preparation of drainage studies and improvements for the Fourth and Alameda drainage basin and the Sixth and Orange drainage basin.	Future

4.2 CUMULATIVE IMPACT ANALYSIS

For the purpose of determining the overall impact that can be expected if individual impacts are allowed to accumulate, the impacts listed in Tables 4-1 and 4-2 and the impacts of the Proposed Action are analyzed below.

4.2.1 AIR QUALITY

Potential cumulative impacts on air quality include the operation of the shipboard generators while in port, and emissions from marine coatings used during maintenance and repair. In light of these concerns, the No-action Alternative, Alternative 1, or Alternative 2 in conjunction with the cumulative actions listed in Tables 4-1 or 4-2 would have a temporary increase in nitrogen oxides (NOx) and volatile organic compounds (VOC) air emissions. However, none of the

emissions generated by the Proposed Action or for those individual projects listed in Tables 4-1 or 4-2 would exceed the General Conformity *de minimis* emissions thresholds in any one year. Therefore, the cumulative effects on air quality from implementation of the Proposed Action in combination with past, present, or reasonably foreseeable future projects would be minimal.

4.2.2 AIRSPACE

Implementation of the Proposed Action in conjunction with the cumulative actions listed in Tables 4-1 or 4-2 would not incrementally affect airspace within the region of influence because no airspace impacts were identified in the analysis presented in Chapter 3.0. No other projects in the region of influence have been identified that would have the potential for incremental additive cumulative impacts on controlled or uncontrolled airspace, special use airspace, military training routes, en route airways and jet routes, airports/airfields, or air traffic control. Consultation with the Federal Aviation Administration on all matters affecting airspace would eliminate the possibility of indirect adverse impacts and associated cumulative impacts on airspace use. Therefore, the Proposed Action in combination with past, present, or reasonably foreseeable future projects would not result in significant cumulative airspace impacts.

4.2.3 BIOLOGICAL RESOURCES

Potential cumulative impacts on marine plants and invertebrates include releases of chemicals into the ocean, introduction of debris into the water column and onto the seafloor, and mortality and injury of marine organisms near the mooring site of the SBX Radar Vessel. In light of these concerns, implementation of the No-action Alternative, Alternative 1 or Alternative 2 in conjunction with the cumulative actions listed in Tables 4-1 or 4-2 would have small or negligible potential impacts as described in Chapter 3. Analysis provided in Chapter 3.0 determined that any impacts to biological resources including threatened or endangered species would be less than significant. There would be no long-term changes to species abundance or diversity, no loss or degradation of sensitive habitats, and no effects to threatened and endangered species from the temporary mooring, maintenance, and repair of the SBX Radar Vessel. Therefore, the Proposed Action in combination with past, present, or reasonably foreseeable future projects would not result in significant cumulative biological impacts.

4.2.4 HAZARDOUS MATERIALS AND WASTE

Cumulative impacts on hazardous materials and waste would consist of the effects of the Proposed Action in conjunction with the cumulative actions listed in Tables 4-1 or 4-2. Large quantities of hazardous materials and waste would affect the hazardous materials management system of the facilities involved, in addition to impacting the local hazardous waste recycling facilities and treatment, storage, and disposal facilities. However, the impacts are expected to be minimal and effectively managed through the existing permitting and procedures. Therefore, the Proposed Action in combination with past, present, or reasonably foreseeable future projects would not result in significant cumulative hazardous materials and waste impacts.

4.2.5 NOISE

Residents in the vicinity of the proposed project site at NASNI and at NSE would be affected by the noise from the operation of the shipboard generators and shipyard equipment while in port, but only temporarily. When mitigated, this effect, in conjunction with the cumulative actions

listed in Tables 4-1 or 4-2, is not expected to cause elevated noise levels significantly above the ambient noise in the residential areas contiguous to the naval stations. The proposed activities would not occur at the same time as the homeporting of a nuclear-powered aircraft carrier, thus decreasing the impact of added traffic noise. Therefore, the Proposed Action in combination with past, present, or reasonably foreseeable future projects would not result in significant cumulative noise impacts.

4.2.6 SOCIOECONOMICS

Cumulative impacts on socioeconomics would consist of any significant effect to regional employment, income, housing, or infrastructure. Implementation of the Proposed Action would not produce any significant regional employment, income, housing, or infrastructure impacts. The mooring of the SBX Radar Vessel should not significantly impact any individual fisherman, overall commercial revenue, or public recreational opportunities. Therefore, the Proposed Action in combination with past, present, or reasonably foreseeable future projects listed in Tables 4-1 or 4-2 would not result in significant cumulative socioeconomic impacts.

4.2.7 TRANSPORTATION

Cumulative impacts on traffic would consist of the effects of the Proposed Action at NASNI in combination with other projects listed in Table 4-2 that would result in increased traffic volumes or conflicts in the city of Coronado. When two CVNs and the SBX Radar Vessel are in port, the 1.2 percent increase in average daily traffic from the SBX would have a negligible impact on the average daily traffic leading to NASNI via the city of Coronado. The cumulative impact of the Proposed Action at NASNI in conjunction with actions listed in Table 4-1 is mitigated by current traffic reduction measures and incentives. Therefore, the Proposed Action in combination with past, present, or reasonably foreseeable future projects listed in Table 4-2 would not result in significant cumulative transportation impacts.

There is no potential for significant impacts from the Proposed Action on transportation in the vicinity of NSE.

4.2.8 VISUAL AND AESTHETICS

NSE is one of a number of industrial land uses on the waterfront area of the city of Everett. NSE is experienced visually from prominent public vantage points to the east. NASNI is experienced from prominent public vantage points on adjacent shoreline and marine areas as well as from the city of San Diego across the bay. Military aircraft carriers and related ships have been recognized as part of both installations for decades, and the nature of the shoreline constantly changes. Although the overall visual effect of the SBX Radar Vessel may be perceived as intrusive at NSE and NASNI, the cumulative impact of the Proposed Action in conjunction with the actions listed in Table 4-1 and 4-2 is mitigated because the proposed activities would not occur at the same time as the homeporting of a nuclear-powered aircraft carrier, thus decreasing the visual and aesthetic impact.

4.2.9 WATER RESOURCES

Effects of the Proposed Action, specifically underwater welding activities having the potential to introduce metals into waters, are insignificant. These metal constituents are not readily dissolved in the surround waters and would fall to the harbor floor. No long-term accumulation is expected; therefore, the cumulative effects on water quality from implementation of the Proposed Action in combination with past, present, or reasonably foreseeable future projects listed in Tables 4-1 and 4-2 would be minimal.

5.0 References

5.0 REFERENCES

Aircraft Owners and Pilots Association, 2004. TFRs downgraded after AOPA intervention [Online]. Available: http://www.aopa.org/whatsnew/newsitems/2004/041223nsa.html.

Boeing, 2009. Ground-Based Midcourse Defense Safety Assessment Report (SAR), Main Volume, Part 1, June (For Official Use Only).

California Air Resources Board (CARB), 2010. Almanac Emission Projection Data (Published in 2009), San Diego Air Basin [Online]. Available: http://www.arb.ca.gov/app/emsinv/emseic1_query.php. Accessed on 4 October 2010.

City of Coronado, 1995. *The City of Coronado General Plan Circulation Element,* October.

City of Coronado, 2010. Visitors [Online]. Available: http://www.coronado.ca.us/category/?fcs=3-0.

City of Everett, 2008. EverettWashingtonUSA—Economic Development [Online]. Available: http://www.everettwa.org/default.aspx?ID=1454.

City of Everett, 2009a. Zoning Map, Planning and Community Development, December.

City of Everett, 2009b. Everett Municipal Code, Chapter 20.08.040-Noise Control, 18 November.

Commander Navy Region Southwest, 2002. *Naval Base Coronado Environmental Assessment*, February.

Commander Navy Region Southwest (COMNAVREGSW), 2005. Senior Officer Present Afloat (SOPA), COMNAVREGSW INSTRUCTION 5400.2, 27 July.

Commander Navy Region Southwest (COMNAVREGSW), 2009. *Afloat Environmental Quick Response Guide,* 12 March.

Commander, U.S. Pacific Fleet, 2008. *Draft Northwest Training Range Complex Environmental Impact Statement/Overseas Environmental Impact Statement,* December.

Commander, U.S. Pacific Fleet, 2010. *Silver Strand Training Complex Draft Environmental Impact Statement* [Online]. Available: http://www.silverstrandtrainingcomplexeis.com/Documents/Silver_Strand_Draft_EIS[1].pdf, January.

County of San Diego, 2009. Guidelines for Determining Significance and Report Format and Content Requirements Dark Skies and Glare. Department of Planning and Land Use-Department of Public Works, January [Online]. Available: http://www.co.san-diego.ca.us/dplu/docs/Dark_Skies_Guidelines.pdf.

Coronado Island Adventure, 2010 Coronado, California: Tourism [Online]. Available: http://www.servinghistory.com/topics/Coronado,_California::sub::Tourism

Coronado Unified School District, 2008-2009. The State of Coronado Unified School District—Finger Tip Facts.

Department of Defense, Missile Defense Agency, 2005. *Ground-based Midcourse Defense (GMD), Sea-Based X-Band (SBX) Radar, Placement and Operations Adak, Alaska, Environmental Assessment*, October.Department of Defense, 1978. Planning in the Noise Environment: AFM 19-10, TM 5-03-2, and NAVFAC P-970, June 15.

Everett Public School, 2010. About Everett Public Schools [Online]. Available: http://www.everett.k12.wa.us/everett/About%20Our%20District.

Federal Aviation Administration, 2007. Instrument Procedures Handbook, updated 21 May 2008, page 1-7 [Online]. Available: http://www.faa.gov/library/manuals/aviation/instrument_procedures_handbook/.

Federal Aviation Administration, 2010. Aeronautical Information Manual, Official Guide to Basic Flight Information and ATC Procedures (Chapter 3, Section 4 Special Use Airspace) [Online]. Available: http://www.faa.gov/air_traffic/publications/atpubs/aim/index.htm.

The Glosten Associates, 2010. Project Memorandum P9-000-01, SBX-1 Seachest Info, 23 August.

Golden, J., R.P. Ouellette, S. Saari, P. Cheremisinoff, 1980. *Environmental Impact Data Book*, Ann Arbor Science Publishers, Inc., Ann Arbor, MI.

Hard, J.J., J.M. Myers, M.J. Ford, R.G. Cope, G.R. Pess, R.S. Waples, G.A. Winans, B.A. Berejikian, F.W. Waknitz, P.B. Adams, P.A. Bisson, D.E. Campton, and R.R. Reisenbichler, 2007. Status review of Puget Sound steel head *(Oncorhynchus mykiss)*. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-NWFSC-81, 117 p. June.

Hawkins, A.D. and A.D.F. Johnstone, 1978. The hearing of the Atlantic salmon, *Salmo salar*. Journal of Fish Biology 13: 655-673.

High Capacity Manual, 2000. Transportation Research Board—The National Academies [Online]. Available: http://www.trb.org/Main/Blurbs/Highway_Capacity_Manual_2000_152169.aspx.

Joshi, no date. *Underwater Welding.* Amit Mukund Joshi (Mechanical Engineer), Junior Research Fellow, Mechanical Engineering Department Indian Institute of Technology, I.I.T.-Bombay [Online]. Available: www.metalwebnews.com/howto/underwater.../underwater-welding.pdf.

ManTech, 2010a, *Naval Station Everett Baseline Noise Assessment*, Final, August.

ManTech, 2010b, *SBX Radar Vessel Noise Assessment*, Final, September.

Melaas, Rich, 2010. Communication between Rich Melaas, U.S. Navy and Lieutenant Commander Joan Malik, Judge Advocate General's Corps, U.S. Navy regarding Obstruction Notification, August.

Missile Defense Agency, 2003. *Ground-Based Midcourse Defense* (*GMD) Extended Test Range Environmental Impact Statement (EIS).*

Missile Defense Agency, 2010 email from Dave Fuller, MDA to Barbara Young, KAYA Associates regarding SBX NOx estimated emissions 9/22/10

National Geospatial Intelligence Agency, 2010a. Digital Aeronautical Flight Information Files [Online]. Available: https://www1.nga.mil/ProductsServices/Aeronautical/DigitalAeroFlightInfoFiles/Pages/default.aspx. Accessed on 8 June.

National Geospatial Intelligence Agency, 2010b. Digital Vertical Obstruction Files [Online]. Available: https://www1.nga.mil/ProductsServices/Aeronautical/DigitalVerticalObstructionFile/Pages/default.aspx. Accessed on 31 August.

National Marine Fisheries Service, 2005. Endangered and Threatened Wildlife and Plants: Endangered Status for Southern Resident Killer Whales [Online]. Available: http://www.nwr.noaa.gov/Publications/FR-Notices/2005/upload/70frn69903.pdf, 18 November.

National Marine Fisheries Service, 2008. Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*), Northwest Regional Office [Online]. Available: http://www.nmfs.noaa.gov/pr/pdfs/recovery/whale_killer.pdf, January.

National Marine Fisheries Service, 2009. Green Sturgeon *(Acipenser medirostris*) [Online]. Available: http://www.nmfs.noaa.gov/pr/species/fish/greensturgeon.htm.

National Marine Fisheries Service, 2010a. Pacific Eulachon/Smelt *(Thaleichthys pacificus)* [Online]. Available: http://www.nmfs.noaa.gov/pr/species/fish/pacificeulachon.htm.

National Marine Fisheries Service, 2010b. Bocaccio *(Sebastes paucispinis*) [Online]. Available: http://www.nmfs.noaa.gov/pr/species/fish/bocaccio.htm.

National Marine Fisheries Service, 2010c. Canary Rockfish *(Sebastes pinniger)* [Online]. Available: http://www.nmfs.noaa.gov/pr/species/fish/canaryrockfish.htm.

National Marine Fisheries Service, 2010d. Yelloweye Rockfish *(Sebastes ruberrimus)* [Online]. Available: http://www.nmfs.noaa.gov/pr/species/fish/yelloweyerockfish.htm.

National Marine Fisheries Service, 2010e. Steller Sea Lion *(Eumetopias jubatus)* [Online]. Available: http://www.nmfs.noaa.gov/pr/species/mammals/pinnipeds/stellersealion.htm.

National Marine Fisheries Service, 2010f. Endangered and Threatened Wildlife and Plants: Threatened Status for the Puget Sound/Georgia Basin Distinct Population Segments of Yelloweye and Canary Rockfish and Endangered Status for the Puget Sound/Georgia Basin Distinct Population Segment of Bocaccio Rockfish, Federal Register/Vol. 75, No.

81/Wednesday, April 28, 2010/Rules and Regulations [Online]. Available: http://www.nmfs.noaa.gov/pr/pdfs/fr/fr75-22276.pdf.

National Marine Fisheries Service, 2010g. Humpback Whale *(Megaptera novaeangliae*) [Online]. Available: http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/humpbackwhale.htm.

National Oceanic and Atmospheric Administration, 2005. Designating Critical Habitat for West Coast Salmon and Steelhead—Considerations for Department of Defense Lands and Impact on National Security [Online]. Available: http://www.nwr.noaa.gov/Salmon-Habitat/Critical-Habitat/Redesignations/upload/F-4B2-APXA.PDF, July.

National Wildlife Federation, 2010. Puget Sound [Online]. Available: http://www.nwf.org/Wildlife/Wild-Places/Puget-Sound.aspx.

Naval Facilities Engineering Command, 2001. Final Biological Assessment Naval Station Everett Piers Delta and Echo Pile Repairs, Engineering Field Activity, Northwest, April.

Naval Facilities Engineering Command, 2008. FY 2008 Secretary of Defense Environmental Awards Environmental Award Competition Natural Resources Conservation Large Installation [Online]. Available: https://www.denix.osd.mil/portal/.../1%20Naval%20Base%20Coronado.doc.

Naval Facilities Engineering Command Northwest (NAVFAC NW), 2005. *Air Emission Inventory Report for Title V Applicability During Calendar Year 2004 at Naval Station Everett, Everett, Washington*, 30 September.

Naval Station Everett, 2008a. Integrated Natural Resources Management Plan, Everett, Washington, October.

Naval Station Everett, 2008b. Oil Spill Prevention, Control, and Countermeasure (SPCC) Plan Naval Station Everett Navy Support Complex Smokey Point Naval Radio Station (T) Jim Creek Pacific Beach Resort and Conference Center, November.

Naval Station Everett, 2009a. *Biological Assessment Naval Station Everett, Waterfront Repairs—Major*, October.

Naval Station Everett, 2009b. Hazardous Waste Management Plan Naval Station Everett Navy Support Complex Smokey Point Naval Radio Station (T) Jim Creek Pacific Beach Resort and Conference Center.

Naval Station Everett, 2010. Email between Dr. Karen Barnes (KAYA Associates, Inc.) and Kristin Ching (CIV NAVSTA Everett) confirming Socioeconomic Numbers for Naval Station Everett.

Noise Control Engineering, 2010. SBX-1: Topside Noise Survey, Technical Memo 2010-066, 21 June (For Official Use Only).

Occupational Safety and Health Administration, 2003. OSHA's Approach to Noise Exposure in Construction [Online]. Available: http://www.elcosh.org/record/document/596/d000573.pdf.

Pacific Fishery Management Council, 1999. Identification of Essential Fish Habitat for Pacific Salmon (Appendix A of Amendment 14 to Pacific Coast Salmon Plan, January 1999) [Online]. Available: http://www.psmfc.org/efh/salmon_efh.html.

Pacific Northwest Pollution Prevention Resource Center and Washington Department of Ecology, 1999. Pollution Prevention at Shipyards—A Northwest Industry Roundtable Report [Online]. Available: http://www.p2pays.org/ref/07/06643/rt_appc.html.

PortofEverett.com, 2010. Tourism Map of Everett Waterfront.

Puget Sound Clean Air Agency, 2005. Order to Establish Pier Side and Dry Dock use of 2 Abrasive Blasting Units with associated area enclosures and 2 Dust Collectors, for Abrasive Blasting and Spray Coating of Military Surface Vessels, August.

Puget Sound Clean Air Agency, 2009. *2008 Air Quality Data Summary*, October.

Puget Sound Naval Shipyard, 2007. Environmental and Safety Requirements for Puget Sound Naval Shipyard and Intermediate Maintenance Facility Contractors, April.

San Diego, 2010. ISMCS Station [Online]. Available: http://www.wrh.noaa.gov/sgx/climate/san-san.htm.

San Diego Air Pollution Control District (APCD), 2007. *Eight-Hour Ozone Attainment Plan for San Diego County, May.*

San Diego Air Pollution Control District (APCD), 2009. *Air Quality in San Diego, 2009 Annual Report.*

San Diego Air Pollution Control District (APCD), 2010. Rule 10, 11, and 67-18 [Online]. Available: http://www.sdapcd.org/rules/reg_4.html

San Diego County Regional Airport Authority, 2003**.** Air Transportation Action Program—ATAP Draft Tier One Screening Analysis Appendix G. Airspace Review [Online]. Available: http://www.asap21.net/news/airspace_review.pdf, 23 June.

San Diego Economy, 2009. San Diego: Economy—Major Industries and Commercial Activity [Online]. Available: http://www.city-data.com/us-cities/The-West/San-Diego-Economy.html

San Diego Region Regional Water Quality Control Board, 1998. Water Quality Control Plan for the San Diego Basin.

San Diego Unified Port District, 1980. Final Environmental Impact Report on the Master Plan. Environmental Management Department.

Schomer, P.D. 2005. Criteria for assessment of noise annoyance. Noise Control Eng. J. 53 (4):132-144.

Shared Strategy for Puget Sound, 2007. Puget Sound Salmon Recovery Plan [Online]. Available: http://www.sharedsalmonstrategy.org/plan/toc.htm, January.

Shipbuilders.org, 2005. Shipyard Stormwater Best Management Practice #2: Out-of-Doors Spray Painting—Exterior Hull [Online]. Available: http://www.shipbuilders.org/Portals/Shipbuilders/documents/pdf/8112005113314A.pdf.

Snohomish County, 2001. Snohomish River Basin Chinook Salmon Near Term Action Agenda, Snohomish Basin Salmon Recovery Forum [Online]. Available: http://www.co.snohomish.wa.us/documents/Departments/Public_Works/surfacewatermanagement/aquatichabitat/salmon/snohomish/near_term_actions/fulldoc.pdf.

Snohomish County Public Works, 2002. Salmonid Habitat Limiting Factors Analysis Snohomish River Watershed -WRIA 7 Final Report [Online]. Available: http://www1.co.snohomish.wa.us/Departments/Public_Works/Divisions/SWM/Library/Publications/Aquatic_Habitat/Salmon/SalmonidHabitatLimitingFactorsAnalysis.htm, December.

Southwest Fisheries Science Center, 2007. "San Diego Bay Sea Turtles," NOAA Fisheries Service Protected Resources Division [Online]. Available: http://swfsc.noaa.gov/textblock.aspx?Division=PRD&ParentMenuId=212&id=4378.

Uniform National Discharge Standards, 2008. Phase I of the Regulatory Development Process [Online]. Available: http://unds.bah.com/Phase_I.html

Uniform National Discharge Standards, 2010. UNDS: Current Status [Online]. Available: http://unds.bah.com/status.html.

Underwater, 2009. Into the Deep, 2009 ROV-Official Journal of the Association of Diving Contractors International and Underwater Intervention, January/February.

U.S. Air Force, 2010. *Air Conformity Applicability Model (ACAM)*, Version 4.5, Technical Documentation, January.

U.S. Army Space and Missile Defense Command, 2003. Ground-Based Midcourse Defense (GMD) Extended Test Range Final Environmental Impact Statement (EIS), July.

U.S. Census Bureau 2000a. American FactFinder Everett City. [Online]. Available: http://factfinder.census.gov/servlet/SAFFFacts?

U.S. Census Bureau 2006/2008a. American FactFinder Everett City 2006-2008 American Community Survey 3-Year Estimates [Online]. Available: http://factfinder.census.gov/servlet/ACSSAFFFacts?_event

U.S. Census Bureau 2000b. American FactFinder Coronado City and San Diego City. [Online]. Available: http://factfinder.census.gov/servlet/SAFFFacts?

U.S. Census Bureau 2006/2008b. American FactFinder Coronado City and San Diego City. 2006-2008 American Community Survey 3-Year Estimates [Online]. Available: http://factfinder.census.gov/servlet/ACSSAFFFacts?_event.

U.S. Census Bureau, 2006-2008c. American Community Survey.

U.S. Coast Guard, 2004. *Environmental Assessment for Construction of Support Facilities for Coastal Patrol Boat "Blue Shark" at Naval Station Everett, Everett Washington*, December.

U.S. Department of Agriculture, Forest Service, 2006. Northwest Forest Plan—The First 10 Years (1994-2003): Status and Trends of Populations and Nesting Habitat for the Marbled Murrelet [Online]. Available: http://www.fs.fed.us/pnw/pubs/pnw_gtr650.pdf, June.

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, 2002. Wind Rose Plot for Station # 23188-San Diego/Lindbergh Field, CA [Online]. Available: http://www.wcc.nrcs.usda.gov/climate/windrose.html.

U.S. Department of the Army, 1997. Army Regulation 200-1: Environmental Quality; Environmental Protection and Enhancement, 21 February.

U.S. Department of the Army, 2005. Operational Noise Manual. Center for Health Promotion and Preventive Medicine (CHPPM).

U.S. Department of the Navy, 1984. *NAS North Island Air Installation Compatible Use Zones Study (AICUZ)*.

U.S. Department of the Navy, 1992. *Draft Programmatic EIS for Dredged Material Disposal (from three volumes). Southwest Division, Naval Facilities Engineering Command, San Diego, CA*.

U.S. Department of the Navy, 1995. *Final Environmental Impact Statement for Development of Facilities in San Diego/Coronado to Support the Homeporting of One Nimitz-Class Aircraft Carrier, October*.

U.S. Department of the Navy, 1999. *Final Environmental Impact Statement for Developing Homeporting Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet, Coronado, California; Bremerton, Washington; Everett, Washington; and Pearl Harbor, Hawaii*, July.

U.S. Department of the Navy, 2000. Record of Decision for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet, Federal Register: February 8, 2000 (Volume 65, Number 26) [Online]. Available: http://www.epa.gov/EPA-IMPACT/2000/February/Day-08/i2831.htm.

U.S. Department of the Navy, 2006. *Marine Resources Assessment for the Pacific Northwest Operating Area, Pacific Division*, Naval Facilities Engineering Command, Pearl Harbor, Hawaii, September.

U.S. Department of the Navy, 2007. OPNAV INSTRUCTION 5090.1C, Chapter 20—Noise Prevention Ashore, 30 October.

U.S. Department of the Navy, 2008. *Final Supplemental Environmental Impact Statement for Developing Homeporting Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet*, December.

U.S. Department of the Navy, 2010. Email between Barbara Young (KAYA Associates, Inc.) and Dan Barosso (Community Planner, Naval Base Coronado, NAVFAC, SW) confirming ambient noise at Naval Air Station North Island, 22 September 2010.

U.S. Environmental Protection Agency, 1995. *Table 2 to Subpart II of Part 63, Volatile Organic HAP (VOHAP) Limits for Marine Coatings [Online]. Available http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=8b13a538a96e1c506ba956ffc99c578a&rgn=div9&view=text&node=40:10.0.1.1.1.9.18.11.13&idno=40*

U.S. Environmental Protection Agency, 1998. Compilation of Air Pollution Factors, Volume I: Stationary Point and Area Sources (AP-42), Section 3.4 Large Stationary Diesel and All Stationary Duel-fuel Engines, 1998 version.

U.S. Environmental Protection Agency, 1999. Phase 1 Final Rule and Technical Development Document of Uniform National Discharge Standards (UNDS). EPA Reference #EPA-842-R-99-001 [Online]. Available: http://water.epa.gov/lawsregs/lawsguidance/cwa/vessel/unds/upload/2007_07_10_oceans_regulatory_unds_TDDdocuments_appAunderNOD-2.pdf.

U.S. Environmental Protection Agency, 2003. Draft Environmental Effects Analysis Report Underwater Ship Husbandry. EPA Reference #842-D-06-012 [Online]. Available: http://water.epa.gov/lawsregs/lawsguidance/cwa/vessel/unds/upload/2006_08_01_oceans_regulatory_unds_shiphusbandry_UWSH_EEAR_draft-2.pdf.

U.S. Environmental Protection Agency, 1995. *Table 2 to Subpart II of Part 63, Volatile Organic HAP (VOHAP) Limits for Marine Coatings [Online]. Available http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=8b13a538a96e1c506ba956ffc99c578a&rgn=div9&view=text&node=40:10.0.1.1.1.9.18.11.13&idno=40*

U.S. Fish and Wildlife Service, 2004. Draft Recovery Plan for the Coastal-Puget Sound Distinct Population Segment of Bull Trout (*Salvelinus confluentus*), Volume I (of II) Puget Sound Management Unit (including the Chilliwack River and associated tributaries flowing into British Columbia, Canada).

U.S. Fish and Wildlife Service, 2007. "Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List the Black-Footed Albatross (Phoebastria nigripes) as Threatened or Endangered," Federal Register: October 9, 2007 (Volume 72, Number 194) (Online). Available: http://www.fws.gov/policy/library/E7-19690.html. Accessed 2 January 2008.

U.S. Fish and Wildlife Service, 2008. Short-Tailed Albatross Recovery Plan [Online]. Available: http://ecos.fws.gov/docs/recovery_plan/090520.pdf.

U.S. Fish and Wildlife Service, 2009. Endangered and Threatened Wildlife and Plants; Short-Tailed Albatross (*Phoebastria albatrus*): Initiation of 5-Year Status Review; Availability of Final Recovery Plan [Online]. Federal Register May 20, 2009, Volume 74, Number 96. Available: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname= 2009_register&docid=fr20my09-80.

U.S. Fish and Wildlife Service, 2010a. *Short-Tailed albatross* (*Phoebastria albatrus*) [Online]. Available: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B00Y.

U.S. Fish and Wildlife Service, 2010b. "Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for Bull Trout in the Conterminous United States," *Federal Register*/Vol. 75, No. 200/Monday, October 18, 2010/Rules and Regulations [Online]. Available: http://www.fws.gov/pacific/bulltrout/pdf/BTCHFR101810.pdf.

U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, 2009. Marbled Murrelet *(Brachyramphus marmoratus)* 5-Year Review, 12 June [Online]. Available: http://ecos.fws.gov/docs/five_year_review/doc2417.pdf.

Washington Department of Ecology, 2000. Central Puget Sound Geographic Response Plan (GRP), March.

Washington Department of Ecology, 2008. Water Quality Assessment for Washington (WQA) [Online]. Available: http://apps.ecy.wa.gov/wats08/Default.aspx.

Washington Department of Ecology, 2009a. Sediment Characterization Study in Port Gardner and Lower Snohomish Estuary Port Gardner, WA, July.

Washington Department of Ecology, 2009b. Everett Shoreline Master Program [Online]. Available: http://www.ci.everett.wa.us/default.aspx?ID=869, December.

Washington Department of Ecology, 2010. Puget Sound Initiative Sediment Investigations in Port Gardner and the Lower Snohomish River Estuary [Online]. Available: http://depts.washington.edu/uwconf/psgb/proceedings/papers/p9_nakay.pdf.

Washington Department of Fish and Wildlife, undated. Public Fishing Piers of Puget Sound, Common Catches from a Pier [Online]. Available: http://wdfw.wa.gov/fishing/ piers/caught.html.

Washington Department of Fish and Game, 2010. Washington's Vessel Regulation Protecting Southern Resident Killer Whales [Online]. Available: http://wdfw.wa.gov/wlm/diversty/ soc/orca/. Accessed 26 July 2010.

Washington State Department of Natural Resources, 2006. Priority Marine Sites for Conservation in the Puget Sound, D. Palazzi and P. Bloch, Aquatic Resources Division, Aquatic Reserves Program, June.

Whalewatching.com, 2008. Learn About the Whales [Online]. Available: http://www.whalewatching.com/whale_information.shtml.

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Appendix A
Distribution List