

# Upper Kapahi Dam Replacement Project

Hawai'i Department of Accounting and General Services  
Division of Public Works

Public Informational Meeting:

April 1, 2014 5 PM - 7 PM  
Kapa'a Middle School  
Dining Room  
4867 Olohena Road  
Kapa'a, Hawai'i

## Project Location

Upper Kapahi Reservoir and Dam is located approximately 2 miles northwest of Kapa'a on the island of Kaua'i, Kaua'i County, Hawai'i, and is owned by the Hawai'i Department of Land and Natural Resources (State) and the County of Kaua'i (County). This dam is an earthen embankment dam that stores irrigation water diverted from Kainahola Stream and Kapa'a Stream. The reservoir is currently dewatered, but historically provided irrigation water to downstream users.

## Project History

The Upper Kapahi Dam was originally constructed in 1910. After the Kaloko Dam failure in 2006, the dam was evaluated by the U.S. Army Corps of Engineers, and it was determined that the current spillway had inadequate capacity for routing the design flood event. Design for a dam improvement project was initiated and included constructing a new box culvert spillway under Kainahola Road, flattening and buttressing the upstream and downstream slopes, and adding erosion protection to the upstream face. Construction of improvements was initiated in 2011. Clearing and excavation on the downstream slope of the dam uncovered significant seepage issues on the downstream slope, as well as poorly compacted soil and debris not suitable for

embankment fill. A subsequent geophysical survey of the dam and test trenching conducted in 2012 revealed that these undesirable embankment characteristics were present along the majority of the dam crest/road alignment. Based on these findings, the improvement project was suspended, the reservoir was drained, and alternatives were developed to address the safety deficiencies. Dam replacement or repair was advised.

Five alternatives were developed and evaluated to resolve the safety issues presented by the existing dam.

Discussions between the State and County identified a

preferred alternative that included maintaining the current alignment of Kainahola Road, breaching the existing dam, and constructing a new dam upstream of the existing embankment dam. This alternative was chosen, in part, because it removed the dam safety uncertainties of the existing dam and provided some agricultural storage for the East Kauai Water Users' Cooperative to supplement some of the water storage lost due to decommissioning the existing dam.

The State and County is proceeding with the breaching of the existing dam as soon as possible, due to public safety concerns. Engineering design work of the dam breach project





is complete, and construction will be completed in 2014. Once the existing dam has been decommissioned by breaching, construction for the new dam could begin.

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The proposed new dam will be located within the footprint of the Upper Kapahi Reservoir, a short distance upstream of the existing dam. The alignment of the new dam was selected to have the least new embankment length, and is planned to extend from the northern end of the existing dam alignment to the opposite end of the reservoir. Conceptually, the new dam is planned to be a homogenous embankment with a downstream filter drain and filter blanket. A silt and overburden excavation is assumed to extend 10 feet below the estimated reservoir bottom to reach a suitable foundation. The jurisdictional height of the new dam will be just below 25 feet, a reduction of about 15 feet from the jurisdictional height of the existing dam. The surface area of the impoundment will be reduced from 8.8 acres to 4.6 acres. Storage capacity would be reduced from approximately 110 acre-feet (with the previous dam) to approximately 35 acre-feet with the replacement dam.

The replacement dam project is in final engineering design, and will be out to bid this month, with bid opening scheduled for June, 2014. This replacement dam project has been determined to need an environmental assessment (EA) to comply with the Hawai'i Environmental Policy Act (HEPA). The EA will include a



summary description of the area potentially affected by the project, including the biological and cultural resources that could be affected. It will also include the identification and summary of potential impacts from the project to the affected environment and any mitigation measures that may be proposed to account for those impacts. Various permits are also required, including a Clean Water Act (CWA) Section 404 permit from the U.S. Army Corps of Engineers, a CWA Section 401 Water Quality Certification from the Clean Water Branch Hawai'i Department of Health, and a National Pollution Discharge Elimination System (NPDES) permit from the Clean Water Branch.

### Modifications of the Existing Dam Include:

- 1) Demolition of a 200-foot section of Kainahola Road;
- 2) Excavation through the existing embankment for installation of the box culvert;
- 3) Construction of a box culvert spillway through the open excavation at the reservoir bottom;
- 4) Backfilling the embankment excavation above the box culvert spillway;
- 5) Reconstruction of Kainahola Road to the pre-construction alignment and grade;
- 6) Placement of rock slope protection at the upstream approach to the box culvert spillway;
- 7) Construction of rundown modifications; and
- 8) Construction of permanent access roads to the upstream and downstream ends of the spillway.

**Comments on the project can be submitted, by April 4, 2014 to:**

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