

# NAVAL BASE VENTURA COUNTY

FY 2011 Secretary of Defense Environmental Award

Environmental Restoration – Installation



*Providing airfield, seaport and base support services to fleet operating forces and shore activities who execute the diverse missions of the Navy and other services in support of National Defense.*



## INTRODUCTION

Naval Base Ventura County (NBVC) is located along the Pacific coastline in Ventura County, California, adjacent to the cities of Oxnard, Port Hueneme and Camarillo.

**Point Mugu, 18 May 2011,**  
1727 PST: As the sun begins to disappear beyond the Mugu lagoon, another idyllic California day is coming to a close. Endangered clapper rails and least terns are settling down on their nests. Suddenly, the gentle hum of jet engines turns into the scream of tearing metal and the sound of exploding jet fuel. A K707 aerial tanker carrying 155,000 pounds of jet fuel has crashed into the Mugu Lagoon. Miraculously, the crew of 3 escapes from the aircraft just as it is enveloped by the raging inferno. An environmental disaster looms over the entire 2,500 acre lagoon...



NBVC is a major aviation shore command and a Naval Construction Force mobilization base providing airfield, seaport and base support services to fleet operating forces and shore activities. Employing approximately 19,100 personnel (military, civilian and contractor), NBVC includes over 90 military commands (17 major and 12 deployable) with diverse mission operations in support of the Department of Defense (DoD). These missions include combat and weapon systems testing on the 36,000 square mile Sea Range off the coast of Point Mugu.

NBVC is composed of three operating facilities: Point Mugu, Port Hueneme and San Nicolas Island (SNI), located on the Pacific Ocean. Point Mugu consists of 4,500 acres, including Laguna Peak, and is bordered by parkland, a wildlife reserve, and intensively farmed agricultural lands. The primary runway at Point Mugu is 11,000 feet (ft) by 200 ft. The secondary runway is 5,500 ft by 200 ft. Port Hueneme covers more than 1,600 acres and has more than 29 miles of roads and 10 miles of railroad track and a deep water port. SNI is approximately 13,370 acres, 8.7 miles long and 4 miles wide, lies in the Santa Barbara Channel 74 miles west of Los Angeles. SNI also has a runway, which is 11,000 ft by 200 ft.

Equally important is NBVC's role as a good neighbor and environmental steward. For more than 60 years we, through our locations at Point Mugu and Port Hueneme, have been an increasingly vital part of Ventura County and its development. NBVC contributes significantly to the economic health of the area, as reported in an Economic Impact Study commissioned by the Workforce Investment Board of Ventura County conducted in June 2008. The study found that nearly 4,400 jobs were created by NBVC. The base supports 8,216 jobs totaling \$377 million in salaries. In addition, more than \$166 million in taxes were generated by the base. NBVC continues to enjoy a strong relationship with the

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community and an atmosphere of mutual respect, cooperation, teamwork and shared interests.

## **BACKGROUND**

### **Organization**

The NBVC Environmental Division is staffed to provide environmental services that enhance mission readiness

**Point Mugu** continued: Spill response crews, including Seabees from NMCB 40, UCT 2, NBVC personnel, and contractor personnel, race to get ahead of the spreading jet fuel. Countless hours of spill response training drills and table top exercises will pay dividends this night, as crews start to isolate the jet fuel with both oil absorbent and oil containment booms and by plugging culverts with sand bags. Crews work throughout the dark night as the fire continues to rage despite the efforts of NBVC Federal Fire and Ventura County Fire Departments. By dawn the next day, the fire is out and the oil has been contained to just 79 acres. Catastrophe had been averted...



and are protective of the environment by coordinating and minimizing environmental constraints to the military mission while ensuring compliance with environmental regulatory requirements. The Environmental Division actively supports all fleet and tenant commands at NBVC and oversees multiple major environmental programs at Point Mugu, Port Hueneme, and SNI, including eight regional special areas. Management support is the key component for continual improvement in environmental programs at NBVC. The NBVC Environmental Division lies within the NBVC Public Works (PW) Department of the Naval Facilities Engineering Command (NAVFAC) Southwest (SW). Working in conjunction with NAVFAC SW, the following aspects of Environmental Restoration oversight are performed for all of NBVC: technical and administrative review of all program documents; interface with component and tenant activities; on-site logistics; facilitation with regulatory agencies; representation of the Navy for community participation; coordination of the Restoration Advisory Board (RAB); and assurance of compatibility of the program with mission requirements.

### **RABs**

NBVC has maintained an active RAB, fostering an atmosphere of mutual respect and cooperation between the Navy, regulators, and the local community. Personnel and community members communicate and work closely together as a team on common goals of environmental cleanup. The RAB met three times per year during FY10 and FY11.

The RAB has facilitated community support of the NBVC Installation Restoration (IR) Program initiatives. NBVC utilized the RAB as a forum for required public meetings for the NBVC Port Hueneme Site 20 Removal Action and the NBVC Point Mugu Site 5 Removal Action. The civilian co-chair of the RAB, who has been member of the RAB for fifteen years, has been very helpful in acquiring community support of the NBVC IR Program by communicating with the community members and informing them of the Navy's various environmental cleanup efforts.

The local community regards the RAB as a helpful and positive tool, enhancing a good working relationship between the Navy, regulators, and community members that attend regularly. RAB meetings have created trust among the public and interested attendees and have become an open forum for positive communication and discourse. The public now has a positive opinion and better understanding of the Navy's clean up efforts and

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its ultimate benefits to the community, its people and the surrounding environment.

## Associated Plans

There were many plans and procedures that were finalized in FY10 and FY11.

**Point Mugu** continued: Unified Command is stood up on 18 May 2011 to continue response operations. Included in the Unified Command structure is NBVC, the NTSB, the FAA, the California Department of Fish & Game, the US Coast Guard, and the Aircraft Owner. The key objectives for the response are collection of floating oil, protection of wildlife, determining the cause of the crash, and safety of all response personnel. The hunt for the “black box” flight recorder, buried somewhere in the mud is on. Spill response crews begin to recover floating oil with skimmers, using tidal action to corral the oil at culvert pinch points. Then a setback, the NTSB reports that 43,000 pounds of jet fuel remains onboard the wreckage and is continuing to leak into the Mugu lagoon...



Some of them include the following:

- October 2009, Final Site Management Plan NBVC Point Mugu
- October 2009, Final Site Management Plan NBVC Port Hueneme
- November 2009, Removal Site Evaluation for Point Mugu IR Site 35
- March 2010, Final Work Plan, Site Inspection, Munitions Response Program for NBVC
- April 2010, Final Work Plan for the Extended Site Inspection, Former Gas Mask Training Area, NBVC Point Mugu
- May 2010, Groundwater Monitoring Report, for NBVC Point Mugu IR Site 24
- August 2010, Groundwater Monitoring Report, for NBVC Point Mugu IR Site
- November 2010, Final Closure Report for NBVC Point Mugu IR Site 10
- December 2010, Long Term Post Construction Monitoring Report: Port Hueneme Maintenance Dredging and CAD Site Construction
- March 2011, Final Sampling and Analysis Plan for NBVC Point Mugu IR Site 38
- March 2011, Remedial Investigation Report for Group 2 IR Sites at Port Hueneme
- March 2011, Land Use Control Implementation Plan for IR Sites 1, 6, 9, and 24 at NBVC Point Mugu
- April 2011, Final Removal Action Work Plan for Point Mugu IR Site 5 Wetland Sediment
- May 2011, Proposed Plan for NBVC Port Hueneme IR Site 4
- June 2011, Proposed Plan for NBVC Port Hueneme IR Site 20
- June 2011, Final Feasibility Study for Port Hueneme Site 4
- July 2011, Proposed Plan for NBVC Port Hueneme IR Site 9
- August 2011, Final Field Investigation Plan, Sediment Quality Assessment at Port Hueneme Harbor
- September 2011, Final Feasibility Study for Port Hueneme IR Site 9
- September 2011, Sediment Removal Work Plan at Omega Plane Crash Site at NBVC Point Mugu

## PROGRAM SUMMARY

During FY10 and FY11, the Environmental Restoration Program was extremely successful in meeting its five major objectives:

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- **Maintaining a safe work environment for all Environmental Restoration personnel –**

**Point Mugu** continued: The remaining fuel is contained in the right wing which is 200 feet off shore in water too shallow for watercraft. The fuel creates a safety hazard that shuts down much of the NTSB investigation. An ingenious plan is developed: 1<sup>st</sup> dam off the single tidal creek linking the crash site to the rest of the lagoon to raise the water depth to 1.5 feet around wreckage to allow a suction line to be floated out the wing. This also reduces the lagoon area affected by the ongoing leak to 6 acres. Secondly, build a temporary road out of metal plates to the shoreline to stage a vacuum truck. The Unified Command approves the plan and the remaining jet fuel is removed without incident on 20 May 2011. More good news follows, as no oiled birds due to the crash have been found to date. Another crisis is averted and the hunt for the black box is back on...



Six prime contractors performed work at NBVC during FY10 and FY11. In total with NBVC staff, they performed over 62,500 man hours of work without a single lost time or reportable accident.

- **Restore contaminated lands and return them for use to support mission requirements –** The Port Hueneme Dredging Project used a confined aquatic disposal cell installed in the harbor floor, to isolate 239,800 cubic yards of contaminated sediment under a cap of sand and gravel. Post construction monitoring proved that the CAD cell successfully isolated the contaminated sediment under a 9 ft thick cap of clean sand and armor rock. This solution allows future maintenance dredging to proceed without contaminated sediment issues.
- **Reduce human health risks at contaminated industrial sites to manageable levels –** Six of fifteen IR Sites and one out of five Munitions Response (MR) Sites at Point Mugu were closed with no further actions required. Four other IR Sites at Point Mugu achieved remedy in place. One removal action was completed at Port Hueneme Site 20, removing over 6,600 cubic yards of benzene contaminated soil.
- **Reduce ecological risk for restoration and enhancement of ecological value of contaminated sites containing natural resource habitats –** NBVC continued its partnership in the Calleguas Creek Watershed Committee (CCWC) to monitor Mugu Lagoon in efforts to meet Total Maximum Daily Load (TMDL) requirements to identify load reductions or other actions needed to attain water quality standards (i.e. water quality goals to protect aquatic life, drinking water, and other water use). One removal action was completed within Mugu Lagoon at Point Mugu IR Site 5, removing over 3,400 cubic yards of chromium contaminated sediment and restoring the site to intertidal wetlands.
- **Perform effective clean-ups with minimum environmental impact –** The NBVC Project Review Board reviews all restoration projects for potential impacts to human health, natural resources, and NBVC mission and prescribes mitigative actions when necessary. This included a Site Investigation project within Point Mugu military family housing which required innovative engineering controls to allow suspected chemical agent identification sets to be safely excavated, identified, and removed without evacuating housing residents.

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## ACCOMPLISHMENTS

**Point Mugu** continued: The box is found on 21 May 2011. The field investigation by the NTSB is completed on 24 May 2011. The Unified Command then turns their attention to salvaging the wreckage from the lagoon. Another challenge presents itself to the response team as most of the wreckage sits in shallow water over an intertidal mudflat. Undaunted, the response team once again comes up with an innovative approach. Unified Command approves the plan to install a temporary floating roadway to the wreckage and utilize the tidal creek dam to lower the water level at the crash site to expose the mudflat and wreckage debris. Extensive coordination is required to coordinate salvage operations with airfield, missile launch, and ordnance operations, none which can occur simultaneously. Salvage operations are completed by 15 June 2011, concluding the initial emergency response to the crash. The focus shifts to the toxic ash and slag spread across the crash site...



## DREDGING PROJECT

The Port Hueneme Harbor dredging and Confined Aquatic Disposal (CAD) cell project's construction phase was completed in August 2009. The project's environmental permit included several post construction monitoring requirements to document the success of the CAD cell construction and the cleanup of contaminated sediment within the harbor. The mission goal of the project was to restore full navigability of the harbor to its design depth. The project team is comprised of the Navy, the Army Corps of Engineers (ACOE) and the Oxnard Harbor District (OHD). A total of 239,800 cubic yards of contaminated sediment were placed into the CAD and capped with sand and armor stone. Another 529,000 cubic yards of clean sand excavated to form the CAD cell was used for nearby beach replenishment.

The CAD cap material was monitored 3, 6, and 12 months post installation via bathymetry and sediment chemistry to determine the final cap thickness achieved. The results indicated that the cap achieved a final uncontaminated average thickness of nine feet. The entire harbor was monitored for sediment chemistry to document the effectiveness of the cleanup 24 months post installation. Preliminary results for DDT, the main cleanup project driver, are 49% below the projects established cleanup goal. Mission accomplished.

The use of an in-harbor CAD and partnering with the ACOE and the OHD resulted in a \$27 million cost savings for the Navy when compared to the only other viable option of landfill disposal. Benefits include restoration of the harbor, clean-up of the sediment, and addition of sand to the beach.

## CALLEGUAS CREEK WATERSHED COMMITTEE

NBVC continued its beneficial partnership with the CCWC. The CCWC was formed in 1998 by local, state, and federal stakeholders throughout the Calleguas Creek watershed. NBVC Point Mugu and Mugu lagoon, aka IR Site 11, are located at the base of the watershed. One of the goals of the CCWC was to collaborate with the Los Angeles Regional Water Quality Control Board (LARWQCB) to prepare Total Maximum Daily Load (TMDL) limits for the listed impairments.

NBVC and the CCWC worked together to develop a remediation and monitoring approach that shifted the cleanup cost to the responsible parties upstream, thereby eliminating the need for cost

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recovery using the cumbersome CERCLA process. The NBVC / CCWC team presented this approach, a combination of natural attenuation and continued monitoring and source control, to the LARWQCB and received their concurrence. The resulting projected cost savings to the Navy is \$34.5 million.

**Point Mugu** continued: The initial fire was hot enough to ignite the aluminum airframe, raising combustion temperatures to over 6,900 °F. Half of the airframe is burned before the fire is extinguished along with onboard electronics and other hazardous materials. The salvage operation leaves ash and metallic slag covering ~1.5 acres of wetlands. Sample results indicate the wetlands are heavily contaminated with metals such as cadmium and lead and residual jet fuel. NBVC and the Aircraft Owner determine that the wetlands must undergo further remediation, all before winter rains return to spread the contamination further...



These savings were threatened in FY10 and FY11 when the EPA proposed TMDLs for a small Calleguas Creek sub-watershed that had been left out of the previous TMDLs. This sub-watershed is known as Oxnard Drain #3 (ODD #3), and also drains into Mugu Lagoon. The proposed TMDL included lower cleanup targets for each corresponding contaminant included in the Calleguas Creek TMDLs and proposed dredging as a remedy for contaminants in sediment located on NBVC Point Mugu property. The dredging remedy proposal alone would reduce the previous cost savings by \$12 million. As a result of negotiations between the NBVC / CCWC team and the EPA, the EPA agreed to make the ODD #3 TMDL consistent with the Calleguas Creek TMDLs. Earlier cost savings estimates were not compromised.

Collaboration with the CCWC to form a watershed wide solution for contamination issues benefits all parties because no funding is wasted on contentious litigation and all parties gain from economy of scale. Cleanup is also expedited because delays in program implementation are minimized.

## Calleguas Creek Watershed Committee Membership

Camrosa Water District  
Heal the Bay  
California Department of Transportation  
Camarillo Sanitary District  
City of Camarillo  
City of Moorpark  
City of Oxnard  
City of Simi Valley  
City of Thousand Oaks  
County of Ventura  
Farm Bureau of Ventura County  
U.S. Department of Navy  
Ventura County Waterworks  
Ventura Coast Keeper

## FORMER GAS MASK TRAINING AREA

The NBVC Restoration team performed an intrusive investigation to determine if chemical agent identification sets (CAIS) containing mustard gas, lewisite, chloropicrin, or phosgene is buried at the former Gas Mask Training Area located in the NBVC Point Mugu Military Family Housing area. A total of 23 locations with buried objects previously identified by geophysical surveys were excavated to definitively identify them. The goal was specifically to find intact or broken CAIS, if present at the site. A purpose built, first of its kind, engineered control system (ECS) consisting of transportable field hood and filter system, designed specifically for this project, was placed over each targeted buried object. The ECS included a negative-pressure dual filter system, including 6 continuous air monitors, which would contain and treat potential emissions from CAIS if they were discovered during excavation. Each location was

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excavated with hand tools only, until the object was positively identified. None of the excavated objects were determined to be CAIS.

The use of the ECS was critical to the success of this project because it reduced the evacuation distance for each excavation site from 500 ft to 0 ft, which allowed housing

**Point Mugu** continued: NBVC develops appropriate cleanup goals in consultation with the California Department of Fish & Game. The floating roadway is again used to provide access for heavy equipment. All cleanup operations have to be scheduled between missile launches and Airfield operations. Almost 2,000 cubic yards of sediment is removed and replaced successfully before the onset of the rainy season. The initial emergency response and subsequent sediment remediation is now complete, taking over 5 months in all. The project has been turned over to the Natural Resource Damage Assessment Trustees to complete the site restoration. But that is a story for another day...



residents to remain in their homes during the entire project. It also allowed the site workers to work without chemical suits and respiratory protection. The ECS is now under consideration for use at the chemical warfare materials sites at the former Brooksville and Bushnell Army Airfields in Florida.



Field hood is use at GMTA

## INSTALLATION RESTORATION SITES

The NBVC Restoration team made major advancements with implementing interim and final remedies and closing sites at NBVC in FY10 and FY11. Specific projects included:

1. Point Mugu Site 1: A landfill closed, capped with asphalt, turned over to Morale, Welfare and Recreation for use as a RV storage lot.
2. Point Mugu Site 2: Public Works Heavy Equipment area, closed with no further action required.
3. Point Mugu Site 4: Public Works storage yard and wetland restoration site, closed with no further action required.
4. Point Mugu Site 5: Plating waste settling pond. Interim remedial action removed 3,400 cubic yards of contaminated sediment and site restored to wetlands.
5. Point Mugu Site 6: Building 311 area, bioremediation used to cleanup solvent contamination of groundwater.
6. Point Mugu Site 8: Runway 27 Landfill closed with no further action required.
7. Point Mugu Site 9: Former Fire Fighting training area, closed with only the requirement for continued industrial land use.
8. Point Mugu Site 10: Transformer fire site closed with no further action required.
9. Port Hueneme Site 20: Equipment fueling area. Interim remedial action removed 6,600 cubic yards of contaminated soil.
10. Point Mugu Site 20: Mercury spill at Pad Alpha launch facility, closed with no further action required.
11. Point Mugu Site 24: Building 354 area, bioremediation used to cleanup solvent contamination of groundwater.
12. Port Hueneme former Rifle Range; Site closed with no further action required.
13. Point Mugu former Rifle Range; Site removed from MR Program due to current use as a munitions range.