

Navy Biosolids Treatment Facility, Kalaelo, Oahu, Hawaii

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Located on Navy land at Kalaelo (formerly known as Naval Air Station Barbers Point) in Oahu's Ewa District is the Navy's Biosolids Treatment Facility. It is operated and maintained by Naval Facilities Engineering Command, (NAVFAC) Hawaii, previously known at Navy Public Works Center, Pearl Harbor.

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 left after wastewater (sewage) has been treated and processed.
- **Greenwaste** is bulking material comprised of tree cuttings and other woody vegetation used to increase the porosity of the compost pile, allowing for enhanced air circulation. It provides nutrients for the sludge/biosolids composting process.

History

The Navy's Biosolids Treatment Facility was constructed between July 1996 and March 1997. After conducting pilot tests on the treatment process from October 1996 to July 1997, the facility became operational.

Over the years, various changes were made to the facility:

- January 1998 – Twenty more air lines were added to the facility's original twenty.
- December 1998 – The City and 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 - one acre (150' x 300'). Electrical and water lines were completed April 2000.
- Feb. 1, 2000 – The State Department of Health (DOH) issued a five-year permit to operate the Navy Public Works Center, Pearl Harbor (currently NAVFAC Hawaii) Biosolids Treatment Facility.

- May 2000 - July 2000 – Three acres were added creating an additional curing windrow area.
- 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 and 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 atmospheric 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. 48 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.

Treatment Process

- (1) Sludge is mixed together with greenwaste, watered and piled on top of an air line in the "extended aeration" area.
- (2) Mixture is oxygenated via the air line and left in a static pile for minimum 21 days.
- (3) Static pile is sifted, removing the large pieces of greenwaste that remain so they can be recycled back into the process.
- (4) Static pile is transferred to a "curing windrow," or holding area, where it is piled into rows. 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, the windrow pile is sifted and 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, the 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 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 show that the composting process has destroyed pathogens.
- (3) Lab sample results on metals concentrations – This information is to show pollutant levels meet unregulated use levels.
- (4) 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.
- (5) Lab sample results on BTEX and PAHs – This information is to show the compost is safe for distribution.
- (6) DOH reviews the logs and test results.
- (7) 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

DOH rules and regulations require a Solid Waste Management permit to operate a composting facility. NAVFAC Hawaii (previously PWC Pearl) received a five-year permit on Feb. 1, 2000, which expired on Jan. 31, 2005. Subsequently, DOH granted the Navy various renewal permits over the years. On Jan. 31, 2015, the permit issued on Oct. 10, 2011 expired. DOH administratively extended the permit and this extension ends on Jan. 31, 2020. The Navy is currently working with DOH regarding potential options for permitting and continued operation of the facility. It is also concurrently researching other options for sludge disposal. The Navy continues to operate under the conditions of the 2011 permit.

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
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Naval Facilities Engineering Command: The Facilities and Expeditionary Combat Systems Command

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