

Navy Biosolids Treatment Facility, Kalaeloa, Oahu, Hawaii

December 2010

Located on Navy land at Kalaeloa (formerly known as Naval Air Station Barbers Point) in Oahu's Ewa District is the Navy's Biosolids Treatment Facility which is owned, operated, and maintained by Naval Facilities Engineering Command, (NAVFAC) Hawaii.

Covering approximately 24 acres, this facility combines biosolids with greenwaste, composting the two to produce a beneficial end-use soil additive/ compost product.

- Biosolids (another term for sludge) is the solid matter that is left after wastewater (sewage) has been put through a wastewater treatment process.
- Greenwaste is a bulking material of tree cuttings and other woody vegetation that is used to increase the porosity of the compost pile allowing for enhanced air circulation and provides nutrients for the sludge/biosolids composting process.



History

The Navy's Biosolids Treatment Facility was constructed between July 1996 and March 1997. Then from October 1996 to July 1997, pilot tests were conducted until the facility became fully operational.

Over the years, various additions and expansions were made to the facility:

- January 1998, twenty more air lines were added to the facility's original twenty.
- December 1998, the City & County of Honolulu entered into an intergovernmental pilot project agreement with the Navy to compost city biosolids from their Honouliuli Wastewater Facility separately from Navy sludge. The facility expanded to accommodate both entities' compost piles.



- May 1999 – August 1999, a new mixing surface was added - 1 acre (150' x 300'). Electrical and water lines were completed April 2000.
- Feb. 1, 2000, Navy Public Works Center, Pearl Harbor (PWC Pearl - currently NAVFAC Hawaii) was issued a five-year permit to operate its Biosolids Treatment Facility by the State Department of Health (DOH).
- May 2000 – July 2000, 3 acres were added creating an additional curing windrow area.

- October 2000, PWC Pearl released its first load of DoD compost to Navy housing.
- January 2003 – June 2003, an 80' x 40' administration building was built.
- June 2003, a new 6" coral surface with clay liner - 250' x 250' was added.
- December 2006, a new 6" coral surface with clay liner – 200' x 500' was added
- September 2009, NAVFAC Hawaii severed the intergovernmental pilot project ties with the City & County of Honolulu.

Main Components of Facility

- Clay liner – acts as a barrier between the ground and the working surface of the facility.
- Coral Layer – serves as the facility's working surface.
- Air Lines – provide oxygen to the sludge/biosolids and greenwaste mixture.
- Electric Blowers – force oxygen through air lines.
- Various Vehicles – used to move, mix, and haul mixture around the facility. (Examples: Trommel Screen, Windrow Turner, Front-End Loaders and Dump Trucks)
- Water Tanks – store rainwater that is used during the composting process. There are four tanks = 100,000 gallons.

Material the Facility Accepts

- Sludge/Biosolids – delivered from various DoD facilities including the Navy's Wastewater Treatment Facility at Fort Kamehameha and the Army's Wastewater Treatment Facility at Schofield Barracks. The Navy and Army provide approx. 110 wet tons per week. Note: All loads are trucked to the Navy's Biosolids Treatment Facility in covered, leak-proof containers.
- Greenwaste – collected from Navy tree-trimming and grounds maintenance contractors who deliver it to the facility instead of Hawaiian Earth Products.

Treatment Process

- (1) Sludge is mixed together with greenwaste, watered and piled on top of an airline in the "extended aeration" area to a height of 8 ft.
- (2) Mixture is oxygenated via the airline and left in a static pile for approx. 21 days.
- (3) The static pile is sifted, removing the large pieces of greenwaste that remain so they can be recycled back into the process.
- (4) Remaining material is transferred to a "curing windrow", or holding area, where it is piled into rows approximately 6 ft. high. The piles are watered, as needed, and turned over to oxygenate at regular intervals for approx. 3-4 months.
- (5) When the material no longer generates a significant amount of heat, it is moved to a "cured pile" area. The composting process is now completed and the resulting product is a rich compost soil. However, prior to use, the compost must pass numerous analytical tests to ensure that it can be used safely.

Release Procedures

As part of the Navy's permit to operate its Biosolids Treatment Facility, certain steps are required prior to release of the composted product.

For DoD Compost: State Department of Health (DOH) requires the Navy submit the following information -

- (1) Time and temperature data logs – This information is to show that the composting process destroyed pathogens and also provided vector attraction reduction (to eliminate any material in the biosolids matter that might attract birds or rodents to the site).
- (2) Lab sample results on fecal coliform – This test is to again show that pathogens have been destroyed by the composting process.
- (3) Lab sample results on TPH or Total Petroleum Hydrocarbons (Navy biosolids contain petroleum hydrocarbons) – This test shows that the composting process has successfully remediated any TPH that may have been present in the original biosolids to a “safe,” acceptable level.
- (4) DOH reviews the logs and test results.
- (5) DOH gives approval for release of compost product.

Released DoD Compost

DoD compost has been issued to: Marine-Corps Klipper Golf Course, Kaneohe; Navy’s Barbers Point Golf Course, Kalaeloa; Navy Marine Golf Course; Navy demolition projects; and Navy housing grounds maintenance.

Permitting

A Solid Waste Management permit is required by the State Department of Health’s (DOH) rules and regulations to operate a composting facility. On Feb. 1, 2000, PWC Pearl (currently NAVFAC Hawaii) was issued a five-year permit, which expired on Jan. 31, 2005. The Navy submitted and was granted a permit renewal which expired on Jan. 31 2010. Subsequently, the Navy submitted a permit renewal request on Oct. 22, 2009 and is currently in the permit renewal process.

Benefits

The diversion of a solid waste stream from island landfills is not only beneficial to the Navy; but also to the State of Hawaii. The Navy’s Biosolids Treatment Facility’s final end-use product (soil additive or compost) derived from DoD sludge is used on Department of Defense property.

**For more information contact Denise Emsley, Public Affairs Officer, (808) 471-7300
or e-mail at denise.emsley@navy.mil.**

Innovation, Leadership, Performance

The Naval Facilities Engineering Command (NAVFAC) manages the planning, design, construction, contingency engineering, real estate, environmental, and public works support for U.S. Navy shore facilities around the world. We provide the Navy’s forces with the operating, expeditionary, support and training bases they need. NAVFAC is a global organization with an annual volume of business in excess of \$18 billion. As a major Navy Systems Command and an integral member of the Navy and Marine Corps team, NAVFAC delivers timely and effective facilities engineering solutions worldwide.

For more information about NAVFAC about NAVFAC Hawaii and/or Naval Facilities Engineering Command visit:
www.navfac.navy.mil.

Additional updates and information about NAVFAC can be found on social media sites Facebook and Twitter. Become a Fan at www.facebook.com/navfac and follow us at www.twitter.com/navfac.