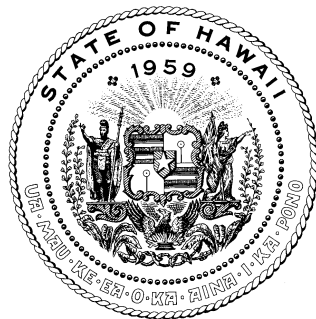


Report to the Twenty-Ninth Legislature
2017 Regular Session

**THE HAWAII DAM AND RESERVOIR SAFETY PROGRAM
STATE FISCAL YEAR 2016**



Prepared by the
Department of Land and Natural Resources
State of Hawaii

In response to
Section 179D-29, Hawaii Revised Statutes

November 2016

THE HAWAII DAM AND RESERVOIR SAFETY PROGRAM STATE FISCAL YEAR 2016

This report is prepared pursuant to Hawaii Revised Statutes (HRS) Section 179D-29 and covers the period from July 1, 2015 through June 30, 2016.

INTRODUCTION

The Department of Land and Natural Resources (Department), Engineering Division administers the Hawaii Dam and Reservoir Safety Act of 2007 (Act), codified as HRS Chapter 179D (Dam and Reservoir Safety Program). This Act, in conjunction with Hawaii Administrative Rules (HAR) Chapter 13-190.1, "Dams and Reservoirs", governs the design, construction, operation, maintenance, enlargement, alteration, repair, and removal of dams, reservoirs, and their appurtenant works in the State of Hawaii, to protect the health, safety, and welfare of the citizens of the State by reducing the risk of failure of the dams or reservoirs. Pursuant to HRS Section 179D-29, the Department shall submit an annual report to the governor and the legislature by January 5 of each year concerning the activities of the department relating to this chapter for the preceding fiscal year. The report shall include but not be limited to information on the following:

- (1) Approvals of plans and specifications for the construction of dams and reservoirs and for alterations, modifications, repairs, removal, and enlargements of any dams and reservoirs;
- (2) A listing of dam and reservoir safety inspections made;
- (3) Use of appropriated funds;
- (4) Rules adopted or amended;
- (5) Enforcement orders and proceedings;
- (6) Dam and reservoir failures and department evaluations of the reasons for the failure, if known; and
- (7) Any other available data regarding the effectiveness of the State's dam and reservoir safety program.

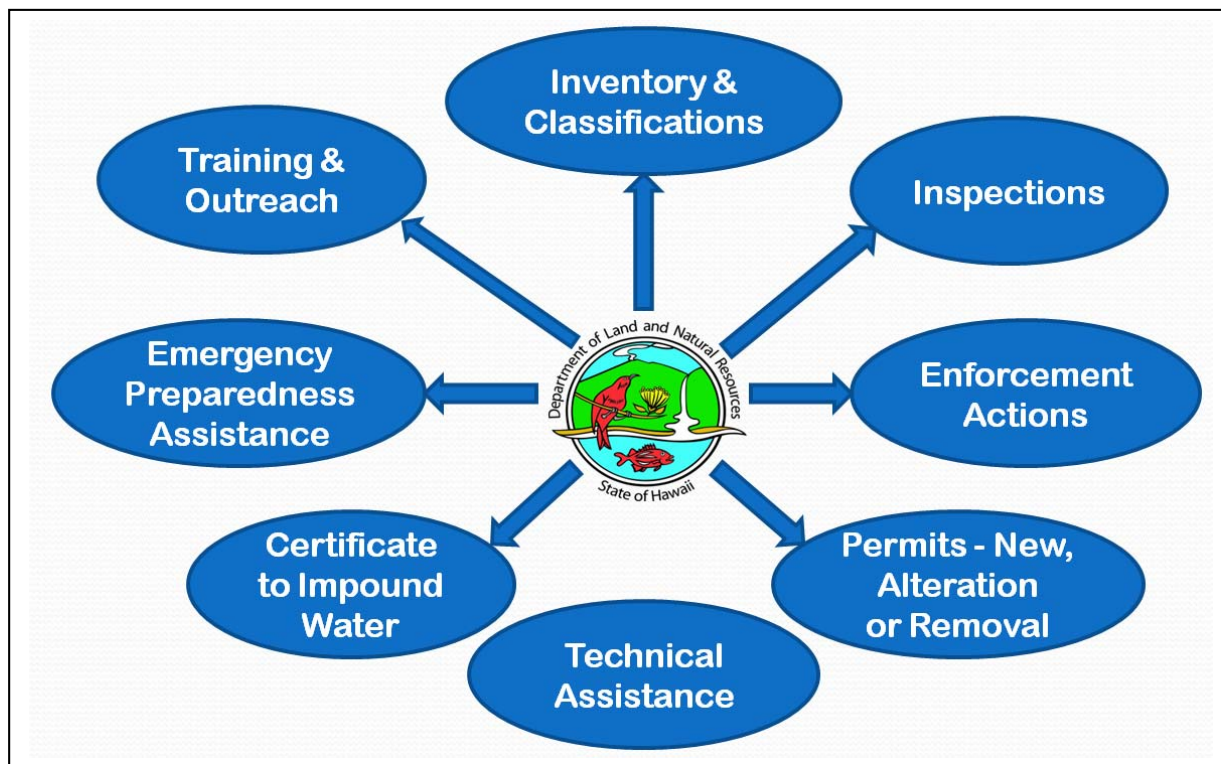
BACKGROUND

Historically, dams and reservoirs in Hawaii were predominately developed by the agriculture industry in the early 1900s. Today, dams and reservoirs continue to be used by the agriculture industry, in addition to providing storage for drinking water, flood control, hydro-electric, recreation and other purposes.

Only dams that meet a certain jurisdictional size criteria (height and volume) are regulated by the Department. Regulated dams are identified as having artificial barriers which are 25-feet or more in height or have an impounding capacity of 50-acre-feet (~17 million gallons) or more. Dams less than 6-feet in height, regardless of storage capacity, or that have a storage capacity not in excess of 15-acre-feet (5 million gallons) regardless of height do not fall under State of Hawaii jurisdiction, unless otherwise specified by the Dam and Reservoir Safety Program.

THE HAWAII DAM AND RESERVOIR SAFETY PROGRAM

The Dam and Reservoir Safety Program is comprised of several core functions:



Regulated Dam Inventory and Dam Classifications: The Department maintains a database of regulated structures, including classifications of each in regards to size, hazard potential and overall condition. The Department verified and updated their inventory of regulated dams in 2006. Hazard potential classifications were updated and assigned by the department as a product of their statewide dam break modeling analysis conducted between 2007 and 2011. Subsequent updates to the hazard classifications have been made for newly added facilities or those with new data affecting this classification. The overall condition assessment classification is a relatively new field which the Dam and Reservoir Safety Program is working to consistently apply across the state based on the condition assessments conducted on all regulated dams. All regulated dams were assessed and assigned an overall condition assessment classification during phase I inspections conducted statewide in 2007-2009. These condition assessment classifications are being updated based on ongoing inspection findings.

Dam Safety Inspections: The Department staff routinely inspects regulated structures statewide and retains consultants as necessary, to confirm or provide additional assessments. The Department currently inspects dams on a two year frequency, and is reevaluating this frequency as it updates the existing hazard classifications for all the regulated dams statewide. The Department also conducts construction or other informal inspections that are in addition to these visual dam safety inspections. Listings of the dams inspected this past fiscal year are included below.

Enforcement Actions: The Hawaii Dam and Reservoir Safety Act of 2007 authorized the Department to take enforcement action for both emergencies and any other violations of the Act. The Department has established administrative enforcement action procedures that are initiated by the following general deficiencies:

- Failure of dam and reservoir owners to comply with general requirements and responsibilities.
- Non-compliance with dam safety permit general terms and special conditions
- Non-compliance with certificate to impound terms and conditions

The Department did issue some penalty fines for delinquent submissions, however did not proceed with enforcement actions against any dam owner in Fiscal Year 2016 (see Section D)

Dam Safety Construction Permits: A permit from the Board of Land and Natural Resources (Board) is required for all dam construction, alteration, enlargement, modifications or removal work. Dams are uniquely engineered structures that require knowledge and experience in dam safety, particularly how to safely handle water flows in and out of the structure through appurtenant features, as well as mitigating the hazards of water passing through the dam embankment itself (seepage). Dams are often under sustained hydrostatic water loads, which if not properly designed can result in a failure of the dam. Dam safety permits allow the Department to review and check proposed improvements for concurrence with current dam safety practices and guidelines. Work that is not considered routine maintenance requires prior approval from the Board. Detailed procedures and requirements for this permitting process are provided in HAR Chapter 190.1. The Department also has developed additional guidance documents for dam owners and designers as well as a standard set of general permit requirements.

Certificate of Approval to Impound: The Certificate of Approval to Impound (CAI) water requirement was included in the Hawaii Dam and Reservoir Safety Act of 2007. Issuance of this certificate will be dependent on dam and reservoir owners ensuring their structures are remedied of critical deficiencies and meet minimum operational criteria.

The Department has developed guidelines and procedures for this certificate in coordination with dam owners on the implementation of this new requirement. The Department sent out notices to complete and submit CAI applications, to all owners of regulated dams and reservoirs in the state in Fiscal Year 2014. The Department received CAI applications for most of the regulated structures and is in the process of reviewing these submissions.

Understanding that many of these dams are over 80 years old, and almost all were constructed before the development of any modern dam safety standards, the department is working with owners to establish a reasonable improvement schedule for these facilities to meet current regulations. In the interim period, the department is working with owners to mitigate these deficiencies through operational restrictions or other types of mitigative actions.

Emergency Preparedness: HRS Chapter 179D requires that all dam owners of High and Significant Hazard Potential dams complete and submit an Emergency Action Plan (EAP) to the Department. The Department developed guidelines and an EAP template for dam owners to

utilize in formulating and executing a plan of action should a possible threat or deficiency occur on their dam facilities. The Department provides training and technical assistance to dam owners and emergency management officials to assist them in the completion and execution of the EAPs. Additionally, the Department is identified as a technical advisor during dam safety emergencies where an EAP is activated.

In April 2015, the Department coordinated EAP training and table top exercises on Oahu and Maui. Over 150 dam owners, operators, emergency managers, first responders and representative from supporting agencies participated in the event. The major objectives for this event was to provide training on basic technical understanding of typical dam failure modes and need of an EAP to mitigate these potential failures, run through several EAP test scenarios, and gain feedback from all participants on revising the current EAP template. Additional training exercises were conducted on Hawaii and Kauai in September 2015, with approximately 130 participants attending those exercises.

The Department has updated their EAP template based on the feed back from the recent testing and training event and worked with a consultant to develop an online EAP tool. This online version simplifies the creation and routine updates of the EAP process. The tool allows the department to easily update the statewide template quickly and users can process revisions to EAPs almost instantly. Owners have responded with positive feedback regarding this new tool.

Training and Outreach: The Department provides technical assistance to the dam owners, operators and consultants, as well as to the broader community of hazard mitigation partners and agencies. The Department works closely with the Association of State Dam Safety Officials, (ASDSO) to collaborate on public outreach and national awareness of the importance of dam and reservoir safety programs. Most recent training seminars included Operation and Maintenance Training and Emergency Action Planning Training.

The Department has retained a consultant to conduct a technical training seminar scheduled for April 2017 on rehabilitation improvements for embankment dams. This training will provide owners with a summary and primer on what studies are required to investigate various areas of their facilities and look at various alternatives used in addressing deficiencies or making improvements to dams. Owners will gain insight on how to procure and scope professional services for their facilities. Two additional days of training are planned for consultants to learn more in-depth technical training on current standard of practices for design and analysis of dams.

FUNDING

The Department's Dam and Reservoir Safety Program is funded under the State Land and Natural Resources LNR 810 Program, Prevention of Natural Disasters, and receives operational funding from two state special funds and one federal grant from the US Department of Homeland Security, Federal Emergency Management Agency (FEMA). The following is a breakdown of available funds to the department for its dam safety activities in FY 2016:

| <u>Source</u> | <u>Approximate Funding</u> |
|--|----------------------------|
| State of Hawaii – Special Land and Development Fund (Dam Safety) | \$ 445,000 |
| State of Hawaii – Dam and Reservoir Safety Special Fund (Appropriation only) | \$ 1,300,000 |
| FEMA – National Dam Safety Program Grant (Federal FY 2015) | \$ 55,843 |
| Total Available Funding | \$ 1,800,843 |

Expenditures from the various funding sources were made as follows:

| | Operating Special Fund | Dam and Reservoir Safety Special Fund | Federal Funds | Total |
|--|------------------------|---------------------------------------|---------------|-----------|
| Personnel Services | \$404,874 | \$6,781 | \$0 | \$411,655 |
| Consultant Services | \$0 | \$180,068 | \$15,000 | \$195,068 |
| Inspections Costs (including travel) | \$1,822 | \$20,146 | \$0 | \$21,968 |
| Training Expense (including travel) | \$0 | \$0 | \$11,324 | \$11,324 |
| Other Expenses (Supplies, Operating & Equipment) | \$4,948 | \$90,992 | \$22,580 | \$118,520 |
| B&F Management Fee | \$6,130 | \$41,926 | \$0 | \$48,056 |
| | \$417,774 | \$339,913 | \$48,904 | \$806,591 |

Funding for the State LNR 810 Program supports multiple programs which include the State oversight of the National Flood Insurance Program, the State General Flood Control Plan and the Dam and Reservoir Safety Program. An attempt was made to isolate the dam safety portion of the allocation and expenditures in the above figures, however some overlap in expenditures between these programs are unavoidable. Most of the operating special funds were expended on salaries. Other major expenditures were for consultant contracts and travel. Travel expenses were incurred mainly from neighbor island inspections costs, and also include the costs for out-of-state training of dam safety personnel.

The Dam and Reservoir Safety Special Fund was intended to maintain a funding reserve should there be a dam safety emergency. The Hawaii Dam and Reservoir Safety Act of 2007 initially allocated \$2,000,000 to the Department's Dam and Reservoir Safety Program, however only \$1,000,000 was released to the Department. With the new Hawaii Administrative Rules becoming effective at the end of FY 2012, the Department was able to start collecting Dam Safety Annual Fees from regulated dam owners. The collection of these fees has enabled the Department to meet the targeted \$ 700,000 minimum emergency reserve. The Department ended the fiscal year with a balance of \$2,718,417 in the Dam and Reservoir Special Fund, although a portion of this balance includes contract encumbrances from previous years and also includes \$ 411,670 of contract encumbrances made this past year as well. The Department initiated several contracts this past year which included support for ongoing maintenance and enhancements to

the Dam Inventory Management System, Dam break modeling, and several contracts to start installing remote water level gages and the software application to monitor these gages.

DAM SAFETY ACTIVITIES:

- A. Approvals of plans and specifications for the construction of dam and reservoirs and for alterations, modifications, repairs, removals, and enlargements of any dams and reservoirs;

During FY 2016, no new dam safety alteration permits were issued.

The following is a listing of active permits in FY 2016 and their current status.

| Permit No. | Dam Inv. | Dam / Reservoir Name | Status |
|------------|----------|--|--|
| 76 | HI- 0067 | Field 1 Kealia Reservoir | Submitted pending review / approval |
| 73 | HI- 0064 | Field 2 Kealia Reservoir | Submitted pending review / approval |
| 46 | HI- 0135 | Hanamaulu Field 21 | Construction completed, waiting for closing documents |
| 19 | HI- 0141 | Kehalani (Wailuku Proj. Dist.) Retention Basin | Under Construction, Defects observed which need to be resolved |
| 75 | HI- 0066 | Lower Anahola Reservoir | Submitted pending review / approval |
| 71 | HI- 0061 | Lower Kapahi Reservoir | Submitted pending review / approval |
| 61 | HI- 0149 | Maunaolu Reservoir | Approved - constructed - pending final docs |
| 66 | HI- 0001 | Nuuanu No. 4 Reservoir | Approved, pending construction, insufficient funds |
| 68 | HI- 0137 | <i>Oahu Reservoir 155</i> | Submitted pending review / approval |
| 39 | HI- 0113 | Omao Reservoir | Permit approved. No construction to date. |
| 72 | HI- 0020 | Opaeula 15 Reservoir | Submitted pending review / approval |
| 54 | HI- 0131 | Paauiilo Reservoir | Permit approved, waiting for construction |
| 55 | HI- 0123 | Puu Pulehu Reservoir | Submitted pending review / approval |
| 77 | HI- 0140 | Ukumehame Reservoirs | Submitted pending review / approval |
| 74 | HI- 0065 | Upper Anahola Reservoir | Submitted pending review / approval |

| Permit No. | Dam Inv. | Dam / Reservoir Name | Status |
|------------|----------|----------------------------------|---|
| 42 | HI- 0013 | Upper Kapahi Reservoir | Construction completed, waiting for closing documents |
| 44 | HI- 0013 | Upper Kapahi Reservoir | Construction completed, waiting for closing documents |
| 59 | HI- 0040 | Waikaloa Reservoir No. 1 | Submitted pending review / approval |
| 43 | HI- 0060 | Wailua Reservoir | Construction completed, waiting for closing documents |
| 47 | HI- 0060 | Wailua Reservoir | Construction completed, waiting for closing documents |
| 53 | HI- 0042 | Waimea 60 MG Reservoir (Puukapu) | Permit approved. No construction to date. |

The following is a listing of closed permits in FY 2016 and status at closure.

| Permit No. | Dam ID | Dam Name | Status / Comments |
|------------|----------|------------------------|--|
| 38 | HI- 0094 | Kapalaalaea Reservoir | Permit approved. Problems during construction - Permit revoked, beyond 5 Year with no action |
| 41 | HI- 0118 | Manuhonuhonu Reservoir | Project to be cancelled, beyond 5 years with no action |
| 51 | HI- 0063 | Aahoaka Reservoir | Construction stopped - Redesign for new scope |
| 70 | HI- 0045 | Helemano 16 | Completed / Closed |

Additionally, the Department assisted many dam and reservoir owners in the review of preliminary designs, and proposed work. The following are a listing of those reservoirs that were engaged in this type of technical assistance.

| Dam ID | Dam / Reservoir Name | Proposed Improvements |
|----------|----------------------|--|
| HI- 0003 | Puu Opae Reservoir | Proposed Pump storage rehabilitation |
| HI- 0095 | Haiku Reservoir | Proposed Outlet repair and seepage remediation |
| HI- 0049 | Keaiwa Reservoir | Proposed embankment remediation and spillway repairs |

B. A listing of dam and reservoir safety inspections;

In FY 2015, The Dam and Reservoir Safety Program staff conducted 60 visual dam safety inspections on regulated dams. In addition to these inspections, the department also conducted 40 informal dam safety inspection visits (including post earthquake inspections) and conducted 23 inspections to monitor construction activity. Listings of the visual dam safety inspections are provided below:

Dams in Honolulu County

| State ID | Dam Name | Type of Inspection | Date |
|----------|--------------------------|--------------------|-----------|
| OA-0017 | Wahiawa Dam | Visual Dam Safety | 5-Aug-15 |
| OA-0018 | Opaeula 01 Reservoir | Visual Dam Safety | 29-Oct-15 |
| OA-0020 | Opaeula 15 Reservoir | Visual Dam Safety | 29-Oct-15 |
| OA-0022 | Upper Helemano Reservoir | Visual Dam Safety | 5-Aug-15 |
| OA-0023 | Helemano 6 Reservoir | Visual Dam Safety | 5-Aug-15 |
| OA-0025 | Ku Tree Reservoir | Visual Dam Safety | 3-Nov-15 |
| OA-0045 | Helemano 16 Reservoir | Visual Dam Safety | 5-Aug-15 |
| OA-0129 | Waimanalo | Visual Dam Safety | 5-May-16 |
| OA-0137 | Oahu Reservoir 155 | Visual Dam Safety | 14-Dec-15 |
| OA-0154 | Nuuanu Reservoir No. 1 | Visual Dam Safety | 30-Oct-15 |

Dams in Maui County

| State ID | Dam Name | Type of Inspection | Date |
|----------|-------------------|--------------------|-----------|
| MA-0068 | HC&S Reservoir 14 | Visual Dam Safety | 13-Aug-15 |
| MA-0069 | HC&S Reservoir 15 | Visual Dam Safety | 13-Aug-15 |
| MA-0071 | HC&S Reservoir 21 | Visual Dam Safety | 13-Aug-15 |
| MA-0073 | HC&S Reservoir 24 | Visual Dam Safety | 30-Jul-15 |
| MA-0074 | HC&S Reservoir 25 | Visual Dam Safety | 30-Jul-15 |
| MA-0080 | HC&S Reservoir 60 | Visual Dam Safety | 30-Jul-15 |
| MA-0081 | HC&S Reservoir 61 | Visual Dam Safety | 28-Sep-15 |
| MA-0083 | HC&S Reservoir 73 | Visual Dam Safety | 24-Feb-16 |
| MA-0084 | HC&S Reservoir 74 | Visual Dam Safety | 28-Apr-16 |
| MA-0089 | HC&S Reservoir 90 | Visual Dam Safety | 28-Apr-16 |
| MA-0090 | HC&S Reservoir 92 | Visual Dam Safety | 28-Apr-16 |

Dams in Hawaii County

| State ID | Dam Name | Type of Inspection | Date |
|----------|-------------------------|--------------------|-----------|
| HA-0040 | Waikalua Reservoir No 1 | Visual Dam Safety | 15-Oct-15 |
| HA-0042 | Waimea 60 MG Reservoir | Visual Dam Safety | 14-Apr-16 |
| HA-0049 | Keaiwa | Visual Dam Safety | 26-May-16 |
| HA-0122 | Waikalua Reservoir No 2 | Visual Dam Safety | 15-Oct-15 |
| HA-0123 | Puu Pulehu Reservoir | Visual Dam Safety | 14-Apr-16 |
| HA-0131 | Paauilo Reservoir | Visual Dam Safety | 14-Apr-16 |
| HA-0136 | Waikalua Reservoir No 3 | Visual Dam Safety | 15-Oct-15 |

Dams in Kauai County

| State ID | Dam Name | Type of Inspection | Date |
|----------|---------------------------|--------------------|-----------|
| KA-0003 | Puu Opae Reservoir | Visual Dam Safety | 18-Nov-15 |
| KA-0004 | Kitano Reservoir | Visual Dam Safety | 22-Sep-15 |
| KA-0005 | Mana Reservoir | Visual Dam Safety | 22-Sep-15 |
| KA-0006 | Waikaia Reservoir | Visual Dam Safety | 27-Jan-16 |
| KA-0007 | Kepani Reservoir | Visual Dam Safety | 27-Jan-16 |
| KA-0008 | Waikoloa Reservoir | Visual Dam Safety | 27-Jan-16 |
| KA-0009 | Kaawainui Reservoir | Visual Dam Safety | 27-Jan-16 |
| KA-0011 | Aii | Visual Dam Safety | 3-May-16 |
| KA-0012 | Kapaia | Visual Dam Safety | 3-May-16 |
| KA-0014 | Okinawa | Visual Dam Safety | 3-May-16 |
| KA-0015 | Kaneha Reservoir | Visual Dam Safety | 15-Mar-16 |
| KA-0016 | Mimino Reservoir | Visual Dam Safety | 15-Mar-16 |
| KA-0030 | Kaloko Reservoir | Visual Dam Safety | 12-Apr-16 |
| KA-0060 | Wailua Reservoir | Visual Dam Safety | 30-Mar-16 |
| KA-0061 | Twin Reservoirs | Visual Dam Safety | 30-Sep-15 |
| KA-0064 | Kealia Field 2 | Visual Dam Safety | 24-May-16 |
| KA-0065 | Lower Anahola | Visual Dam Safety | 24-May-16 |
| KA-0066 | Upper Anahola | Visual Dam Safety | 24-May-16 |
| KA-0067 | Kealia Field 1 | Visual Dam Safety | 24-May-16 |
| KA-0099 | Waita Reservoir | Visual Dam Safety | 6-Apr-16 |
| KA-0100 | Kapa Reservoir | Visual Dam Safety | 30-Mar-16 |
| KA-0105 | Elima Reservoir | Visual Dam Safety | 23-Feb-16 |
| KA-0107 | Puu O Hewa Reservoir | Visual Dam Safety | 10-Feb-16 |
| KA-0109 | Ipuolono Reservoir | Visual Dam Safety | 30-Mar-16 |
| KA-0115 | Pia Mill Reservoir | Visual Dam Safety | 10-Feb-16 |
| KA-0116 | Mau Reservoir | Visual Dam Safety | 23-Feb-16 |
| KA-0117 | Elua Reservoir | Visual Dam Safety | 23-Feb-16 |
| KA-0118 | Manohonuhonu | Visual Dam Safety | 3-May-16 |
| KA-0119 | Mauka Reservoir | Visual Dam Safety | 10-Feb-16 |
| KA-0120 | Papuaa Reservoir | Visual Dam Safety | 6-Apr-16 |
| KA-0121 | Halenanahu Reservoir | Visual Dam Safety | 6-Apr-16 |
| KA-0155 | Pond No. 1 at Kauai Ranch | Visual Dam Safety | 15-Mar-16 |

Other Inspections Conducted Statewide

| State ID | Dam Name | Type of Inspection | Date |
|----------|----------------------------------|---------------------------------|-----------|
| OA-0149 | Maunaolu Reservoir | Const - Base Prep Meeting | 29-Jan-16 |
| KA-0013 | Upper Kapahi Reservoir | Construction | 22-Jul-15 |
| KA-0013 | Upper Kapahi Reservoir | Construction | 7-Aug-15 |
| KA-0013 | Upper Kapahi Reservoir | Construction | 18-Aug-15 |
| KA-0013 | Upper Kapahi Reservoir | Construction | 25-Aug-15 |
| KA-0013 | Upper Kapahi Reservoir | Construction | 26-Aug-15 |
| KA-0013 | Upper Kapahi Reservoir | Construction | 27-Aug-15 |
| KA-0013 | Upper Kapahi Reservoir | Construction | 22-Sep-15 |
| OA-0045 | Helemano 16 Reservoir | Construction | 24-Sep-15 |
| KA-0013 | Upper Kapahi Reservoir | Construction | 30-Sep-15 |
| OA-0045 | Helemano 16 Reservoir | Construction | 2-Oct-15 |
| OA-0045 | Helemano 16 Reservoir | Construction | 12-Oct-15 |
| OA-0045 | Helemano 16 Reservoir | Construction | 21-Oct-15 |
| OA-0149 | Maunaolu Reservoir | Construction | 21-Oct-15 |
| OA-0045 | Helemano 16 Reservoir | Construction | 29-Oct-15 |
| OA-0045 | Helemano 16 Reservoir | Construction | 3-Nov-15 |
| MA-0141 | Kehalani Offsite Retention Basin | Construction | 28-Apr-16 |
| KA-0013 | Upper Kapahi Reservoir | Construction - Abandonment | 15-Mar-16 |
| KA-0013 | Upper Kapahi Reservoir | Construction - Abandonment | 30-Mar-16 |
| KA-0013 | Upper Kapahi Reservoir | Construction - Embanking | 10-Feb-16 |
| MA-0141 | Kehalani Offsite Retention Basin | Construction - Inflow Channel | 22-Feb-16 |
| MA-0141 | Kehalani Offsite Retention Basin | Construction - Inflow Channel | 22-Feb-16 |
| MA-0141 | Kehalani Offsite Retention Basin | Construction - Inflow Channel | 16-Mar-16 |
| UOA-2035 | Opaepala 6 MG Reservoir | Informal | 29-Oct-15 |
| KA-0060 | Wailua Reservoir | Informal | 10-Feb-16 |
| UKA-1045 | New Upper Kapahi Reservoir | Informal - Cofferdam | 10-Feb-16 |
| UKA-1016 | Kuhumu Reservoir | Informal - Data Collection | 27-Jan-16 |
| MA-0068 | HC&S Reservoir 14 | Informal - Drive By | 28-Sep-15 |
| HA-0122 | Waikoloa Reservoir No 2 | Informal - EAP Training | 31-Aug-15 |
| KA-0010 | Waiakalua Reservoir | Informal - Gage/Reservoir Level | 30-Sep-15 |
| UMA-006 | E-2 Reservoir | Informal - Gannett Fleming | 22-Feb-16 |
| UMA-007 | Crater Reservoir | Informal - Gannett Fleming | 22-Feb-16 |
| UMA-006 | E-2 Reservoir | Informal - Gannett Fleming | 24-Feb-16 |
| UMA-006 | E-2 Reservoir | Informal - Gannett Fleming | 25-Feb-16 |
| UMA-007 | Crater Reservoir | Informal - Gannett Fleming | 25-Feb-16 |
| UMA-007 | Crater Reservoir | Informal - GF - Tunnel | 24-Feb-16 |
| OA-0022 | Upper Helemano Reservoir | Informal - Grass/Spillway Gage | 12-Oct-15 |
| MA-0093 | Kaupakalua Reservoir | Informal - Inundation Area | 30-Sep-15 |
| OA-0018 | Opeaula 01 Reservoir | Informal - LEVEL 1 | 3-Feb-16 |

| State ID | Dam Name | Type of Inspection | Date |
|----------|------------------------|---------------------------------|-----------|
| KA-0024 | Kalihiwai Reservoir | Informal - Outlet Work | 18-Aug-15 |
| HA-0042 | Waimea 60 MG Reservoir | Informal - Permit | 31-Aug-15 |
| HA-0123 | Puu Pulehu Reservoir | Informal - Permit | 31-Aug-15 |
| OA-0154 | Nuuanu Reservoir No. 1 | Informal - UHSLC | 9-Jul-15 |
| OA-0154 | Nuuanu Reservoir No. 1 | Informal - UHSLC | 27-Jul-15 |
| KA-0099 | Waita Reservoir | Informal - UHSLC | 25-Aug-15 |
| KA-0010 | Waiakalua Reservoir | Informal - UHSLC | 26-Aug-15 |
| KA-0099 | Waita Reservoir | Informal - UHSLC | 27-Aug-15 |
| KA-0010 | Waiakalua Reservoir | Informal - UHSLC | 27-Aug-15 |
| MA-0073 | HC&S Reservoir 24 | Informal - UHSLC | 28-Sep-15 |
| MA-0073 | HC&S Reservoir 24 | Informal - UHSLC | 29-Sep-15 |
| MA-0093 | Kaupakalua Reservoir | Informal - UHSLC | 29-Sep-15 |
| MA-0093 | Kaupakalua Reservoir | Informal - UHSLC | 30-Sep-15 |
| OA-0154 | Nuuanu Reservoir No. 1 | Informal - UHSLC | 19-Jan-16 |
| OA-0154 | Nuuanu Reservoir No. 1 | Informal - UHSLC | 19-Jan-16 |
| OA-0154 | Nuuanu Reservoir No. 1 | Informal - UHSLC | 3-Feb-16 |
| OA-0018 | Opeaula 01 Reservoir | Informal - UHSLC | 17-Feb-16 |
| KA-0010 | Waiakalua Reservoir | Informal - UHSLC | 15-Mar-16 |
| MA-0093 | Kaupakalua Reservoir | Informal - UHSLC | 16-Mar-16 |
| OA-0018 | Opeaula 01 Reservoir | Informal - UHSLC | 24-Mar-16 |
| OA-0018 | Opeaula 01 Reservoir | Informal - UHSLC | 1-Jun-16 |
| KA-0010 | Waiakalua Reservoir | Informal - UHSLC - Install Pole | 18-Aug-15 |
| OA-0021 | Kemoo 5 Reservoir | Informal - USGS Elevations | 3-Nov-15 |
| MA-0069 | HC&S Reservoir 15 | Informal Drive By | 28-Sep-15 |

C. Rules adopted or amended;

No rules were adopted or amended.

The 2016 Legislature authorized the availability of varying amounts of Special Purpose Revenue Bonds (SPRB) to four dam owners/operators to fund improvements and modifications to their facilities. The approval of the SPRB issuance will require further discussion between the dam owner/operator and the Department of Budget & Finance, and satisfactory credit underwriting review of the financing components with respect to the proposed financing. The facilities for which SPRB are available are:

- KA-030 Kaloko Dam
- MA-141 Kehalani Offsite Retention Basin
- MA-140 Ukumehame Reservoirs
- MA-150 Wailuku Reservoir No.6

D. Enforcement orders and proceedings;

The Department did issue one penalty fine via enforcement action for delinquent submissions to the dam owner of the following dams in FY 2016:

KA-62 Twin Reservoirs (Delinquent Annual Fee) for \$ 97.50

E. Dam and reservoir failures and department evaluations of the reasons for the failure, if known;

There were no known dam failures or incidents in FY 2016.

F. Other available data regarding the effectiveness of the State's Dam and Reservoir Safety Program.

The Dam and Reservoir Safety Program are working with dam owners to complete Emergency Action Plans (EAP) for their facilities. EAPs are required by statute for only high and significant hazard potential classifications of dams. Out of the 132 regulated dams in FY 2016, 127 are classified as high or significant hazard potential structures, and only three high hazard dams do not have EAPs on file. Two of these were recently added to the State inventory and the Department is working with the owners to complete these plans and the third one is maintained empty. The following is a summary of EAPs on file with the Department for all classifications.

| | | Number of Dams with EAPs | | | | | |
|---------|---------|--------------------------|---------|---------|---------|---------|-----------|
| FY 2004 | FY 2007 | FY 2010 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
| 12 | 55 | 121 | 125 | 130 | 127 | 130 | 129 / 132 |