

December 2007

EPA's Tentative Decision on the renewal of CWA 301(h) variance for the Sand Island Wastewater Treatment Plant

Fact Sheet

ACTION

The U.S. Environmental Protection Agency (EPA) is issuing a Tentative Decision Document (TDD) regarding an application from the City and County of Honolulu (CCH) for a renewed variance from full secondary treatment under section 301(h) of the Clean Water Act for its ocean discharge from the Sand Island Wastewater Treatment Plant. EPA's tentative conclusion is that this treatment plant does not qualify for a renewed variance. A public comment period on this TDD is being held from December 10, 2007 to February 29, 2008. A public hearing is scheduled for February 5, 2008 at 6:30pm at the Washington Intermediate School.

BACKGROUND ON WASTEWATER TREATMENT AND FEDERAL REQUIREMENTS

Across the United States, municipal wastewater treatment plants handle sewage and other wastewater collected from homes, businesses, and industries. These treatment plants are designed to clean wastewater prior to discharging it to streams, oceans, the ground, or for reuse. There are two basic stages in the treatment of municipal wastewater: **primary and secondary treatment**.

Primary treatment generally involves screening out large objects (such as rags), removing grit (such as cinders, sand and small stones), and allowing the wastewater to settle (where objects that float, such as sticks, are skimmed off the surface, and materials that sink are removed from the bottom).

When secondary treatment is used, primary-treated wastewater flows into another facility where the wastewater is exposed to microorganisms (such as bacteria). There are a variety of different biological treatment techniques that allow the microorganisms to consume most of the waste's organic matter. The microorganisms are then removed prior to discharge.

Federal law provides expectations for how municipal wastewater will be treated. In 1972, Congress passed the Federal Water Pollution Control Act amendments, which required that Publicly Owned Treatment Works (POTWs) achieve secondary treatment capability by 1977. After this requirement was passed, some municipalities with POTWs discharging into marine waters argued that secondary treatment might not be necessary, given that there may be greater dilution and dispersion of wastewater discharged to the ocean, as compared to discharges to rivers and other freshwater. In 1977, Congress added section 301(h) to the Clean Water Act (CWA), which allows the U.S.

Environmental Protection Agency (EPA) to, on a case-by-case basis, grant variances from secondary treatment requirements. (Note that these variances are sometimes referred to as “301(h) waivers.”)

The CWA includes specific criteria the discharger must meet in order to receive a variance from secondary treatment under section 301(h) of the CWA. These criteria include requirements to:

- Attain or maintain water quality that allows recreational activities in and on the water;
- Attain or maintain water quality that allows protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife;
- Meet water quality standards (or federal guidance values for pollutants without standards);
- Establish a monitoring program to assess impacts;
- Provide a minimum of primary or equivalent treatment;
- Have an approved pretreatment program and establish toxics controls;
- Provide enhanced urban area pretreatment, for POTWs serving greater than 50,000 population;
- Protect water supplies and;
- Prohibit variances in stressed estuaries.

When EPA concludes that an applicant for a 301(h) variance meets the CWA’s criteria, EPA may issue a permit that allows an ocean discharge at less than full secondary treatment.

BACKGROUND ON THE SAND ISLAND WASTEWATER TREATMENT PLANT

The Sand Island Wastewater Treatment Plant (WWTP) receives sewage and other wastewater from residences and businesses from the City of Honolulu, including Waikiki. The Sand Island WWTP serves a population of approximately 412,000 including both residents and tourists. Approximately 66 million gallons per day (MGD) of raw wastewater is treated at this facility at the present time. The Sand Island WWTP discharges treated wastewater into Mamala Bay via the Sand Island outfall. This outfall is located at a depth of approximately 230 feet below the ocean’s surface. Treated wastewater is discharged from a multi-port diffuser located approximately 9000 feet offshore.

The Sand Island WWTP is currently operating under a permit EPA issued in September, 1998. This permit contains a 301(h) variance allowing the discharge following the use of only primary treatment. In May, 2003, CCH applied for a renewal of this permit, including a renewal of the 301(h) variance.

Since receiving the 1998 permit for the Sand Island WWTP, CCH has made improvements to the treatment operations, which have included the incorporation of new

technology intended to improve primary treatment operations, and the recent installation of a ultraviolet light disinfection system.

EPA'S REVIEW OF CCH'S APPLICATION FOR 301(h) VARIANCE RENEWAL

EPA's review of CCH's application for a renewed variance from secondary treatment utilized data provided by CCH on the wastewater discharged.

Based on its review, EPA has concluded that the proposed discharge from the Sand Island WWTP will not meet several of the criteria under the CWA section 301(h) for granting variances from full secondary treatment, including:

- Meet water quality standards (or federal guidance values for pollutants without standards);
- Attain or maintain water quality that allows protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife.

BASIS FOR EPA'S TENTATIVE DENIAL OF CCH'S APPLICATION

In evaluating CCH's application for a renewed variance from secondary treatment requirements, EPA evaluated whether the discharges meet water quality standards. Water quality standards are the foundation of the water quality-based control program mandated by the Clean Water Act. Water quality standards define the goals for a waterbody by designating its uses, setting criteria to protect those uses, and establishing provisions to protect water quality from pollutants. The Hawaii Department of Health (HDOH) has designated that the uses to be protected in the vicinity of the discharge are recreation, aesthetic enjoyment and the support and propagation of fish, shellfish and wildlife. Criteria to protect these uses have been established by both EPA and HDOH.

Water Quality Standards Protecting Fish, Shellfish and Wildlife

In evaluating whether the discharge from the Sand Island WWTP meets water quality standards protecting fish, shellfish and wildlife, EPA evaluated the discharge with respect to Hawaii State standards established to protect indigenous aquatic life.

One of the standards established by HDOH that the Sand Island WWTP wastewater fails to meet is that discharges not have an observable toxic effect on test organisms exposed to the treated wastewater in a laboratory. CCH conducts tests of Sand Island WWTP wastewater using two aquatic species, one of which is a Hawaiian sea urchin. Treated wastewater samples are collected by CCH just before the wastewater enters the outfall pipe. In the laboratory, the wastewater samples are diluted with seawater prior to use in the test, to account for the dilution that occurs quickly when the Sand Island WWTP wastewater is discharged to the ocean. CCH submitted data on this type of testing as part of their application. The results showed that the diluted wastewater often produces toxic effects in the sea urchins.

The Sand Island WWTP treated wastewater also fails to meet the HDOH standard for ammonia. Ammonia contains nitrogen, excessive amounts of which can stimulate the growth of large numbers of algae that drift with the ocean currents. The algae can then reduce the amount of oxygen dissolved in the water and reduce the clarity of the water, adversely affecting other aquatic organisms.

Therefore, the wastewater discharge from the SIWWTP is exceeding the toxicity standard and the ammonia standard, and it cannot be determined to be protective of indigenous fish, shellfish, and wildlife.

Water Quality Standards Protecting Human Health

HDOH has established numeric criteria for toxic pollutants in water to ensure that fish caught by anglers will be safe to eat. CCH collected samples of Sand Island WWTP wastewater just before it entered the outfall pipe and analyzed the samples for toxic pollutants. CCH submitted these results on a monthly basis between 1998 and 2007. EPA compared these data to the HDOH criteria, taking into account the dilution that occurs quickly when the Sand Island WWTP wastewater is discharged to the ocean. EPA's review of the data showed that wastewater samples exceeded HDOH criteria for two pesticides, dieldrin and chlordane, established to protect against carcinogenic effects.

REVIEW OF BACTERIA DATA

For the evaluation of whether the Sand Island WWTP discharge meets water quality standards to protect swimmers and others who come in contact with marine waters, the relevant criteria became effective in December 2004. Criteria were established by EPA pursuant to the Beaches Environmental Assessment and Coastal Health Act of 2000. These criteria establish a maximum permissible level of bacteria in water in order to protect recreational users of marine waters from gastrointestinal diseases. In its review of the Sand Island application, EPA compared the levels of bacteria found by CCH in the vicinity of the Sand Island outfall to the national criteria. In evaluating bacteria data collected through the end of 2006, EPA found that bacteria levels exceed the national criteria, and thus the wastewater discharge from the Sand Island WWTP could not be determined to meet standards established to protect recreational activities. However, beginning in 2007, after CCH began operation of an ultraviolet light disinfection system, bacteria levels in the vicinity of the Sand Island outfall were found to meet national criteria, thus meeting standards established to protect recreational activities during this period of time.

CONCLUSION AND NEXT STEPS

EPA's review of CCH's application for a renewed variance from full secondary treatment at the Sand Island WWTP has concluded that the statutory criteria in section 301(h) of the CWA have not been met due to exceedances of State water quality standards established to protect wildlife and human health. EPA's TDD documenting

this conclusion can be found on the EPA Region 9 website <http://www.epa.gov/region09/water/npdes/pubnotices.html>, and is available for public comment through February 29, 2007. At the completion of this public comment period, EPA will consider all public comments and make a final decision on whether CCH should receive a renewed variance from full secondary treatment for the Sand Island WWTP.