

Hawaii Beach Monitoring Program

Revised December 31, 2019

Contents

1. Introduction.....	3
2. Overview of the Beach Monitoring Program in Hawaii.....	5
3. Goal of the Beach Monitoring Program in Hawaii.....	8
4. Risk-based Beach Evaluation and Classification and Tiered Monitoring Plan	8
5. Methods and Assessment Procedures	10
6. Monitoring Report Submissions	11
7. Public Notification, Advisory, and Risk Communication Plan	12
Response to BAV exceedances.....	14
Response to Sewage Spills.....	15
Response to Brown Water Advisories	16
Additional Information on the CWB Water Quality Notification and Advisories Website .	16
8. Notification Report Submission.....	17
9. Public Evaluation of the Beach Program	18
APPENDIX 1.....	19
APPENDIX 2.....	24
APPENDIX 3.....	27

1. Introduction

The Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), also known as the Clean Water Act (CWA), was amended by the Beaches Environmental Assessment and Coastal Health Act of 2000 (BEACH Act) to require: 1) states, territories, and tribes with coastal recreational waters to adopt new or revised water quality standards for pathogens and pathogen indicators for which the US Environmental Protection Agency (EPA) has published criteria under CWA section 304(a); 2) EPA to conduct studies associated with pathogens and pathogen indicators and publish new or revised criteria for pathogens and pathogen indicators; 3) states, territories, and tribes with coastal recreational waters to adopt new or revised water quality standards for all pathogens and pathogen indicators for which EPA published new or revised CWA section 304(a) criteria; and 4) authorizes EPA to award grants to states, territories, tribes or local governments to develop and implement beach monitoring and assessment programs.

In 2002 EPA published performance criteria for recipients of the BEACH Act grant which were revised in the “*2014 National Beach Guidance and Required Performance Criteria for Grants.*”

¹ The Hawaii Department of Health (HDOH) Clean Water Branch (CWB) is a recipient of EPA BEACH Grants and this document presents the procedures and practices used by the HDOH CWB to meet the EPA-specified performance criteria.

The foundations of Hawaii’s Beach Program are based on the state’s recreational water quality standards as specified in the Hawaii Administrative Rules, Title 11, Chapter 54, Water Quality Standards (HAR 11-54)² which was last amended in November 2014. This amendment is consistent with the 2012 EPA Recommended Water Quality Criteria (RWQC) for recreational waters and was approved by EPA on May 20, 2015. In its 2012 RWQC, the EPA recommended that state water quality standards specify the magnitude of the indicator density, expressed as a geometric mean and a statistical threshold value; the duration over which the magnitude is calculated; and the frequency of exceedances or the maximum number of times that the indicator may be present above the magnitude over the specified duration.

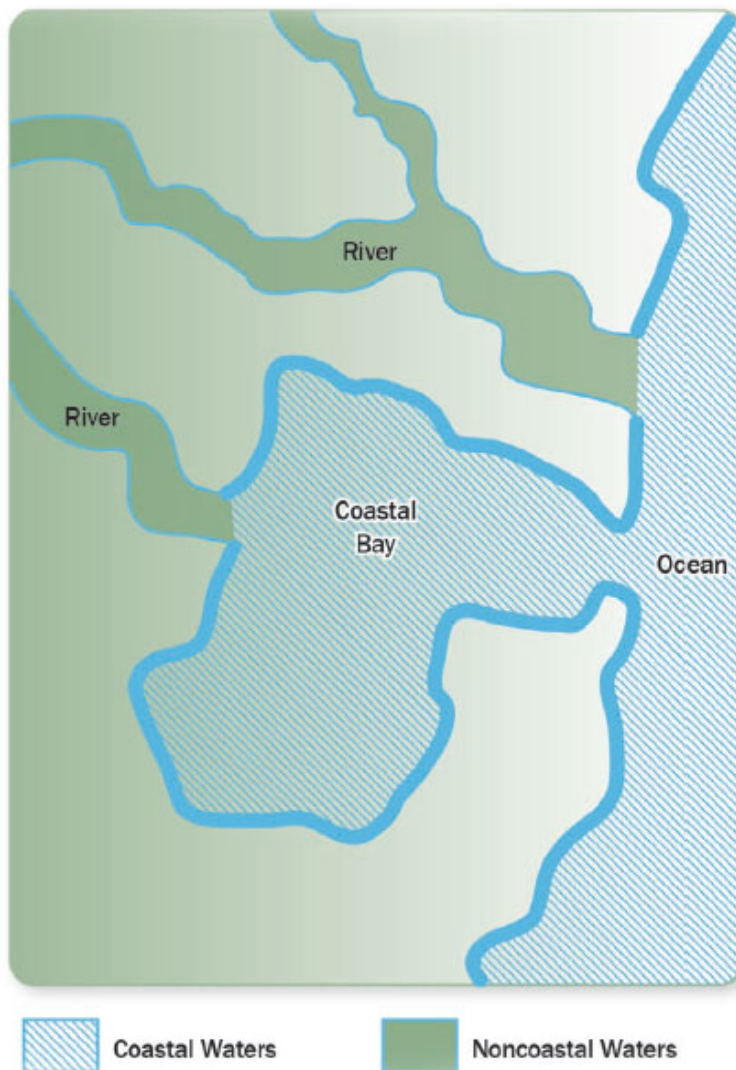
Hawaii’s recreational water quality standards specify the use of enterococci as the fecal indicator bacteria (FIB, also identified by EPA as a fecal indicator or pathogen indicator). Enterococci, one of the FIBs recommended by EPA, is used to identify the possible presence of pathogenic microorganisms that may cause illness in users of recreational waters. The specific criteria for enterococci are expressed as colony forming units (CFU) or most probable number (MPN) per 100 milliliters (mL), depending on the analytical method used. Hawaii’s recreational water quality standards specify that enterococci density (magnitude) in recreational waters may not exceed a geometric mean of 35 CFU or MPN per 100 mL over any 30-day period (duration). In addition, a Statistical Threshold Value (STV) of 130 CFU or MPN of enterococci per 100 mL may not be exceeded by more than ten percent of samples taken within the same 30-day period

¹ [National Beach Guidance and Required Performance Criteria for Grants](#), 2014 Edition, EPA-823-B-14-001, July 31, 2014.

² http://health.hawaii.gov/cwb/files/2013/04/Clean_Water_Branch_HAR_11-54_20141115.pdf

(frequency). The CWB has developed a beach program decision rule, shown in Section 2, to help guide actions necessary to appropriately advise the public when monitoring shows that beach waters do not meet recreational water quality standards. The decision specifies a “Beach Action Value” (BAV), the FIB level at which the CWB will take appropriate beach management actions. The CWB uses FIB levels above 130 cfu/100 mL as the BAV.

The Hawaii Beach Monitoring program specifically applies to coastal beaches and explicitly excludes inland waters upstream of the mouth of a river or stream, as specified in the 2014 National Beach Guidance, and shown on Figure 1 below.



Source: National Beach Guidance and Required Performance Criteria for Grants, 2014 edition

Figure 1. Coastal and Non-coastal waters

2. Overview of the Beach Monitoring Program in Hawaii

The State is required to identify measures to notify EPA and the public when a beach advisory threshold (i.e., the BAV) has been exceeded and to identify measures to inform the public of the potential risks associated with water contact activities in coastal recreational areas (beaches) when the BAV has been exceeded. The State is also required to report to EPA, at least annually, on the occurrence, nature, location, pollutants involved, and the extent of any exceedances of the BAV. The State must also identify any local governments to which they have delegated responsibility for implementing an advisory program and describe the process by which the delegation is made.

The Monitoring and Analysis Section of the CWB is responsible for the administration of Hawaii's BEACH Act monitoring program and all BEACH Act advisory requirements and does not delegate any of these responsibilities. As part of the BEACH monitoring program, CWB performs routine monitoring of Hawaii's beaches which encompass sample collection, field measurements, and field observations. Water quality samples are currently analyzed for the FIB, enterococci, by five laboratories that are situated on the islands of Oahu, Maui, Kauai, and two on the island of Hawaii.

Consistent with the 2014 EPA guidance, the CWB must promptly issue a beach advisory or resample if there is reason to doubt the accuracy, certainty, or representativeness of the first sample. If there is reason to doubt the results of the first sample, the CWB will collect confirmatory samples before issuing an advisory.

Several studies and scientific reports³ have concluded that enterococci, the FIB recommended by EPA, is not an ideal pathogen indicator in Hawaii in that it does not necessarily indicate the presence of fecal pollution. Enterococci has been shown to multiply in soil and decaying vegetation in Hawaii and other tropical regions, especially along inland streams that are heavily canopied by vegetation. Studies have identified major sources and sinks of enterococci in the environment, which include soil, aquatic and terrestrial vegetation, beach sand, and sediment and feral animals. The 2014 EPA Guidance states that it is important to note that the recommended FIB is not exclusively of fecal origin and that they can be part of the natural microflora in the environment and that FIB from these non-fecal sources have not been demonstrated to be related to the potential for human illness. The 2014 EPA Guidance further recommends that beach managers understand the potential fecal sources in the watershed affecting their beaches to most effectively protect the health of beachgoers. One recommendation towards this goal made by EPA is the performance of a sanitary survey.

The CWB conducted a site-specific sanitary survey on the island of Kauai after receiving complaints that the BAV was consistently being exceeded in the area. The sanitary survey could not definitively identify a source of enterococci that would indicate risk to human health. The CWB then commissioned a study to identify the potential sources of the FIB in the area. The

³ <https://www.ncbi.nlm.nih.gov/pubmed/23204362>; <https://www.ncbi.nlm.nih.gov/pubmed/26184253>; <https://www.ncbi.nlm.nih.gov/books/NBK190421/>

study concluded “high concentrations of FIB in both Waiopili Ditch and Waikomo Stream were not caused by human or animal fecal contamination”⁴. As a result of this and previous studies⁵, the CWB has determined that enterococci do not reliably indicate human health risk due to fecal pollution in Hawaii and confirmatory testing must be performed before beach advisories are issued.

The previous beach decision rule specified the issuance of advisories immediately after receiving laboratory results showing that the BAV has been exceeded. Signs were posted on the affected beach and follow-up samples were collected. From the initiation of Hawaii’s beach advisory program in October 2017 to September 2019, more than 7,200 samples were collected statewide, out of which, 81 advisories were issued for 49 beaches. Of the 81 advisories issued, 75 advisories were canceled based on the laboratory results of the follow-up sample, which was usually shortly after the 24-hour analytical period. Of the 49 beaches at which advisories were issued, 45 beaches did not exceed the geometric mean of 35/100 mL over the two-year period. CWB data shows that during the period between the posting of the advisory and the receipt of the follow-up sample results, the FIB levels for these samples were below the BAV and there was no significant risk to the public, despite the posting of the advisory signs. Data shows that for the vast majority of advisories that were issued, immediate follow up resamples indicated that there were no significant risks during the period that the advisory signs were posted. The CWB believes that if there were a public health risk as a result of fecal pollution, the BAV would remain elevated for several consecutive days. The CWB further believes that the advisory posting of single-day exceedances of the BAV, unless warranted (e.g., evidence or report of sewage leaks or spills), causes unnecessary apprehension and inconvenience to the public when no significant health risk can be demonstrated. The CWB has concluded that in most cases, there is a valid reason to doubt the certainty and representativeness of the first sample, and confirmatory resampling of the area prior to issuing an advisory is warranted⁶.

The CWB’s beach program decision rule, shown in Figure 2 below is used to help guide actions necessary to communicate to the public when there is a potential risk to beach users. The decision rule specifies a “Beach Action Value” (BAV), the level of FIB at which the CWB will take appropriate beach management actions. The CWB selected enterococci at or above 130 cfu/100 mL as the BAV, which is equivalent to the EPA recommended statistical threshold value not to be exceeded 10% of the time.

⁴ Mahaulepu and Waikomo Watersheds PhyloChip Source Tracking Study, Hawaii, Final Report May 22, 2019

⁵ Viau, E.J.; Lee, D.; Boehm, A.B. Swimmer Risk of Gastrointestinal Illness from Exposure to Tropical Coastal Waters Impacted by Terrestrial Dry-Weather Runoff. *Environ. Sci. Technol.* 2011, (45), 7158-7165.

⁶ DOH data analysis 2019

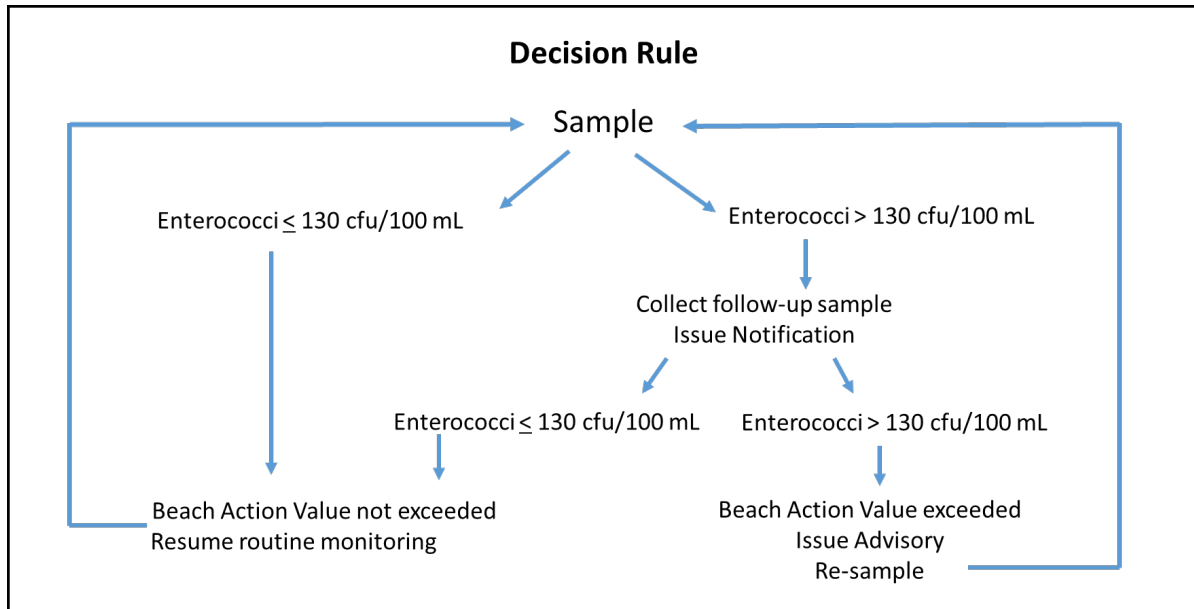


Figure 2. Decision Rule

If the BAV is not exceeded, i.e., is less than or equal to 130 enterococci/100 mL during routine monitoring, then no action is required and routine monitoring resumes.

If the BAV is exceeded, the CWB collects a confirmatory follow-up sample and issues a notification on the CWB Water Quality Notification and Advisories website and sends email notification to subscribers informing them that confirmatory testing is being conducted.

If the confirmatory follow-up sample shows that the BAV has not been exceeded, the CWB will update the notification stating that no advisory is issued, and routine monitoring will resume.

If the confirmatory follow-up sample shows that the BAV has been exceeded, the CWB issues an advisory for the affected beach and communicates the exceedance to the public. Advisories in response to exceedances of the BAV remain in place until further follow-up sampling results indicate that the BAV is no longer exceeded.

When the BAV is no longer exceeded, an advisory cancelation is communicated to the public.

Public notification and advisories are discussed in Section 7.

Responses to wastewater or sewage spills, overflows, and discharges are carried out pursuant to HAR 11-62, Wastewater Systems, Appendix B⁷ and are discussed in Section 7, Response to Sewage Spills.

⁷ <https://health.hawaii.gov/opppd/files/2015/06/11-62-Wastewater-Systems.pdf>

3. Goal of the Beach Monitoring Program in Hawaii

The goal of Hawaii's Beach Monitoring Program is to reduce the risk of illness to users of Hawaii's beaches due to sewage pollution by issuing public advisories when warranted (e.g., due to evidence of sewage leaks or spills, heavy rains, etc.) and in response to exceedances of the BAV when there is no reason to doubt the accuracy or representativeness of the monitoring results. To achieve this goal, the CWB takes prompt action in response to any exceedance to the BAV by collecting confirmatory follow-up samples. The CWB provides timely public advisories and risk communication to users of Hawaii's beaches in response to BAV exceedances that may pose a health risk. Risk communication is provided to the public so that personal decisions may be made based on individual risk tolerances. The CWB believes that routine monitoring and prompt, accurate advisories will satisfy the goal of reducing risk to beach users by keeping beach users informed.

In addition to informing the public, the CWB is also required to prepare quarterly reports to EPA to satisfy a grant requirement and annual reports to the EPA to satisfy a federal BEACH Act requirement. These reports compile monitoring results, advisory and notification efforts and actions taken. Reporting activities are discussed in Sections 6 and 8.

4. Risk-based Beach Evaluation and Classification and Tiered Monitoring Plan

Hawaii's beaches were evaluated and classified by the CWB when the BEACH Act was first enacted in 2000. In 2003, Hawaii submitted to the EPA an inventory of beaches that were subject to the provisions of the BEACH Act (i.e., "BEACH Act beaches"). There are six major islands with public access to beaches. The four largest islands of Kauai, Oahu, Maui, and Hawaii Island are staffed by CWB personnel. The beaches on the islands of Lanai and Molokai are included in the beach inventory but are not monitored due to logistical challenges imposed by holding time restrictions for the samples. These islands are the least populated and industrialized of the major Hawaiian Islands and their beaches are least likely to be threatened by pollution. There are no BEACH Act beaches on the islands of Kahoolawe and Niihau due to access restrictions. With current resources, it is impossible and impractical for the CWB to monitor all beaches in the state; therefore, the CWB has ranked all beaches into different priority levels or tiers.

Hawaii's BEACH Act inventory of beaches, submitted to the EPA in 2003, was ranked by tiers which identified the frequency of monitoring that the beaches would receive. During the evaluation process, CWB staff used a checklist to evaluate each beach using the factors listed below. The CWB also considered factors such as accessibility, available facilities such as showers and restrooms, local knowledge of the area, and consulted external sources such as lifeguards to determine daily beach user counts and reference books for current and historic information on usage. A major determining factor when considering beach usage is the presence of lifeguard stations on a beach. Currently, there are approximately 407 BEACH Act beaches in the state; of which, approximately 215 have been monitored in 2018. Some of the larger beaches have multiple monitoring stations which may not be monitored at the same frequencies; however, if one of the monitoring stations on the beach is monitored at a Tier 1 level, then the

entire beach is considered a Tier 1 beach. The criteria for determining beach tier levels are shown on Table 1. The number of Tier 1 and Tier 2 beaches in the state has been updated in 2019 and is shown on Table 2. A current list of Tier 1 and Tier 2 beaches is provided in Appendix 1.

Table 1. Beach Tiering Criteria.

Tier 1	Tier 1 beaches are considered “core” beaches and were ranked as such because of their economic and social importance to the state. Tier 1 beaches are heavily used, and most are stationed by lifeguards. Tier 1 beaches may be threatened by some type of pollution. These beaches were given the highest monitoring priority
Tier 2	Tier 2 beaches also include beaches which may be economically or socially important to the state but are less heavily used than Tier 1 beaches. Tier 2 beaches are currently monitored on a less frequent basis due to resource constraints; however, the frequency may be increased as resources become available.
Tier 3	Tier 3 beaches are even less heavily used, do not have a history of high FIB concentrations, are less threatened than Tier 1 or Tier 2 beaches, and currently receive no routine monitoring due to the lower threat and usage level. Tier 3 beaches also include those beaches that may pose a safety hazard to the sampler.
<p>The tier-based classification system for beaches is based on the following factors:</p> <ul style="list-style-type: none"> • Year-round primary contact recreation • The presence of streams that flow through a residential, agricultural, urban, or industrial area and discharge nearby • Urban nonpoint sources • History of sewage spills in the area with accompanying monitoring data • Heavy beach usage • Importance of the area to the local economy and use by the community • Prior monitoring data showing elevated levels of FIB • Ease of access to the beach, including whether access is restricted or must be gained through crossing private property <p>If a beach possessed five or more factors out of the seven listed above, the beach was given a Tier 1 ranking. If it possessed less than five factors, the beach was given a Tier 2 ranking. If the beach was determined not to be threatened using the above criteria, or if prior monitoring history revealed no evidence of excessive levels of FIB, additional monitoring was determined to not be required then the beach was classified as a Tier 3 beach.</p> <p>The beach tier levels will be evaluated annually by the CWB. The historical monitoring data as well as the above classification criteria will be used to evaluate whether the tier level assigned to a beach should be changed; however, priority consideration will be given to the economically important and most heavily used beaches on each island.</p>	

Table 2: Number of Tier 1 and Tier 2 Beaches

Island	Tier 1 Beaches	Tier 2 Beaches
Hawaii	10	35
Kauai	12	28
Maui	16	39
Oahu	25	26
TOTAL	63	128

Tier 1 beaches are given the highest priority in the Beach Monitoring program and are monitored weekly on all islands. Monitoring stations are divided into sampling runs, which are grouped by geographic proximity to each other. Tier 2 beaches are monitored at a lower priority and monitoring schedules and frequencies may be changed at any time.

Tier 2 beaches are typically monitored once per month on Kauai, once every two months on Oahu and Maui and once every three to four months on Hawaii Island. The monitoring frequency of Tier 2 beaches may need to be adjusted to accommodate activities such as follow-up sampling and sign posting on beaches where advisories are warranted and to accommodate other duties of the field staff. Tier 3 beaches may be monitored as resources permit.

Specific sampling sites on each beach were chosen to be readily identifiable to the sampler and to be representative of how the particular beach is typically used. For example, most of the sampling sites will target water near the geographic center of the beach or near an easily-recognizable landmark (e.g., life guard station, pavilion, public restroom) to help ensure that the sampling sites remain consistent. The CWB has established beach sampling sites near where people are most likely to enter the water and recreate. An inventory of beach monitoring sampling sites (including maps, latitude and longitude coordinates, and a general description) is available on the CWB main website: <http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/sample-sites/>. The CWB notifies the EPA and the public at least annually whenever there is a significant change to the list of beaches or beach rankings. As specified in the 2014 National Beach Guidance, a state or tribe must review its program and associated list of beaches annually to determine whether there are significant changes and, if so, must provide the public with an opportunity to review these significant program changes. All significant changes to the Hawaii Beach Monitoring Program, including changes to the criteria and beach classifications will be subject to public review.

5. Methods and Assessment Procedures

Hawaii's beach monitoring program is based on the collection of discrete samples by CWB staff that are analyzed by state-operated microbiological laboratories on the islands of Kauai, Oahu, Maui, and Hawaii Island. In addition, a contract microbiology laboratory is used for the Kona region of Hawaii Island in order to meet the allowable holding time from sample collection to analysis. This is due to the long distance between the sampling sites in Kona and the state-operated laboratory in Hilo. Other contract laboratories may be used when needed.

Short-term increases in FIB levels are identified using EPA-approved laboratory methods for the detection and enumeration of enterococci, as specified in 40 CFR 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act*⁸. The CWB may utilize site-specific water quality assessment indicators and methods that are consistent with the 2012 EPA Recreational Water Quality Criteria in areas where the levels of enterococci cannot be accurately attributed to human or animal sources.

In addition to enterococci, the CWB has been analyzing all water quality samples for the presence of *Clostridium perfringens* for the past 27 years to provide supplemental information and to collect data which may be used to demonstrate its feasibility for use as a potential future indicator. Studies conducted at the University of Hawaii⁹ and Washington State University¹⁰ suggest *C. perfringens* may be a more appropriate indicator of fecal contamination in Hawaii's coastal marine waters. Currently, no action is taken using *C. perfringens* results.

6. Monitoring Report Submissions

As part of the BEACH Act grant requirements, the CWB submits quarterly and annual reports that summarize Beach program activities. All notifications and advisories including sewage spills, Brown Water Advisories (BWAs), Beach program advisories, and beach locational data are provided annually in the Beach program advisory and notification submission to EPA. This information is available on EPA's Program tracking, beach Advisories, Water quality standards and Nutrients (PRAWN) database and is available to the public via EPA's Beach Advisory and Closing On-line Notification (BEACON) system. Monitoring data, including the number of samples collected, the number of beaches monitored under the Beach program, and all BEACH Act funding activities (purchases, payments, etc.) are submitted quarterly to EPA. Advisory and notification report submissions are discussed in Section 8.

The public can view all of the Beach program monitoring data after they have been verified and validated, on the CWB Water Quality Data website¹¹. The CWB also uploads monitoring data to EPA's Water Quality Exchange (WQX) database monthly. The public may also view all BEACH advisories and notifications issued by the CWB on the CWB Water Quality Advisories website¹². Advisories and notifications may be sorted by type (Beach Advisory, Beach Notification, Brown Water Advisory, Sewage Spills and Permanent postings), island, and status (Issued or Canceled). Advisories and notifications can also be downloaded as Excel files from the Water Quality Notification and Advisories website.

⁸ <https://www.gpo.gov/fdsys/pkg/FR-2012-05-18/pdf/2012-10210.pdf>

⁹ Fujioka, R.S. (2001). Monitoring coastal marine waters for spore-forming bacteria of faecal and soil origin to determine point from non-point source pollution. *Water Science and Technology* 44, 181-188.

¹⁰ Miller-Pierce, M.R. (2019). *Clostridium perfringens* Testing Improves the Reliability of Detecting Non-point Source Sewage Contamination in Hawaiian Coastal Waters Compared to Using Enterococci alone. *Marine Pollution Bulletin* 114, 36-47.

¹¹ <http://emdweb.doh.hawaii.gov/CleanWaterBranch/WaterQualityData/default.aspx>

¹² <https://eha-cloud.doh.hawaii.gov/cwb/#!/landing>

7. Public Notification, Advisory, and Risk Communication Plan

A central component of the current beach monitoring program is the decision rule, shown in Figure 2, which the CWB uses to identify actions to be taken in response to exceedances of the BAV during its routine monitoring. Any exceedance of the BAV during routine monitoring of Hawaii's Beach Program beaches will trigger confirmatory follow-up sampling, a *notification* on the CWB Water Quality Notification and Advisories website and a notification email to all subscribers. The notification will inform the public that the beach is being resampled. No signs will be posted on the beach until confirmatory follow-up sampling test results indicate BAV exceedance. The first notification is canceled on the CWB Water Quality Notification and Advisories website, if the resample results show no exceedance of the BAV. Email notifications are transmitted to all subscribers.

Exceedance of the BAV in a confirmatory sample will immediately trigger a public *advisory* and follow-up sampling. An advisory consists of sign posting on the beach, advisory posting on the CWB Water Quality Notification and Advisories website, and emails to all subscribers informing them of the advisory. The CWB does not close beaches in response to any advisory but does issue advisories to inform the public about water quality conditions so that personal decisions may be made based on individual risk tolerances. Notifications differ from advisories in that notifications inform the public that the site will be resampled, or the site is no longer exceeding BAV levels. Signs are not posted on the beach in response to notifications.

Three distinct activities have been identified to inform the public of confirmed BAV exceedances: 1) posting of advisory signs on the beach at locations where they would be most visible (e.g., parking lots, entrances, points of access, etc.); 2) transmission of email advisories issued by the CWB to all subscribers, which include media outlets, other government agencies, non-governmental organizations, and private citizens; and 3) advisory posting on the CWB Water Quality Notification and Advisories website: <https://eha-cloud.doh.hawaii.gov/cwb/#!/landing> (shown below):

The screenshot shows the 'Clean Water Branch CWB System' website. At the top left, it says 'ENVIRONMENTAL HEALTH PORTAL' and 'Clean Water Branch CWB System'. On the right, there is a 'Sign in' button. The main content area features a map of the Hawaiian Islands on the left and a table of 'Ongoing Water Quality Advisories' on the right. Below the table is a 'Stay Safe & Subscribe' section with a 'SUBSCRIBE' button. At the bottom left, there is an 'Explore' section for 'Water Quality Advisories' with 'List' and 'Map' buttons. At the bottom right, there is a 'Frequently asked questions' section.

Advisory	Date
Brown Water Advisory, Island of Maui	Dec 26, 2019
Brown Water Advisory, Island of O'ahu	Dec 25, 2019
Brown Water Advisory, Island of Kaua'i	Dec 25, 2019
Brown Water Advisory at Hilo Bay to Honolulu, Hawai'i	Dec 23, 2019

The public is encouraged to subscribe to receive email notifications and advisories at the CWB Water Quality Notification and Advisories website. The CWB Water Quality Notification and Advisories website also provides a link to frequently asked questions relating to the beach monitoring program.

The CWB has worked with its stakeholders, also referred to as community partners, to develop the messaging content for the beach advisory information that would best inform the beach users of the potential risks. Four types of beach advisories were identified: temporary water quality exceedance advisories, permanent water quality exceedance advisories, sewage spill warning advisories, and brown water advisories. The CWB posts signs for temporary and permanent exceedances of the BAV on the affected beaches. Sewage spill signs are posted according to the requirements specified in HAR 11-62, Appendix B. Signs are not posted during a Brown Water Advisory (BWA) as it is not logistically feasible for the CWB since these advisories often encompass entire regions of an island, an entire island, or even the entire state. The CWB lacks the resources to post signs at all beaches that could be affected by BWAs. Exceedances of the BAV, sewage spills, and BWAs are also communicated via email advisories and are issued on the CWB Water Quality Notification and Advisories website.

If sample test results indicate an exceedance of the BAV, resampling of the beach site will be scheduled for the next working day or as soon as possible to confirm the high counts of the fecal indicator bacteria. If the result of the resample confirms continued high count above the BAV, temporary signs will be posted at the beach to alert beach users that high bacteria levels were found and that contact with the water may cause illness. Follow up samples will be collected

after the initial posting, and the signs will be removed after laboratory results from the follow up samples confirm that the BAV is no longer exceeded. Laboratory results are available to the CWB no sooner than 24 hours after the samples have been analyzed.

If routine monitoring results consistently exceed the BAV, a permanent sign may be placed at the site. Routine monitoring is discontinued at the site where permanent signs are posted; however, the site may be subject to occasional monitoring. The frequency of the site visits to these locations will depend on the availability of resources; however, they will be visited at least once per year to ensure that the signs remain standing and legible. Permanent signs may be posted when the decision rule indicates that the BAV has been exceeded more than 50% of the time over a period of one calendar year, or when deemed necessary by the CWB. If the CWB determines that the source of the BAV exceedance does not pose a significant health risk to users, as evidenced by scientific investigations, the permanent signs will be removed. Significant health risk is determined when human, and to a lesser extent, animal sources of enterococci are detected and indicate potential risks at or higher than EPA's recommended protection level in the 2012 Recommended Water Quality Criteria.

Warning signs are used to alert beach users of known sewage contamination due to reported sewage spills. The warning sign explicitly states that the water is contaminated by sewage and that people should keep out of the water. Warning signs are differentiated visually from routine monitoring exceedance signs to distinguish the level of potential risks.

Examples of the advisory signs used for the Beach Monitoring program are shown in Appendix 2. The posting procedures and messages displayed on other HDOH signs are beyond the scope of this document.

Examples of advisories on the CWB Water Quality Notification and Advisories website are shown in Appendix 3.

Another type of risk communication is through direct person-to-person interaction with beach users through the use of laminated informational sheets or placards. These placards provide direct interaction with beach users to inform them of any advisories issued on the beach, especially visitors who do not speak English. The placards have been translated into several of the most common languages spoken by Hawaii's visitors and will provide helpful information on what the signs mean, how to minimize their risk of illness, and where to find more information. These placards are intended to be shown to beach users by county lifeguards, visitor industry personnel (specifically beach front hotels and beach activity vendors), and CWB field staff to help provide information.

Response to BAV exceedances

The overall advisory/notification process for BAV exceedances are as follows (see also Figure 2, Decision Rule):

1. CWB receives an automated exceedance notification from the Water Quality Data system after the laboratory has entered and confirmed the result, typically 24 hours after the samples have been analyzed.

2. The sampler collects follow-up confirmatory samples from the affected site.
 - a. A notification is issued on the CWB Water Quality Notification and Advisories website
 - b. Email notifications are transmitted to all subscribers
3. If laboratory results for the follow-up confirmatory sample show that the BAV has not been exceeded, routine sampling resumes.
 - a. Updated notification is issued of BAV non-exceedance on the Water Quality Notification and Advisories website
 - b. Email notifications are transmitted to all subscribers
4. If laboratory results for the follow-up confirmatory sample show that the BAV has been exceeded:
 - a. An advisory is issued on the CWB Water Quality Notification and Advisories website
 - b. Email advisories are transmitted to all subscribers
 - c. Advisory signs are posted on the affected beach
 - d. A follow-up sample is collected
5. When follow-up samples show that the BAV is no longer exceeded:
 - a. The advisory issued on the CWB Water Quality Notification and Advisories website is canceled
 - b. A cancelation email is transmitted to all subscribers stating that the advisory is no longer in effect
 - c. Advisory signs posted on the affected beach are removed
 - d. Routine sampling resumes

Response to Sewage Spills

If the CWB receives a report of a confirmed sewage spill, a “Sewage Spill Advisory” is issued. A confirmed sewage spill is defined as a spill reported by a permitted wastewater facility or a spill that has been verified by a CWB staff member. The procedures specified in HAR 11-62¹³, Wastewater Systems, Appendix B, Responses for Wastewater Spills, Overflows, and Discharges (“Spills”) will be followed. If the owner/agent is unable to post warning signs, the CWB will post signs in area(s) likely to be affected by the spill and where public access is possible.

A Sewage Spill Advisory provides information (location, description, cause, etc.) and warns the public to stay out of the affected waters. The advisory is transmitted via email to all subscribers as described above. The CWB will determine when the advisory is no longer in effect based on the indicator levels and current environmental conditions. When the advisory is no longer in effect, the signs are removed, the advisory on the CWB Water Quality Notification and Advisories website is removed, and emails are transmitted to all subscribers informing them that the advisory is no longer in effect. An example of a sewage spill advisory message issued on the CWB Water Quality Notification and Advisories website is shown in Appendix 3.

¹³ <http://health.hawaii.gov/wastewater/>

Response to Brown Water Advisories

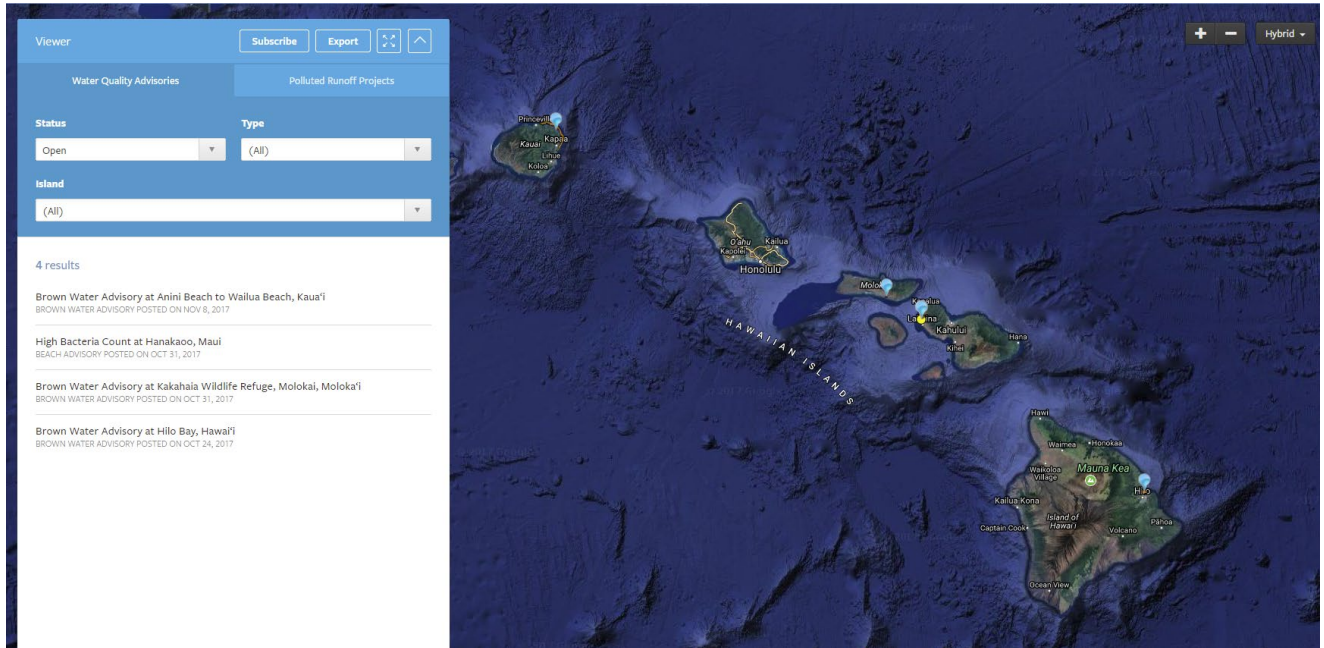
In the event of heavy rain or if a Flash Flood Warning is issued by the National Weather Service, or if conditions occur that may result in surface runoff into ocean, the CWB may issue a “Brown Water Advisory” (BWA). The coastal beach water need not be brown for a BWA to be issued. BWAs are preemptive advisories and are so named because surface water runoff often carries soil and sediment and other pollutants that can cause water at the beach to appear brown or have a turbid appearance. A BWA is issued when there is a strong likelihood of land-based pollutants entering coastal beach waters thereby increasing the possibility that the BAV will be exceeded. Land-based runoff from streams and drainage systems into coastal beach waters may pose a health risk to swimmers from elevated pathogen levels due to fecal contamination from sewage. It should be noted that heavy rainfall need not occur on the beaches for a BWA to be issued; rainfall in the mountains may carry polluted runoff into beach waters through streams and drainage systems. Additional information leading to a BWA may come from CWB staff, county lifeguards, or other CWB partners such as community organizations who observe water conditions directly. Information from other sources may need to be verified by the CWB before a BWA is issued. Sampling will be suspended under a BWA, and if samples have already been collected when a BWA is issued, CWB may not wait for laboratory results before issuing a BWA. The BEACH Act addresses illness that may be caused by sewage related pathogens and does not address chemicals such as pesticides, heavy metals, and other toxic material which may enter Hawaii’s beaches through surface water runoff. BWAs are issued to provide additional protection to Hawaii’s beach users above those required by the BEACH Act.

The public will be informed of a BWA as described above; however, signs will not be posted on the beach and confirmatory samples will not be collected. It is impractical to post physical signs on, and collect samples from, all of the impacted beaches due to resource constraints. Currently, news organizations may include BWAs in their weather broadcasts when time permits. The HDOH Communications Office may issue a press release at their discretion. BWAs are generally rescinded no sooner than three days after the rain event has subsided and when CWB staff determines that surface water runoff no longer poses a risk to users of the beach.

An example of a Brown Water Advisory message issued on the CWB Water Quality Notification and Advisories website is shown in Appendix 3.

Additional Information on the CWB Water Quality Notification and Advisories Website

In addition to the notification and advisory information stated above, the CWB Water Quality Notification and Advisories website contains a viewer which lists, at a glance, all ongoing (active) notifications and advisories statewide, as well as a map which identifies the locations of the active notification and advisories. The viewer is accessed through the link labeled “View ongoing water quality notifications and advisories in map viewer.” The viewer is shown below. Clicking on any of the text advisories or a pin location on the map in the viewer takes the user to the specific advisory information.



Visitors to the viewer are able to sort the water quality notifications and advisories by status (Issued or Canceled); by type (Beach Advisory, Beach Notification, Brown Water Advisory, Sewage Spill, and Permanent); and by island. Users may also export information on the notifications and advisories as comma-separated values or .csv files, which are viewable in Microsoft Excel.

8. Notification Report Submission

As part of its BEACH grant conditions, the CWB reports its public notification and advisory activities electronically to the EPA through the Program Tracking, Beach Advisories, Water Quality Standards, and Nutrients (PRAWN) database on an annual basis. The data elements that are uploaded include beach monitoring notifications, advisories, and beach locational data. The CWB also provides the EPA with quarterly or annual written reports summarizing all BEACH Act program specific water quality data, including beach locational data, the number of samples taken, the number of stations monitored, and all notifications and advisories that were issued during that time span. The information in the PRAWN database is available to the public through the Beach Advisory and Closing On-line Notification (BEACON) system at:

<https://watersgeo.epa.gov/beacon2/reports.html>

In addition to reporting its beach notification and advisory activities, the CWB also reports (uploads) the actual monitoring results (enterococci levels) to the national EPA STORET/WQX database system on a monthly basis. Monitoring results are also issued on the CWB Water Quality Data website after they have been verified and validated. The information uploaded to STORET/WQX is available to the public at: <https://www.epa.gov/waterdata/storage-and-retrieval-and-water-quality-exchange>

9. Public Evaluation of the Beach Program

This document describes the Hawaii Beach Monitoring Program and will be made publicly available on the CWB website. The public will be provided an opportunity to evaluate and provide comment on all aspects of the Beach Monitoring Program when significant changes are made.

Points of Contact

All questions on the Beach Program may be directed to the CWB at:

Phone: (808) 586-4309

Email address: cleanwaterbranch@doh.hawaii.gov

Mailing address:

Clean Water Branch
Environmental Management Division
State of Hawaii Department of Health
P.O. Box 3378
Honolulu, HI 96801-3378

APPENDIX 1.

Tier 1 Beaches

ISLAND	BEACH ID	BEACH NAME
Hawaii	HI013290	Kahalu'u Beach Co. Pk.
Hawaii	HI261474	Kamakaokahonu
Hawaii	HI315019	Hilo Bayfront
Hawaii	HI326172	Anaeho'omalu Bay
Hawaii	HI540868	Lelewi Beach Co. Pk.
Hawaii	HI668132	Puako
Hawaii	HI670254	James Kealoha Park
Hawaii	HI753566	Kailua Bay
Hawaii	HI857411	Honoli'i Beach Co. Park
Hawaii	HI862286	Onekahakaha Beach Co. Pk.
Kauai	HI385259	Hanalei Beach Co. Park (Hanalei Bay Pavillion)
Kauai	HI758685	Kalapaki Beach
Kauai	HI798758	Lydgate State Park
Kauai	HI396850	Po'ipu Beach Co. Park
Kauai	HI701008	Salt Pond Beach Co. Park
Kauai	HI530569	Kekaha Beach Co. Park
Kauai	HI554189	Ha'ena Beach Co. Park
Kauai	HI124511	Ke'e Beach
Kauai	HI836118	Wai'oli Beach Park
Kauai	HI270737	Anahola Beach
Kauai	HI402035	Kealia
Kauai	HI392082	Wai'ohai Beach
Maui	HI253548	Fleming Beach North
Maui	HI846900	H.P. Baldwin Beach Co. Pk.
Maui	HI797917	Hanaka'o'o Beach Co. Pk.
Maui	HI985873	Ho'okipa Beach Co. Pk.
Maui	HI643627	Ka'anapali
Maui	HI280920	Kahalui Harbor
Maui	HI705118	Kalama Beach Co. Park
Maui	HI761092	Kama'ole Beach 1
Maui	HI097179	Kama'ole Beach 2 (Ili'iliholo Beach)
Maui	HI496115	Kama'ole Beach 3
Maui	HI797225	Kanaha Beach Co. Park
Maui	HI558359	Launiupoko St. Wayside
Maui	HI491359	Olowalu

Maui	HI279887	Oneloa Beach (Big Beach)
Maui	HI058731	Ma'alea Beach
Maui	HI278988	Wailea Beach Park
Oahu	HI882094	Ala Moana Beach Co. Park, Center
Oahu	HI306071	Ala Moana Beach Co. Park, D.H.
Oahu	HI950962	Chun's Reef
Oahu	HI451176	Hale'iwa Ali'i Beach Co. Pk.
Oahu	HI451471	Hanauma Bay
Oahu	HI515191	Ko Olina Kohola
Oahu	HI366432	Kahanamoku Beach
Oahu	HI482719	Kailua Beach Co. Pk.
Oahu	HI848207	Kualoa Co. Regional Park
Oahu	HI681782	Kuhio Beach Park
Oahu	HI183312	Laniakea Beach
Oahu	HI596989	Lanikai
Oahu	HI529142	Magic Island Beach
Oahu	HI627464	Ma'ili Beach Co. Park
Oahu	HI632106	Makaha Beach Co. Park
Oahu	HI723399	Makapu'u Beach Co. Park
Oahu	HI467413	Nanakuli Beach Co. Pk.
Oahu	HI659533	Poka'i Bay Beach Co. Pk.
Oahu	HI898947	Royal-Moana Beach
Oahu	HI776760	Sandy Beach Co. Park
Oahu	HI617815	Sans Souci St. Rec. Area
Oahu	HI860544	Sunset Beach
Oahu	HI471097	Waimanalo Beach Co Park
Oahu	HI696599	Waimea Bay Beach Co. Pk.
Oahu	HI267023	White Plains Beach

Tier 2 Beaches

Hawaii	HI107517	Ka Lae (South Point)
Hawaii	HI124561	Ninole
Hawaii	HI138086	Hakalau Co. Pk.
Hawaii	HI152572	Ho'okena
Hawaii	HI224651	Punalu'u
Hawaii	HI246645	Honaunau Bay
Hawaii	HI261869	Kauna'oa Beach
Hawaii	HI316864	Pohoiki Beach
Hawaii	HI320616	Pine Trees
Hawaii	HI380623	Laupahoehoe Beach Co. Park

Hawaii	HI425303	Radio Bay
Hawaii	HI436267	White Sands Beach Co. Pk. (Magic Sands)
Hawaii	HI459942	Kehena
Hawaii	HI470112	Miloli'i Beach
Hawaii	HI478461	Pu'u honua Pt. (Pu'u o Honaunau)
Hawaii	HI534434	Waipi'o Bay
Hawaii	HI542822	Kalapana Beach (new) (Harry K. Brown Beach Co. Pk.)
Hawaii	HI582331	Holoholokai Beach
Hawaii	HI616452	2nd Beach (Next to Mahaiula)
Hawaii	HI621002	Hapuna Beach St. Rec. Area
Hawaii	HI643938	Wawaloli Beach
Hawaii	HI659453	Ice Pond (single point)
Hawaii	HI691720	Lehia Beach Co. Pk.
Hawaii	HI693485	Kolekole Beach Co. Park
Hawaii	HI713293	Keahou Bay (Kona)
Hawaii	HI713314	Banyan's Surfing Area
Hawaii	HI720408	Manini'owali
Hawaii	HI720900	Whittington Beach Co. Pk.
Hawaii	HI738158	Pelekane Bay
Hawaii	HI849313	Keaukaha Beach Park
Hawaii	HI890924	Mauna Lani (Kalahuihua'a)
Hawaii	HI934020	Waiulaula
Hawaii	HI936372	Spencer Beach Co. Pk.
Hawaii	HI977673	Coconut Island Park
Hawaii	HI978783	Kawaihae Harbor
Kauai	HI338804	Anini Beach
Kauai	HI418744	Anini Beach Park
Kauai	HI156238	Beach House Beach
Kauai	HI166521	Brennecke Beach
Kauai	HI976083	Gillin's Beach
Kauai	HI385259	Hanalei Beach Co. Park
Kauai	HI352580	Hanama'ulu Beach Co. Park
Kauai	HI264001	Kalihiwai Bay
Kauai	HI972832	Kapa'a Beach Co. Park
Kauai	HI698776	Kawailoa Beach
Kauai	HI530569	Kekaha Beach Co. Pk.
Kauai	HI955435	Koloa Landing
Kauai	HI619039	Kukui'ula Bay
Kauai	HI889639	Lumaha'i Beach
Kauai	HI547745	Moloa'a Bay

Kauai	HI953916	Niumalu Beach Park
Kauai	HI502794	Nukoli'I Beach Park
Kauai	HI176480	Pacific Missile Range Facility
Kauai	HI468251	Pakala (Makaweli)
Kauai	HI247403	Polihale State Park
Kauai	HI742228	Prince Kuhio Park
Kauai	HI542569	Sheraton Beach
Kauai	HI358435	Shipwreck Beach
Kauai	HI936087	Tunnels Beach
Kauai	HI330114	Waikoko Bay
Kauai	HI606168	Wailua Beach
Kauai	HI245235	Waimea Rec. Pier St. Pk.
Kauai	HI682678	Waipouli
Maui	HI879646	Ahihi-kina'u Natural Area Reserve
Maui	HI996835	Hana Bay
Maui	HI553820	Hata's
Maui	HI412391	Honokowai Beach Co. Pk.
Maui	HI280286	Honolua Bay
Maui	HI984456	Honomanu Bay
Maui	HI160433	Kahana
Maui	HI705118	Kalama Beach Co. Park
Maui	HI647373	Kalepolepo Beach
Maui	HI797225	Kanaha Beach Co. Park
Maui	HI391006	Kapalua (Fleming's) Beach
Maui	HI607763	Keawakapu Beach
Maui	HI276573	Ku'au Bay
Maui	HI407363	Lahaina Beach
Maui	HI864937	Lower Pa'ia
Maui	HI715975	Mai Poina 'Oe la'u Beach Co. Pk.
Maui	HI245556	Makena Landing Beach
Maui	HI847607	Malu'aka Beach
Maui	HI861961	Mokapu Beach Park
Maui	HI977299	Mokule'ia Beach
Maui	HI764060	Napili Bay
Maui	HI491359	Olowalu
Maui	HI740710	Oneloa Bay Beach
Maui	HI279887	Oneloa Beach (Big Beach)
Maui	HI997014	Palauea Beach Park
Maui	HI462219	Papalaua
Maui	HI339656	Polo Beach Park

Maui	HI684864	Po'olenalena Beach
Maui	HI167153	Puamana Beach Co. Park
Maui	HI373055	Pu'unoa Beach
Maui	HI789952	Spreckelsville
Maui	HI765340	St. Theresa's
Maui	HI814309	Ukumehame Beach Co. Pk.
Maui	HI588333	Ulua Beach Park
Maui	HI169380	Wahikuli State Wayside Park
Maui	HI118874	Wai'anapanapa State Park
Maui	HI916183	Waiehu Beach Co. Park
Maui	HI343702	Waihe'e Beach Co. Park
Maui	HI284036	Waipulani
Oahu	HI702973	Ala Moana Beach Co. Park, Ewa
Oahu	HI798011	Bellows Field Beach Co. Pk.
Oahu	HI544313	Diamond Head
Oahu	HI767464	Ewa Beach
Oahu	HI555850	Fort DeRussy Beach Park
Oahu	HI994019	Hale'iwa Beach Co. Pk.
Oahu	HI685981	Ko Olina Naia
Oahu	HI173325	Kahala Hilton Beach
Oahu	HI548986	Kahe Pt. Beach Co. Pk.
Oahu	HI071892	Kalama Beach
Oahu	HI410842	Kaluanui Beach
Oahu	HI904851	Kapaeloa Beach
Oahu	HI733929	Kapi'olani Park
Oahu	HI767708	Kokololio Beach
Oahu	HI137325	Malaekahana Bay
Oahu	HI717740	Manner's Beach
Oahu	HI430267	Maunalua Bay Beach Park
Oahu	HI952205	Oneawa Beach
Oahu	HI825419	One'ula Beach Co. Park
Oahu	HI188157	Pipeline, The
Oahu	HI587568	Pounders Beach
Oahu	HI148836	Punalu'u Beach Co. Park
Oahu	HI193495	Pupukea Beach Co. Pk.
Oahu	HI851298	Queen's Surf Beach Park
Oahu	HI244505	Waikiki Beach Center
Oahu	HI279194	Waimanalo Bay St. Rec. Area

APPENDIX 2.

Advisory Signs

The advisory signs used in the Beach Monitoring program are shown below.



Temporary sign: High Bacteria Levels



HIGH BACTERIA LEVELS FOUND
in ocean and stream
especially after heavy rainfall

Contact with water
may cause illness

For information
health.hawaii.gov/cwb
(808) 586-4309

Hawaii State Department of Health



Permanent sign: High Bacteria Levels



**KEEP OUT OF WATER
NO SWIMMING • NO FISHING**

Sewage contaminated water.

Exposure to water may cause illness.

Department of Health - Clean Water Branch (808) 586-4309

Temporary sign: Sewage Contamination

APPENDIX 3

Examples of Notifications and Advisories on the CWB Water Quality Notification and Advisories Website

Beach Notifications are issued after enterococci levels exceed 130/100 mL during routine monitoring.

Note: “Issued” and “Canceled” refer to the status of the notification or advisory. “Issued” indicates that the notification or advisory is actively ongoing and “Canceled” indicates that the notification and advisory is no longer in effect.

Beach Notification

Environmental Health PORTAL CWB • Clean Water Branch System

ADVISORIES

Beach Notification

ISSUED

Details

Locations 1

Beaches

Documents 2

Notes

Beach Notification

MONITORING STATION
Ala Moana Park, Center

ISLAND
O'ahu

COVERED BY BROWN WATER ADVISORY?
No

SAMPLE DATE
Oct 29, 2019

COUNT
160 per 100 mL

CAUSE
Undetermined

TITLE
High Bacteria Count Notification at Ala Moana Park, Center, O'ahu

ADVISEMENT
The Hawai'i State Department of Health (DOH) is retesting Ala Moana Park, Center, O'ahu. Levels of 160 per 100 mL were detected during routine beach monitoring. DOH is uncertain about the representativeness of the first sample. This beach has historically met the acceptable beach threshold level, and there is no known source of fecal contamination. Therefore, DOH has collected another sample and is retesting the site. DOH will update the notification based on the results of this retesting.

ISSUANCE DATE
Nov 6, 2019

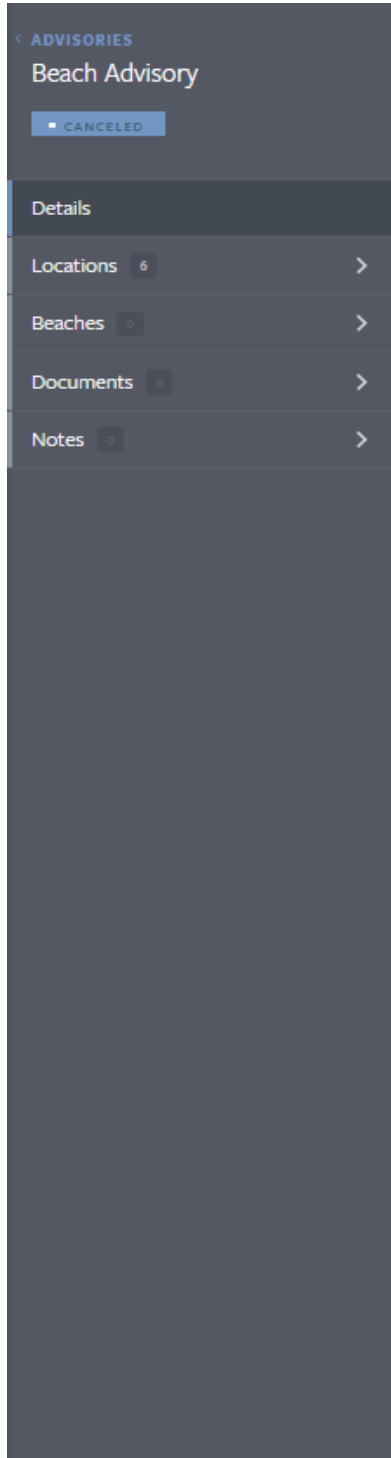
CANCELLATION DATE
—

LOCATIONS 1



Beach Advisories are issued after enterococci levels exceed 130/100 mL in follow-up confirmatory sampling.

Beach Advisory



A dark grey sidebar menu for a mobile application. At the top, it says '< ADVISORIES' and 'Beach Advisory'. Below that is a blue button with a white minus sign and the word 'CANCELED'. The menu items are: 'Details', 'Locations 6 >', 'Beaches 0 >', 'Documents 0 >', and 'Notes 0 >'.

Beach Advisory



MONITORING STATION

Hanalei Bay Landing

ISLAND

Kaua'i

COVERED BY BROWN WATER ADVISORY?

No

SAMPLE DATE

Oct 29, 2019

COUNT

207 per 100 mL

CAUSE

Stormwater runoff

TITLE

High Bacteria Count at Hanalei Bay Landing, Kaua'i

ADVISEMENT

The public is advised of a water quality exceedance of enterococci at Hanalei Bay Landing, Kaua'i. Levels of 207 per 100 mL have been detected during routine beach monitoring. The Department of Health Clean Water Branch provides beach monitoring and notification through its beach program. The advisory for this beach is posted because testing for enterococci indicate that potentially harmful microorganisms such as bacteria, viruses, protozoa, or parasites may be present in the water. Swimming at beaches with pollution in the water may make you ill.

Children, the elderly, and people with weakened immune systems are the most likely populations to develop illnesses or infections after coming into contact with polluted water, usually while swimming. Fortunately, while swimming-related illnesses can be unpleasant, they are usually not very serious - they require little or no treatment or get better quickly upon treatment, and they have no long-term health effects.

The most common illness associated with swimming in water polluted by fecal pathogens is gastroenteritis. It occurs in a variety of forms that can have one or more of the following symptoms: nausea, vomiting, stomachache, diarrhea, headache or fever. Other minor illnesses associated with swimming include ear, eye, nose and throat infections. In highly polluted water, swimmers may occasionally be exposed to more serious diseases.

Not all illnesses from a day at the beach are from swimming. Food poisoning from improperly refrigerated picnic lunches may also have some of the same symptoms as swimming-related illnesses, including stomachache, nausea, vomiting and diarrhea. At any given time and place, we are constantly exposed to a variety of microorganisms that have the potential of making us ill.

The beach has been posted and this advisory will remain in effect until water sample results no longer exceed the threshold level of 130 enterococci per 100 mL.

ISSUANCE DATE

Oct 30, 2019



Sewage Spill Warnings are issued following a confirmed sewage spill.

Sewage Spill

< ADVISORIES

Sewage Spill

• CANCELED

Details

Locations 1 >

Beaches 0 >

Documents 0 >

Notes 0 >

Sewage Spill



ISLAND

O'ahu

COVERED BY BROWN WATER ADVISORY?

No

LOCATION NAME

1330 Liliha Street

CAUSE

Unconfirmed

TITLE

Wastewater Discharge at 1330 Liliha Street, O'ahu

ADVISEMENT

The public is advised to stay out of Nuuanu Stream below N. Kukui Street, and Honolulu harbor near the mouth of Nuuanu stream, due to a wastewater discharge. The public is advised to remain out of these waters until warning signs have been removed. Details are as follows.

Location of discharge: 1330 Liliha Street
Total volume: estimated 960 gallons
Volume into state waters: estimated 400 gallons
Entered state waters? Yes
Affected waters: Nuuanu stream, Honolulu harbor, near the mouth of Nuuanu stream
Warning signs: Will be posted on morning of 10/22/19

ISSUANCE DATE

Oct 21, 2019

CANCELLATION DATE

Oct 25, 2019

SIGN POSTED DATE

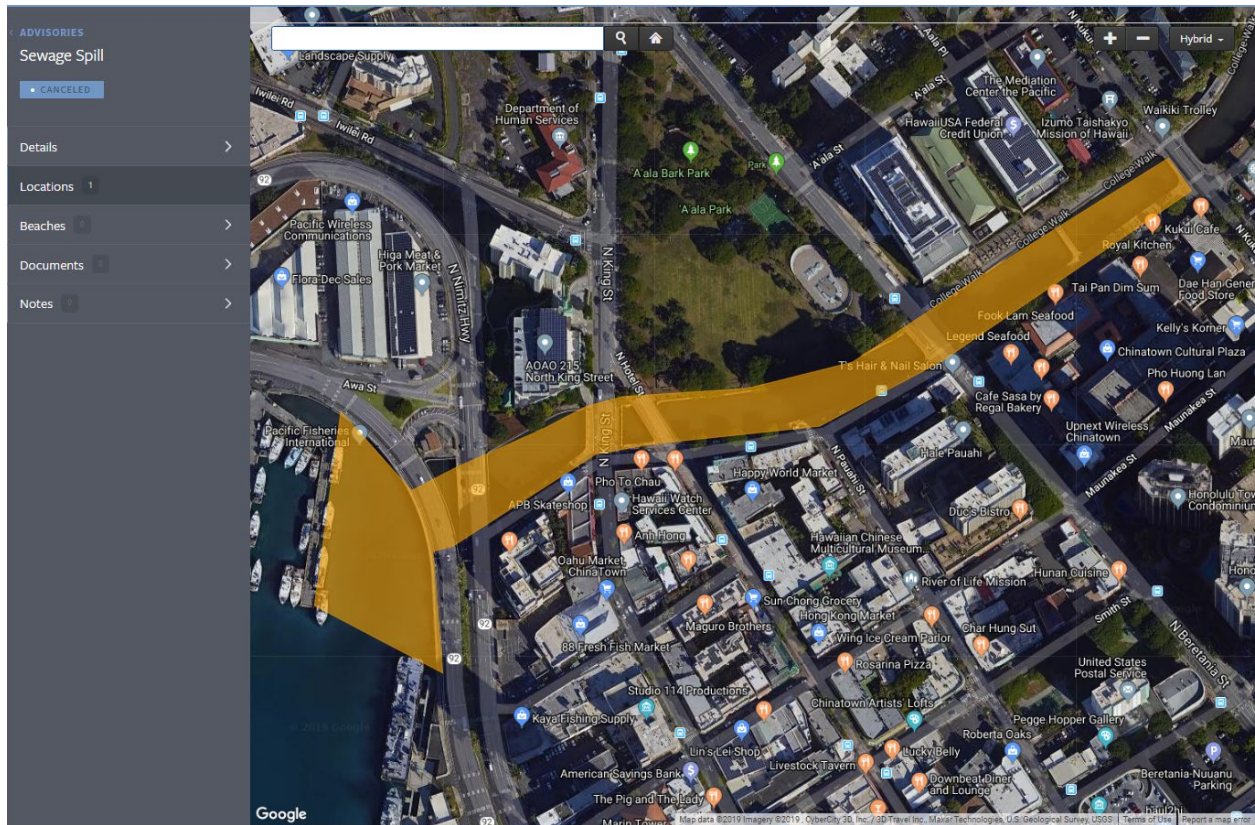
Oct 22, 2019

SIGN TYPE

Sewage

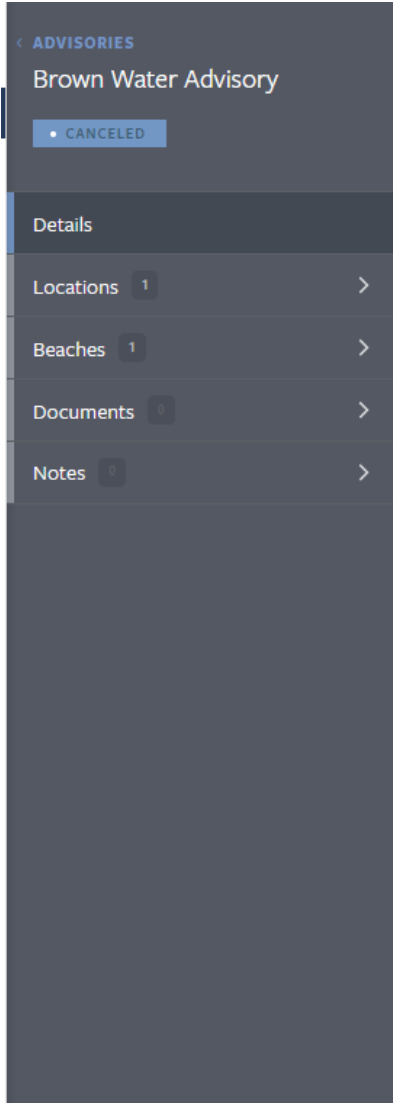
SIGN REMOVAL DATE

Oct 25, 2019



Brown Water Advisories are issued if stormwater runoff is entering the ocean.

Brown Water Advisory



A vertical navigation menu for the 'Brown Water Advisory' app. At the top, it shows '< ADVISORIES' and 'Brown Water Advisory'. Below this is a 'CANCELED' button. The main menu items are: 'Details', 'Locations 1', 'Beaches 1', 'Documents 0', and 'Notes 0'. Each item has a right-pointing chevron icon.

Brown Water Advisory



ISLAND

O'ahu

ISLAND WIDE?

No

LOCATION NAME

Punalu'u Beach Park

CAUSE

Heavy Rain

TITLE

Brown Water Advisory at Punalu'u Beach Park, O'ahu

ADVISEMENT

Updated: 11/4/19.

A Brown Water Advisory has been issued at Punalu'u Beach Park on O'ahu.

Heavy rain has resulted in stormwater runoff entering into coastal waters. The public is advised to stay out of flood waters and storm water runoff due to possible overflowing cesspools, sewer, manholes, pesticides, animal fecal matter, dead animals, pathogens, chemicals, and associated flood debris. Not all coastal areas may be impacted by runoff, however, if the water is brown stay out. Continue to practice good personal hygiene and follow-up with your primary care physician if you have any health concerns.

ISSUANCE DATE

Oct 30, 2019

CANCELLATION DATE

Nov 14, 2019

