



INTRODUCTION

Naval Base (NAVBASE) Kitsap, located in Kitsap County, Washington, is the largest naval installation in Navy Region Northwest (NRNW). Formed in 2004, it includes the former Naval Submarine Base Bangor, Naval Station Bremerton, and NAVBASE Keyport, as well as Manchester Fuel Depot, Naval Hospital Bremerton, Jackson Park Housing Complex and other properties in Washington and Alaska. NAVBASE Kitsap provides world class service, programs and facilities to meet the needs of hosted warfighting commands, tenant activities, crews, employees, and service member families.

NAVBASE Kitsap is conceivably the most complex base in the Navy, hosting approximately 70 tenant commands including Strategic Weapons Facility Pacific (SWFPAC), Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS&IMF), Naval Undersea Warfare Center (NUWC) Keyport, Commander Navy Region Northwest (CNRNW), and Submarine Group 9. NAVBASE Kitsap provides base operating services to home-ported fleet units including SSBN, SSGN, and SSN class submarines as well as a CVN. NAVBASE Kitsap provides critical infrastructure not commonly found elsewhere to support a world-class shipyard, a Marine Corps Security force of approximately 800 individuals, the largest U.S. Coast Guard Maritime Force Protection Unit in the nation, the largest CONUS Navy underground fuel storage facility, a heavyweight and lightweight torpedo facility, and Unmanned Underwater Vehicle research and testing facilities.

NAVBASE Kitsap has \$8B in infrastructure including 23 piers and seven drydocks, including the only CVN capable drydock on the west coast, and drydock certified for SSBNs. Located approximately 20 miles

west of Seattle, it includes 11,200 acres, 60% of which is forested. The annual payroll is \$2.3 billion with a local economic impact of \$4.6 billion, which places it at approximately 54% of Kitsap County's economy. Nearly 15,000 civil service and 12,000 military personnel are employed at NAVBASE Kitsap. The surrounding community is semi-rural with 395 square miles of land and over 250 miles of marine shoreline.

BACKGROUND

In 2014, the CNRNW Environmental Management System (EMS) began transitioning to an installation-specific EMS to provide greater mission-specific emphasis. The EMS identified generation of hazardous waste, discharges to water, emissions to air and unintended releases or spills as significant aspects. EMS implementation challenges included funding constraints, environmental staff vacancies, outreach to widespread tenant and contractor personnel, maintaining EMS documentation, and communicating roles and responsibilities. In spite of these constraints, NAVBASE Kitsap maintained ISO 14001 conformance as part of the CNRNW EMS and, following the external audit in May 2015, anticipates re-declaring conformance.

In addition to the large number and varied missions of the tenants, NAVBASE Kitsap has challenges that are unique to the northwest. Most properties fall within the Usual and Accustomed grounds and stations of five Native American Tribes: the Skokomish, Port Gamble S'Klallam, Jamestown S'Klallam, Lower Elwha Klallam, and Suquamish. Navy actions that may impact tribal access for fishing or the quality or quantity of fish are subject to consultation and potential mitigation. Daily communication is common, with formal meetings between tribal leadership and the

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Commanding Officer (CO) occurring as required. Additionally, nine animal species have been listed as threatened or endangered under the Endangered Species Act, including fresh water and saltwater salmonids, rockfish, marine mammals and terrestrial birds.



CAPT Zwolfer, CO NAVBASE Kitsap participates in groundbreaking project with representatives (left to right) of Washington State Department of Fish and Wildlife, Representative Kilmer's office, Kitsap County, Suquamish Tribe and EPA.

NAVBASE Kitsap has developed and maintains environmental plans including six Spill Prevention and Control and Countermeasure (SPCC) plans, a tank management plan, and installation-wide hazardous waste, stormwater, and air program management instructions; each are reviewed and updated annually per EMS requirements. The Bangor Facility Operations Plan was updated and received U.S. Coast Guard approval in September 2014. Spill response is managed under the NRNW Integrated Contingency Plan. NAVBASE Kitsap operates under the EPA multi-sector general permit for stormwater discharges at Bangor and Keyport; individual National Pollution Discharge Elimination System (NPDES) permits are held for discharges to Kitsap county sanitary sewer, and discharges of drydock non-contact

cooling water to the Hood Canal. NAVBASE Kitsap Bremerton and Bangor each operate under synthetic minor air permits.

EMS Implementation: The CO meets with the Environmental Director weekly to review compliance issues, project status and develop environmental solutions. The Director manages a staff of 28 including engineers, environmental protection specialists, biologists, a chemist and a historic architect. The Environmental Division is within the Public Works Department with reach-back support provided by Naval Facilities Engineering Command.

NAVBASE Kitsap and CNRNW leadership receive quarterly briefings on EMS implementation, including progress on



EMS Policy Statement

environmental objectives and compliance issues. PSNS&IMF at Bangor is the major industrial tenant operating under NAVBASE Kitsap's EMS, and is committed to reaching



100% compliance. Other tenants have stand-alone EMSs and are not under the NAVBASE Kitsap EMS.

NAVBASE Kitsap performed environmental compliance and EMS audits by following a rigorous Environmental Quality Assessment (EQA) program. An Excel database was used to manage the EQA program, enhancing reporting techniques. The database comprehensively integrates significant aspects and EMS roles and responsibilities with audit schedules and completion dates. Inspection/audit frequency is determined using regulatory requirements and functional risk assessment. Inspections/audits ensure compliance with requirements in the following programs: Air, Storage Tanks, SPCC, Oil and Hazardous Substances, Natural Resources, Stormwater, HW, and Safe Drinking Water. Audit findings are tracked through Plans of Action and Milestones (POAMs) which were entered into a Corrective Action Preventative Action database. Audit metrics were then reported monthly to EQA auditors, environmental program managers, site coordinators, supervisors, and PSNS&IMF, NAVBASE Kitsap and NRNW to ensure they were aware of compliance trends and potential problem areas.

**SUMMARY OF ACCOMPLISHMENTS
Environmental Management Programs**

Storage Tank Management: NAVBASE Kitsap managed 324 above and underground storage tanks (ASTs/USTs) with a combined capacity of over 2.5 million gallons. In FY14, Washington State Department of Ecology completed comprehensive inspections of the UST Program and identified zero issues of non-compliance with state or federal regulations. This was due to aggressive compliance posture. In FY14, a \$1.7M project was awarded to remove eleven single-walled steel USTs, some of which are over

30 years old. Five of the tanks will be replaced with state-of-the-art double wall tanks and piping systems; the remaining six are no longer required and will be removed.



Removal of 30-year-old single-wall steel Underground Storage Tank

Spill Prevention In response to a February 2014 oil spill into the Hood Canal from a malfunctioning ship's overboard discharge (SOD) sump on the Bangor Delta pier, an intensive study was undertaken to identify potential vulnerabilities in infrastructure to prevent similar spills. The study surveyed the entire Bangor waterfront to identify all locations where oily wastes are transferred over water. Immediate process changes were implemented to prevent similar occurrences, and replacement of existing SOD systems with double-wall fiber reinforced plastic piping and interstitial leak detection on the Service Pier, Delta Pier, and Explosive Handling Wharf are ongoing.



Photo of the Delta Pier at NAVBASE Kitsap Bangor



Air Program: Due to the large and diverse number of mission requirements, NAVBASE Kitsap maintains an expansive and technically challenging Air Program. NAVBASE Kitsap has approximately 250 regulated sources, is subject to federal and state greenhouse gas reporting requirements, complies with four federal area source National Emission Standards for Hazardous Air Pollutants (NESHAPs) and has approximately 35 Notice of Construction permits. Program management includes evaluation of requirements for new and existing sources, permitting of new sources, emission calculation and reporting, assessing compliance status of existing sources, and working with tenants to implement requirements. The program has been so well managed that, as of FY15, the program has been removed as a significant aspect.

Waste Reduction: NAVBASE Kitsap operates aggressive waste reduction programs resulting in significant cost savings, reduction in toxicity of wastes and support of mission readiness. The following accomplishments are significant and technically transferable:

- A Hazardous Material (HM) minimization center was established at SWFPAC to aid in the management, reuse, and procurement.
- Dedicated lockers on the Delta Pier were used for collection of excess HM. The readily accessible HM was reissued on site and in a timely manner. \$60,650 of HM has been placed into reuse and waste disposal costs were eliminated.
- Shops updated their Authorized Use List (AUL) annually to delete materials no longer required. Additions to the AUL are subject to an approval process, which includes affirmative procurement, requiring either bio-

based or recycled products, if available. Finally, the process was tailored for an internal Prohibited and Controlled Chemical List (PCCL) in order to achieve its goal of 50 % HM reduction.

- All submarine exterior hull coating repairs have been standardized to include only marine ablative zinc-based anti-foulant coatings containing no ablative copper or other toxic heavy metals. The new coatings have shown to be very reliable.
- Ultra-high solids (99% solids) rapid cure coating was successfully used in all submarine tank recoating preservation projects. This resulted in an approximate 50% solvent reduction and 66% solid waste reduction vice use of standard catalyzed epoxy coatings.
- A dry-dock mini high solids modular paint kitchen was designed and installed. This upgrade is expected to increase painting efficiency by 40% and decrease waste and labor requirements by a minimum of 20%.
- A new \$1.4M Low Metal Clarifier was installed to treat dry dock wastewater and has eliminated the periodic noncompliance with the NPDES permit requirements for copper discharge.
- New waterjet cutting equipment was installed in the PSNS&IMF ship-fitters shop. The equipment has increased the small parts manufacturing efficiency by 40% and reduced waste by approximately 30%.
- Four new high pressure aqueous parts washers were installed. Each washer uses an aqueous detergent and de-foamer for rapid industrial parts cleaning, and eliminates approximately 1,200 gallons of cleaning solvent annually. Further, an alternate part washer detergent and de-foamer and



innovative solvent blend were all tested, AUL approved, and placed into extensive shop applications. These products efficiently remove grease and oils from complex submarine components and do not damage sensitive brass, bronze or aluminum.

- A new innovative solvent blend was shop tested and AUL approved for routine component paint system equipment maintenance and clean-up requirements. The new solvent works very well, meets the Significant New Alternatives Program (SNAP) requirements, is Volatile Organic Compound (VOC) exempt, and is not a Hazardous Air Pollutant (HAP).
- Over 7,700 gallons of B20 biodiesel fuel blend and 163,800 gallons of E85 ethanol fuel were issued.
- A total of 9,938 tons of material were recycled, reducing waste generation and resulting in cost avoidance of \$2,464,600.
- Energy intensity (energy used per square foot of building space) has been reduced by 25.8% from the 2003 baseline. Water intensity (water used per square foot of building space) has also been reduced by 39.5%, compared to the 2007 baseline, exceeding the federal mandate of 26% reduction by the year 2020. Project upgrades included heating, ventilating and air conditioning systems, control systems, and water fixture replacements, and will save \$250,000, 12 billion BTUs and 870,000 gallons of water each year.
- New Light-Emitting Diode (LED) exterior lighting, and variable refrigerant flow heating and cooling systems were installed. A pilot project replaced 123 high-intensity discharge exterior lights with LED fixtures, which reduced energy consumption by 53%. Based on the success of the pilot project, the

Bonneville Power Administration has been contracted to replace additional street and perimeter lighting.

Restoring the Environment

Replacement of Fish-Blocking Culverts:

NAVBASE Kitsap awarded a \$640,000 contract to complete a comprehensive survey of culverts in fish bearing streams along 50 miles of the Navy-owned railroad. The survey will be completed by spring 2015 when all railroad culverts will be assigned a Fish Passage Priority Index per state criteria to prioritize their repair or replacement.

A culvert on a Union River tributary was identified as being a complete barrier to fish passage. The 48 inch diameter, 280 foot long culvert was replaced with a \$6M 20-foot diameter natural-bottom tunnel. The project also included re-grading 250 feet upstream and downstream of the new tunnel and re-vegetating the area with native species,



NAVBASE Kitsap replaced a 48" diameter culvert with a \$6M 20' wide natural bottom tunnel to provide passage for ESA-listed salmon species.

including 10,000 Douglas fir, cedar, hemlock trees and the groundcovers sword fern, salal, and bracken fern. The tunnel was constructed 70 feet below the active railroad and all construction was completed in a five-and-a-half month window prior to salmon migrated



up the Union River to spawn. The Union River supports Endangered Species Act (ESA)-listed Hood Canal Summer Run Chum and Steelhead Trout, Coho salmon, as well as sea-run Cutthroat Trout. The construction and permitting coordination effort yielded many lessons-learned that are highly transferrable to the hundreds of Navy and non-Navy culverts that block fish passage across the northwest.

The tunnel reopened nearly one mile of stream that had been closed to fish passage since the 1940s and is proving to be a highly successful ecological enhancement. The Navy provided project information to regulatory agencies and tribes and the design was revised based on their comments. The Navy also consulted with the Washington State Historic Preservation Officer who agreed the project would have no adverse effect on historic properties. The Navy's work supports restoration plans for the Union River and will provide a long-term benefit to ESA listed species. This project was highlighted in the fall 2014 issue of *Currents* magazine.

Further, a \$81,000 contract was awarded to provide a detailed design to replace an undersized culvert at Bangor. The design will utilize valuable lessons-learned from the railroad tunnel project and FY15 funding is budgeted for this culvert replacement.

Cattail Estuary Restoration: Tidal access to the Cattail Lake basin was restored by removing existing road fill and culverts, and installing a bridge to allow free flow to and from the Hood Canal. The project restored 13.7 acres of intertidal, freshwater forest/shrub, riparian, and upland habitat, and reestablished 2,800 feet of stream channel. Tribal biologists estimate the newly opened stream will support spawning for 300 chum salmon. During bridge construction, evidence

of prehistoric human occupation was discovered, excavation was halted and archeologists excavated the site to perform data recovery. During FY13/14, the data recovery report was received; radiocarbon dating indicated the site to be 700 years old. The Navy developed National Historic Preservation Act (NHPA) and Native American Graves Protection and Repatriation Act (NAGPRA) Memorandum of Agreements (MOAs) with the SHPO and affected Tribes to address sections of the midden that remained and the potential to encounter human remains. After the MOAs were developed, the remainder of the fill was removed. A program of monitoring the estuary for the extent of tidal exchange, vegetation reestablishment, stream channels, beach substrate and elevation, and impacts on oyster and eelgrass beds has been developed and will continue for ten years. This project was highlighted in the spring 2013 issue of *Currents* magazine.



NAVBASE Kitsap personnel monitor the restoration of Cattail Estuary.

Environmental Planning, Permitting and Government-to-Government Consultations

NAVBASE Kitsap maintains a robust program of environmental review, analysis, consultation, permitting and follow-on compliance monitoring. In FY13/14, 33

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consultations were initiated under the ESA, 67 consultations were initiated under the NHPA, and 85 letters were sent to tribes, either initiating or documentation consultations. Approximately 1,400 projects were reviewed for potential impacts to the environment.

In-water work is of particular interest to Tribes as it may affect fishery resources or access to fisheries. NAVBASE Kitsap maintains a robust Government to Government (GtG) relationship with local Tribes and during, FY13/14, successfully completed GtG consultations for projects to repair piers at five different locations (Bremerton Pier 6, Manchester Fuel Pier, Zelatched Point Pier, K/B Dock and EHW 1), replace one pier (Manchester Barge Moorage), replace a failing seawall (Manchester), construct moorage for a new barge (Bangor Service Pier Barge), construct a moorage and relocate an existing dock (Bangor Dive Boat Dock). Additional Navy projects in the out years have consultations ongoing.

Additionally, three Cooperative Agreements (CAs) worth \$4.1M were awarded under the Sikes Act to meet requirements identified in MOAs with tribes. The CAs included projects to remove fill from a historic creek bed, replacement of a four foot diameter culvert with a 160 foot long bridge, and building sustainable fisheries facilities.

Mission support is always a foremost priority. When fender pile replacement for an aging pier was required for a critical ship recycling project, NAVBASE Kitsap completed development of all environmental documentation for the 380 pile project to support the required construction schedule. The ESA Section 7, NHPA Section 106, and GtG consultations were completed, the Environmental Assessment/Finding of No

Significant Impact was signed, and the Rivers and Harbors Act Section 10 permit was received within a ten-month window, from November 2012 to September 2013. The Marine Mammal Protection Act (MMPA) Incident Harassment Authorization (IHA) was issued by National Marine Fisheries Service (NMFS) by December 2013.

Construction Monitoring: NAVBASE Kitsap has several large scale construction projects in progress which have the potential for unintended impacts to the environment, thus are monitored to ensure such impacts do not occur. The Pier 6 fender pile replacement project (380 piles), Explosive Handling Wharf 2 project (1,038 piles) and Service Pier Barge Moorage project (16 piles) had marine mammal and marbled murrelet observers to ensure ESA-listed species are protected and operations are within permit limits. Monitoring reports were submitted to the regulatory agencies. The Navy was consistently well below the MMPA take limit for the projects. Two California sea lions were found deceased in the vicinity of MMPA permitted projects and, with support from NAVBASE Kitsap, necropsies were done by state biologists. The causes of deaths were determined to be natural and unrelated to Navy activities. Monitoring also identified two new bald eagle nests and an osprey nest produced two chicks.



A Steller sea lion sits with California sea lions on top of a submarine moored at Bangor's Delta Pier.