

East Maui Water Systems Improvement Proposed Project Summary Report

State of Hawaii Department of Agriculture

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Executive Summary

*My people have been cultivators from very ancient times;
it was by agriculture that they made a living for themselves,
for their families, and for those dependent on them.*
– Samuel Kamakau (*Na Hana a ka Po'e Kahiko*)¹

Traditional and Contemporary Agricultural Uses in East Maui

East Maui has a long-standing commitment to sustainable agricultural uses. Prior to western contact, the Hawaiian subsistence lifestyle was built upon communal *kalo* (taro) cultivation. While the wet trade winds provided the area with ample rain to grow *awa*, *mai'a* (bananas), *'uala* (sweet potatoes), *ulu* (breadfruit); the most important staple was *kalo*. *Kalo* was generally grown in *lo'i* (fields or patches) and families were encouraged to use the “spirit of mutual dependence” in the use of water within the *lo'i* complexes and amongst the users on the same stream.²

By the 1800s industrial agriculture included items like pineapple and rubber, but sugarcane became the dominant economic agricultural industry in East Maui. Much of the sugarcane was grown on the *kula* (flat) dry areas of central Maui and to be viable, sugarcane required more water than was naturally available. The solution was to bring water from the rain-soaked north and east flanks of Haleakalā to the dry sugarcane fields by constructing a vast system of ditches, flumes, and tunnels. Built between 1876 and 1923, the East Maui Irrigation (EMI) System carried more than a hundred million gallons of water per day. The EMI went through 39 watersheds, with 388 separate intakes, 24 miles of ditches, 50 miles of tunnels, and numerous features and structures such as inverted siphons, small dams, pipes, flumes and reservoirs.³ For over 100 years, the EMI system diverted water from the valleys and gulches that had previously watered the *lo'i kalo* of East Maui, affecting the traditional *kalo* subsistence lifestyle of many farmers in East Maui.

In January 2016, Alexander & Baldwin (A&B) announced that Hawaiian Commercial & Sugar (HC&S) was terminating its sugarcane cultivation and transitioning to a diversified farm model which would need substantially less water. A&B also announced that it had decided to fully and permanently restore several of the East Maui streams that the EMI system had previously diverted, including Honopou, Hanehoi (including Puolua), Waiokamilo, East Waiokamilo Stream, Pi'ina'au, Palauhulu, and East and West Wailuanui.⁴

¹ *Kalo Kanu O Ka 'Āina, A Cultural Landscape Study of Ke'anae and Wailuanui, Island of Maui*, prepared by The County of Maui Planning Department, May 1995.

² Perhaps the essential feature of the ancient water system was that water was guaranteed to those natives who needed it, provided they helped in the construction of the irrigation system. Because agriculture was a matter of great importance to the Hawaiians, they were, in general, willing to contribute their efforts to the water system. The *konohikis* aimed to secure equal rights to all *maka'āinana* and to avoid disputes. Beneficial use of water by the *maka'āinana* was also essential to the continued delivery of water. The natives were subject to compulsory maintenance work on the *'auwai* under the supervision of the *konohiki*. The *konohiki*, on the other hand, were reluctant to impose unreasonable burdens on the tenants because they were normally free to leave a particular plot if unhappy with the *konohiki*. Hence, a “spirit of mutual dependence and helpfulness prevailed, alike among the high and low, with respect to the use of water.” Finding of Fact (FOF) No. 142, Commission on Water Resource Management, Contested Case Hearing No. CCH-MA-13-01, Petition to Amend Interim Instream Flow Standards for Honopou, etc. (EMI Contested Case Hearing), June 20, 2018, referencing the discussion in Reppun, 65 Haw, at 540, 656 P.2d. at 64.

³ FOF No. 43 of the EMI decision.

⁴ FOF No. 33 of the EMI decision.

With the fully restored streams, several of the East Maui farmers, in particular *lo'i kalo* farmers who engaged in sustainable agriculture, were challenged with the need to restore, replace, and maintain existing water delivery systems. In most cases, these existing water delivery systems consisted of traditional *'auwai* (ditches) from the streams into the *lo'i kalo*. Many of these systems fell into disrepair from natural erosion and inadvertent man-made obstructions.

Legislative Capital Improvement Project Appropriation for East Maui Water Systems to Support East Maui Farmers

In 2018, the Legislature appropriated \$4.5 million in funding for capital improvement program (CIP) for plans, design, and construction for irrigation and water delivery systems in East Maui to support agricultural purposes. The legislative intent was to primarily support the small farmers in East Maui in furtherance of the State's goals of food security and self-sufficiency.

Culturally Sensitive Community Engagement Process

The Hawaii Department of Agriculture (HDOA) deliberately sought a culturally sensitive community engagement process to identify potential projects for the CIP funds based upon the needs of the East Maui farmers. The community engagement process was based upon fundamental Hawaiian cultural values and was coordinated by Ku'iwalu Consulting on behalf of HDOA. Some of these values include being respectful and asking permission or *mana'o*, acting with humility or *ha'aha'a*, being thoughtful or *no'ono'o*, and acting with responsibility or *kuleana*. The *kahea* (call) was extended through formal correspondence, but the most effective approach was by the East Maui community "coconut-wireless," or word of mouth. Ku'iwalu and the project engineer from AECOM visited East Maui farming communities to talk story with the actual farmers who identified water projects that were critical not only to the farmers but the larger community within their ahupua'a. Site visits were conducted in Wailuanui, Ke'anae, Honopou, Nahiku, and Kīpahulu. In addition to the proactive engagement process, two public meetings were held in Haiku and Ke'anae to provide the community at large with project updates, an opportunity to identify additional projects, and to provide comments.

Proposed Water System Improvement Projects

After the proposed projects were identified, AECOM conducted a conditions assessment, taking into consideration the feasibility of completing each proposed project based upon a matrix of key factors. Some of these factors included (1) use of public lands, (2) broad public benefit, (3) supported traditional or on-going agricultural uses, (4) minimal impact to the stream, (5) restore, replace or maintain existing water delivery systems, (6) technically feasible to design and construct, (7) secure construction bids within the appropriation deadline, and (8) has a cost benefit justification. Based upon the matrix of key factors, AECOM prepared a prioritization matrix to assist HDOA in determining which proposed projects should proceed to the design phase.

Recommended Projects for Design Phase

Taking into consideration the prioritization matrix and the legislative intent of the CIP funds, HDOA has selected the following proposed projects to proceed to the design phase.

- Ke‘anae
 - Stabilize ‘*auwai* banks just downstream of diversion box.
- Wailuanui
 - Replace the ‘*auwai* with 2-24” HDPE pipe.
 - Repair the ‘*auwai* with grouted rip rap or similar means.
- Waikani Falls
 - CCTV inspection of the piping to locate and identify the blockage or damage.
- Honopou
 - Repair the wall of the ‘*auwai* with grouted rip rap.
- Nahiku
 - Replace the two smaller pipes with one larger pipe.

Introduction

Overview of Sustainable Agriculture in East Maui

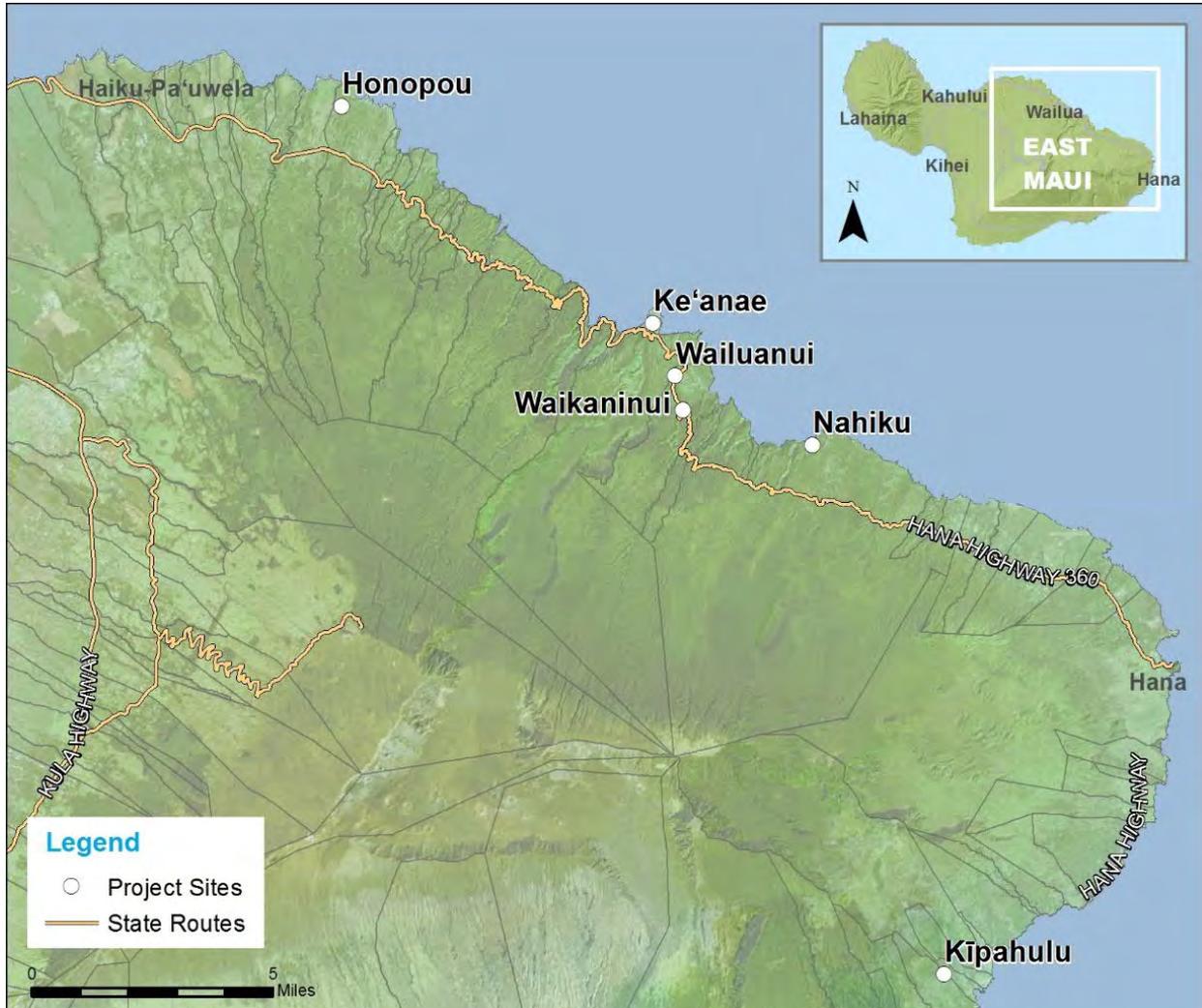


Figure 1: Vicinity on Maui with Hana Highway from Haiku-Pa'uwela to Hana depicted. Watersheds are bounded by grey lines.

History of Traditional Farming in East Maui

While Hawaiian culture is deeply connected to the ocean and voyaging, many of its longstanding traditions are truly rooted in the cultivation of the land. Pre-contact Hawaiians throughout the archipelago had a complex and fruitful relationship with the island landscape. Land management was organized through the summit-to-sea *ahupua'a* system of land divisions, which envisioned the *'aina* (land) as a series of interconnected ecosystems stewarded for different, complementary resources. Traditional methods of resource management, from upland forestry to extensive irrigated *lo'i kalo* (ponded taro fields) to the coastal fishpond complexes and ocean fisheries, relied upon coordination of whole communities to construct, maintain, and produce food and other resources for the common good.

East Maui has historically been known as one of the most fertile agricultural areas in the Hawaiian Islands due to its extensive rainfall and rich soils. The well-watered valleys and gulches of East Maui as well as associated *kula* (flat lands) have sustained native Hawaiian families for many generations. The Hawaiian subsistence economy was built upon *kalo* (taro), which was the staple food as well as holding a central place in Hawaiian culture. While *kalo* can be grown on dry land, it is more productive and yields a superior product when grown in shallow ponds of fresh, flowing water. Because the complex irrigation systems, as well as the *kalo* crop, required intensive, year-round labor, its production was a community endeavor. Communities invested effort in the construction of *pani wai* (dams), *'auwai* (ditches), and *lo'i* (ponded fields, typically on shallow terraces). While all land and water was under the stewardship of the king or chief, customarily, those who put their labor into building and maintaining the system were entitled to use the waters conveyed in the *'auwai*. Such rules and customs regarding water use were in place well before the arrival of Captain Cook (Wilcox 1996).

The nature of agriculture in East Maui and throughout the islands changed dramatically throughout the nineteenth century. After the arrival of foreign settlers in the early part of the century, the associated introduction of diseases resulted in a massive population decline among native Hawaiians, rendering traditional labor-intensive, community-based enterprises such as taro farming and fishpond aquaculture difficult to sustain. Soon afterward, during the *Māhele 'Āina* beginning in 1846, land ownership and use patterns across the Hawaiian Islands were irrevocably altered under the direction of Kamehameha III. After the *Māhele 'Āina*, the commercialization of agriculture, foreign land ownership, and the introduction of rice and sugar as cash crops began to change East Maui. Due to their isolation and remoteness, East Maui coastal areas were somewhat insulated from these changes; for example, the Ke'anae-Wailuanui area has been characterized as a "cultural *kipuka*" where traditional Hawaiian practices have survived, providing a resource for revitalization (McGregor 1995). In general, small, subsistence farming communities persisted in East Maui, and with them, some taro farming. Traditional lifeways continued alongside sugar industry activities (as in Kīpahulu, where a small mill and landing supported a minor plantation enterprise). In places, former *kalo lo'i* were converted to other uses. For example, in Ke'anae, they were leased by Chinese farmers and converted to rice cultivation between 1880 and the 1930s (Croteau et. al 2005).

East Maui's agricultural landscape was greatly transformed by the rise of sugarcane. Much of the cane was grown in vast monocultures on the more level, dry areas of central Maui; to be viable, this plantation crop required more water than was naturally available. The solution was to bring water to the cane fields from the rain-soaked north and east flanks of Haleakalā by constructing a vast system of ditches, flumes, and tunnels. Built between 1876 and 1923, this tremendous work of engineering carried more than a hundred million gallons of water per day through the system now known as East Maui Irrigation (EMI) (Wilcox 1996). Among the largest irrigation systems of its time, the EMI encompasses 39 watersheds, with 388 separate intakes, 24 miles of ditches, 50 miles of tunnels, and numerous features and structures such as inverted siphons, small dams, pipes, flumes, and reservoirs (Young 2013). The EMI diverted water from the valleys and gulches that had previously watered the taro lands of East Maui, affecting the remaining agriculture on those lands through loss of naturally fed water resources that the *'auwai* systems relied upon.

In the pre-contact and early contact periods, the Ke'anae and Wailuanui areas were a major cultural center along the East Maui coast, supported by extensive wetland taro cultivation associated with permanent settlements.

According to Handy and Handy (1972), “Wailua has been notable for its continued occupancy and cultivation by Hawaiian families. This has been due...to the influence of the Catholic mission. Land titles here are very complicated, too much so to be defined correctly by an outsider.” Water from two springs, said to have been opened by the gods Kane and Kanaloa, were harnessed to irrigate the *lo’i* of Wailua. The waterfall of the Wailuanui Stream gorge, just above the *lo’i*, is called Wai-o-Kane (Water of Kane) (Handy and Handy 1972, 501). Today, this waterfall is known as Waikani Falls.

On the Ke‘anae Peninsula, Pi‘ina‘au and Palauhulu streams provided water, which was diverted to the peninsula via a short flume (*ha wai*), to irrigate the taro patches for which the Ke‘anae Peninsula was renowned. Taro cultivation in this area was founded, according to an account by Henry Ikoa, by a chief who instructed his people to carry topsoil to enrich the barren lava of the peninsula to form a fertile, irrigated level *lo’i* system (Handy, Handy and Pukui 1974, 501).

Handy, Handy and Pukui (1974) note the land ownership is complex in the Ke‘anae Ahupua‘a and other nearby areas. The Ke‘anae Peninsula was largely owned by individual farmers as *kuleana* lands, allowing for the continuation of traditional taro agriculture after the practice had been lost in other places. Today, about half of the original *kalo lo’i* remain in use.

Current Agricultural Infrastructure in East Maui

Farmers using traditional agriculture techniques have established and maintained farming plots in East Maui for generations. The productivity of these farms, which mostly consist of taro (*kalo*) cultivation, has been predicated on the construction and maintenance of an extensive irrigation infrastructure network. This network consists of flumes, canals, pipes, weirs, diversions, and ponds constituting the area’s *‘auwai* systems. While a definitive age has not been established for much of the *‘auwai* infrastructure, some features are known to pre-date statehood with other features are much older than that.

Some sections and features of the *‘auwai* systems have fallen into disrepair. The degraded condition of some *‘auwai* infrastructure has been caused or exacerbated by rockfalls and landslides, erosion, and flooding that are common along the East Maui coastline as well as human activities such as road construction. Maintenance has occurred intermittently and inconsistently through the years. The difficulties of maintaining the *‘auwai* systems have been amplified because each ditch traverses multiple parcels and properties with multiple owners requiring engagement to secure consensus, lack of funding, the uncertainty of the water rights permitting process, and the overall age of the facilities.

This current effort seeks to document community-identified problems with the area’s irrigation system, along with specific, achievable solutions to be paid with legislative funds specifically allocated for this purpose. Based on the legislation, these funds must be encumbered for specific projects no later than June 2020. Therefore, this report prioritizes solutions that are achievable within that time frame while still providing optimum benefits in achieving irrigation improvements for area farmers. The intent of the funding legislation is further discussed in the “Legislative Background and Intent” section of this report.

Farming Communities and General Project Location

East Maui is blanketed in lush vegetation and receives ample rainfall year-round, especially at its higher elevations. Agriculture thrives where water is channeled in adequate quantities and consistent flows through the *'auwai*. While some level coastal areas *makai* of Hana Highway are cultivated, areas *mauka* of the highway are largely steep slopes, mountainous terrain, and thick forests, many within dedicated watershed and forest reserve areas. The circuitous route of the only road connecting the area to the rest of the island (Hana Highway) adds to its remoteness and undisturbed rural character.

The area being considered for the various proposed projects is located along the rural Hana Highway corridor between the towns of Haiku and further down the coast past Hana. This area is defined by low-density residences centered in farming communities with limited services and few commercial or institutional enterprises aside from community and recreation centers and churches. These farming communities are designated into general area place names such as Ke'anae, Waikani and Wailuanui, Honopou, Nahiku and Kīpahulu.

Defined Purpose and Need

This project provides the opportunity to assist East Maui farmers, primarily traditional agricultural users of *lo'i kalo*, in repairing and restoring the existing water infrastructure necessary to sustain their agricultural operations and making use of the restored natural water flows.

As described in the *Hawaii Department of Agriculture Strategic Plan* of 2008, the mission of the agency is to:

Lead the State's efforts to maintain the agricultural sector of Hawaii's economy....in a strong and competitive condition by providing policies services, loans, subsidies, environmental protection, land and water, operations, facilities, advice, coordination, and information so as to achieve appropriate rates of growth, high levels of employment, reasonable returns on investment, and steady gains in real personal income.

To that end and consistent with its mission, with this project the HDOA has focused on seeking upfront community input, engaging in an ongoing dialogue with farmers and community leaders, and completing site visits to possible project areas over numerous months. All these activities were completed with the purpose of having the farmers themselves identify their agricultural and irrigation needs and possible projects to address them.

Legislative Background and Intent

Hawaii Senate Bill (SB) 2886 became law by the Hawaii State legislature on July 1, 2018. The introduction of the law notes, "the legislature finds and declares that the appropriations made under this Act are in the public interest and for the public health, safety, and general welfare of the State." SB 2886 included appropriations for "plans, design, and construction for irrigation and water delivery systems for agricultural enterprises and/or agricultural purposes in east Maui" and "plans, design, and construction for water systems in east Maui." The law further notes that the "sums appropriated for the respective capital projects...shall be expended by the department of agriculture for the purposes of this Act."

A subsequent CIP funding letter dated November 19, 2018, was sent to the Department of Agriculture from the State Representative of District 13. The letter confirmed the allocation of the funds from the legislature and outlined specific projects to which the funds would be distributed. The letter went on to state that the "legislature also put these projects in the CIP budget because we know that supporting projects that provide water to farmers in East Maui directly correlates with the State's goals of food security and self-sufficiency. The Department of Agriculture can provide services to assist the East Maui farmers with water resources and increase the State's local food production. It is in the public interest to support this project and move forward with the funding as the purpose of such a project directly supports the State's efforts of food sufficiency."

The deadline for a commitment to these projects, demonstrated by the receipt of construction bids to encumber funds, is June 2020.

Structure and Purpose of this Report

The purpose of this report consists of multiple outcomes. It outlines the process of East Maui community collaboration with HDOA by:

- Documenting the community engagement process to identify as many potential water projects as possible from the East Maui farmers
- Documenting the criteria and assessment process to plan, design and procure appropriate projects
- Examining agricultural operations and capturing farmer needs in the community
- In concert with the farming community, developing a range of possible solutions for implementation through community consensus building
- Consultation with various Regulatory Agencies
- Holding a public meeting
- Developing the structure to assess qualified projects which involved
 - Describing the specific features and locations of the selected types of projects and the problems each seeks to address
 - Identifying criteria, defining criteria objective and weighting
 - Establishing a list of site specific improvement options
 - Rating the alignment of improvement option with the criteria objective
 - Outlining steps and permit approvals needed to implement them
 - Discussing how each project scored on the matrix
 - Estimating implementation timeframes and costs

These important initial steps all informed the resultant project selection. These activities and discussions are captured and summarized in the Appendices of this document.

Community Engagement Process

In 2018, the Hawai'i State Legislature appropriated CIP funding for the East Maui Water Systems Improvement Project (Project). The CIP funds are for plans, design, and construction for irrigation and water delivery systems in East Maui to support agricultural purposes. The legislative intent was to primarily support the small farmers in East Maui in furtherance of the State's goals of food security and self-sufficiency. For these reasons, the legislature appropriated the CIP funds to the Hawai'i Department of Agriculture (HDOA) to promote food production.

HDOA wanted to ensure that a broad-based community engagement process was implemented to inform, solicit, and identify potential water projects that were consistent with the legislative intent and had a public benefit. More importantly, HDOA was genuinely interested in considering projects that the East Maui farmers deemed critical to support and sustain agricultural production within their communities.

This section describes the community engagement process that was undertaken to involve the key stakeholders, regulatory agencies, and the public throughout the planning and designing of the proposed projects for HDOA's determination to use the CIP funds. It also explains the consultation principles, based on fundamental Hawaiian cultural values that were used to engage the community. The community engagement process was designed to be inclusive and transparent to ensure that opportunities were provided to East Maui farmers to be considered for the HDOA CIP funds.

Development of a Culturally Sensitive Community Engagement Process

East Maui agricultural farmers have traditionally been native Hawaiian subsistence kalo farmers. While agricultural production on East Maui has evolved from traditional subsistence farming to large scale sugarcane plantations, and more recently to diversified and organic farming, the heart of East Maui farmers, in particular those farmers makai of Hana Highway, continue to farm traditional lo'i kalo. It has been the strong commitment by the East Maui kalo farmers to restore and maintain the natural flows of the traditional *'auwai* to sustain their traditional and ancestral way of life.

In recognition that many of the East Maui farmers continue to exercise traditional and customary native Hawaiian practices, in particular those related to lo'i kalo, Ku'iwalu designed a culturally sensitive community engagement process grounded in Hawaiian cultural principles. These principles, while common to most cultures, are especially important in a Hawaiian context:

- *Mahalo* or Respectful: Asking permission before acting and being grateful for the opportunity to talk story with community stakeholders.
- *Ha'aha'a* or Humility: Listening with attention, respect, and compassion to understand their needs and fashion an appropriate project.
- *No'ono'o* or Thoughtful: Being thoughtful and considerate to those who have taken time to share not only their needs but their dreams of a traditionally sustainable lifestyle.

- *Pono* or Consistency: Doing what is right.
- *Kuleana* or Responsibility: Responsibility is reciprocal for both HDOA and the community. HDOA commits to funding critical water delivery projects to support the local farmers, and the community commits to maintaining these systems not only for their benefit but also for the good of the larger community.

Key Stakeholders

Although sustainable agricultural use has a broad public interest, there were certain key stakeholders whose views and perspectives were given careful consideration because of their cultural or ancestral, legal, or regulatory connection to East Maui agricultural activities. They include those who have been involved in East Maui agriculture, agriculture in general, or may have relevant information regarding potential water delivery issues or projects. These key stakeholders include the following:

- Na Moku Aupuni O Ko'olau Hui
- East Maui Farmers from Wailuanui, Ke'anae, Hana, Nahiku, Honopou, Huelo, Hanehoi, and Kīpahulu
- Alexander & Baldwin
- Mahi Pono
- Hawai'i Farm Bureau and Maui County Farm Bureau
- Maui Tomorrow
- Aha Moku Advisory Council
- Department of Land and Natural Resources, Commission on Water Resource Management
- Department of Hawaiian Home Lands
- Elected officials that represent East Maui

Community Engagement Process and Methods

While the key stakeholders for East Maui were given careful consideration, the community engagement process was designed to be broader, more inclusive, and transparent. A deliberate attempt was made by Ku'iwalu to initiate a broad-based community engagement process that would inform, listen, and solicit potential water delivery projects for HDOA's consideration for the CIP funding. The following is a brief description of the various methods used to engage the community on the Project:

- Introductory Letter from Mr. Brian Kau, HDOA Administrator and Chief Engineer, dated May 7, 2019. A copy of the letter and list of recipients is attached as Appendix A.1. At onset of the Project, HDOA sent the letter to Key stakeholders and elected officials summarizing the 2018 legislative CIP funding for the Project. The letter also informed the stakeholders that representatives from the Project Team would be meeting with key stakeholders to "identify and assess potential projects for HDOA's consideration."

- **Proactive Outreach to Key Stakeholders.** Soon after HDOA's letter was distributed, Ku'iwalu requested "personal one-on-one, candid talk story meetings with key stakeholders" to ask them to identify potential water delivery projects for HDOA's consideration. In most instances, Ku'iwalu followed up with email requests. Appendix A.2 is a copy of the follow-up correspondence from Ku'iwalu and a list of recipients. Follow-up emails or telephone calls were made to all the key stakeholders listed in Appendix A.2.
- **Based upon the follow-up emails,** Ku'iwalu coordinated site visits to specific East Maui communities who identified particular water delivery projects. The site visits were conducted by Dawn Chang, Ku'iwalu Principal and Puna Kaneakua, AECOM Project Engineer. The purpose of the site visits was to ask permission to work in their communities, gather first-hand information from the farmers on the water delivery issue, assess the site conditions (including regulatory issues and construction logistics), and understand the potential public benefit of the proposed project. Site visits were conducted in Wailuanui, Ke'anae, Honopou, Nahiku, and Kīpahulu. Appendix A.3 is a summary of site visits. In addition to gathering information, the personal site visits were to manage the East Maui farmers' expectations that HDOA, during these early site visits, had not made a decision as to which projects would proceed to the design and construction bid Phase, as the ultimate decision would be dependent on numerous factors and considerations. A small *makana* of food was given to the farmers in appreciation for them taking the time to talk story.
- **Public Meetings.** In addition to the correspondence, proactive outreach to key stakeholders, and site visits to East Maui farmers, HDOA convened two public meetings in East Maui. The first meeting was on Friday, September 27, 2019, from 6:00-8:00 p.m. at Haiku Elementary School and the second meeting was on Saturday, September 28, 2019, from 4:00-6:00 p.m. at Ke'anae Congregational Church. The Notice of Public Meetings was published in the Maui News on August 17, 2019. Appendix A.4 is a copy of the publication. Ku'iwalu emailed the Notice of Public Meetings related to HDOA's East Maui Water Systems Improvement Project to the key stakeholders. Appendix A.5 is a copy of the updated notification to stakeholders of the public meetings and list of recipients. Although the public meetings are not required by law, in the spirit of continued inclusivity and transparency, the purpose of the public meetings were to provide the community with updates on the Project, present potential projects for improvements/repair of water systems as identified by the East Maui farmers, assess any other potential water project that may be identified by the community, and address any public comments. Appendix A.6 is a copy of the sign-in sheets and agenda from the public meetings.
- **On-going updates to key stakeholders.** As the Project proceeded through the planning and designing process, there was on-going updates to the key stakeholders and in particular to the prospective East Maui farmers on the status of HDOA's process to keep them informed.

Summary of Community Engagement

To a large extent the community engagement process was driven by several factors. First it was to have the potential water projects identified by the actual East Maui farmers based upon their water needs that would support and sustain their agricultural activities. Since these were State CIP funds, we were looking for projects that would serve a public interest. It was important that the potential projects would not only help the local farmers but would also support their larger community. In addition, HDOA made it very clear that the CIP funds were for construction of water delivery system projects and not for maintenance. Thus, it was important that once constructed, the local farmers and community would maintain the water delivery projects. Finally, due to the legislative appropriation, the construction bids for the projects needed to be received by June 2020, which required projects that could timely comply with applicable regulatory processes.

In light of aforementioned factors, at the onset of the community engagement process, we reached out to numerous stakeholders to assist with identifying as many water projects that would benefit from the CIP funding. These key stakeholders included Rep. Lynn DeCoite who represents East Maui and was a strong advocate for the CIP funding based upon concerns raised by her constituents. We also met with the Aha Moku Advisory Council (AMAC) Executive Director who provided contacts for the AMAC representatives from the East Maui ahupua'a. Contact was also made with the Hawaii Farm Bureau and Maui County Farm Bureau for potential projects. Recognizing that a significant part of East Maui agricultural users included Alexander & Baldwin, and more recently Mahi Pono, outreach was made to their representatives. Contact was also made to CWRM Deputy Director and Staff as well as parties in the EMI litigation who provided valuable information about the East Maui farmers, in particular lo'i kalo farmers, who may have appropriate potential projects for HDOA's consideration.

We followed up on as many inquiries by either East Maui farmers themselves, or key stakeholders who referred us to potential farmers. Based upon the outreach, we met with many dedicated farmers who consciously choose to lead a lifestyle of hard-work with challenging conditions, and little monetary compensation for their efforts. However, notwithstanding the challenges, these farmers take great satisfaction that they are continuing a traditional practice of farming by those who lived and toiled the same lands. These farmers identified their specific problems or issues with the existing water delivery system, in most cases their traditional *'auwai* system that impacted their ability to efficiently sustain their agricultural activities. We discovered that while many are committed to maintaining the traditional, open free-flowing *'auwai* system, for others, due to conditions and circumstances beyond their control, they must look to contemporary alternatives, including placement of PVC pipes in the *'auwai* or installation of water tanks, to ensure a consistent, reliable and temperate supply of water to support their agricultural activities.

Pursuant to the community engagement process, the project team proceeded to assess each potential project by conducted site visits hosted by the farmer(s) to identify their water delivery problem or need as well as assess the logistics of accessing the sites and evaluate each potential project against the prioritization criteria. We specifically met Mahealani and Ed Wendt, Bush Martin, and Avraham Elkayam from Wailuanui; Dan and Sharon Clark, and Max Pichay from Ke'anae; Lyn Scott, Sanford Kekahuna, Michael Magliato, and Lezley Jacintho from Honopou; Zack Williams and Russell Stoner from Nahiku; Pat and Patrick O'Connell, Lily Boerner, and Carol Best from Kīpahulu. It was an honor and privilege to walk through the traditional *'auwai* with these farmers and we greatly appreciated the time they took to meet with us, share food in some instances, and tell us their stories.

Conditions Assessment

Following the community engagement, the project team conducted a series of site visits with East Maui farmers to evaluate potential projects to improve their respective water delivery systems for irrigation. The site visits were conducted on these dates and locations (refer to Figure 2):

- June 18, 2019
 - Wailuanui and Waikani Falls
- July 3, 2019
 - Ke‘anae
- July 25, 2019
 - Honopou
- August 6, 2019
 - Nahiku

The findings and observations at each visit are described in the following sections and includes design options at each location.



Figure 2: Site Visits Area Surveyed

Wailuanui

This site is located just makai of Hana Highway and consists of an *'auwai* that feeds portions of the Wailuanui area. The farms in Wailuanui rely heavily upon this *'auwai* for water delivery. Over time, the banks of the *'auwai* have eroded substantially to a point where it is unsafe to maintain the *'auwai* or the banks. In addition, inadvertent dumping of debris off of Hana Highway has damaged the *'auwai* and caused further erosion of the banks.

Historically, the farmers and residents of Wailuanui would have community work days to clear invasive vegetation and debris from the *'auwai*. Past work days have seen several hundred people come to maintain this system. Currently, residents and farmers are unable to safely access the *'auwai* to conduct maintenance due to the inaccessible banks of the *'auwai*, and the condition of the *'auwai* continues to degrade.



Figure 3: Wailuanui Area Map

Table 1: Wailuanui Site Photos



Debris-clogged drains and 'auwai are typical along this irrigation route.



The irrigation to Wailuanui needs repair to maintain reliable flow.



The irrigation running under Hana Highway.

Potential Design Solutions

Option A: Repair portions of the 'auwai with grouted rip rap or similar means.

Option B: Replace portions of the 'auwai with 2-24" HDPE pipe.

Waikani Falls

This site is located near Waikani Falls. An inlet structure was installed in the pond near the base of the falls. Water received by this inlet structure is carried downstream through a pipe approximately 500 feet that feeds into an 'auwai that delivers water to the eastern portion of Wailuanui Valley.

Heavy rain events have caused boulders to fall onto the pipe at the inlet structure causing damage to the inlet pipe making it difficult to access and maintain the inlet pipe. The pipe carrying water to the downstream 'auwai is also clogged or damaged resulting in almost no flow through the pipe. Historically, farmers have been able to clear the pipe of any debris; however, in this event they have tried for years to clear the blockage with no success.



Figure 4: Waikani Falls Area Map

Table 2: Waikani Site Photos



Makai side access to Waikani Falls (visible, upper-left) on private property.



Accessing the Falls from Ke'anae; thick vegetation, facing south.



Waikani Falls.

Potential Design Solutions

Option A: CCTV inspection of the piping to locate and identify the blockage or damage in order to develop a proposed repair/replacement method.

Option B: Repair/replace the damaged or blocked pipe and repair/replace the inlet at the pond.

Ke'anae

This site is located on the Ke'anae peninsula within farm lots used to cultivate taro. The project area receives its water from a flume approximately 1'x1'. The flume delivers water to a diversion structure that splits the flow into four different segments to feed the various farm lots on the Ke'anae peninsula. The main feed travels south to north through an 'auwai that provides water to the furthest portion of the project, approximately 1,400 feet downstream from the diversion structure.

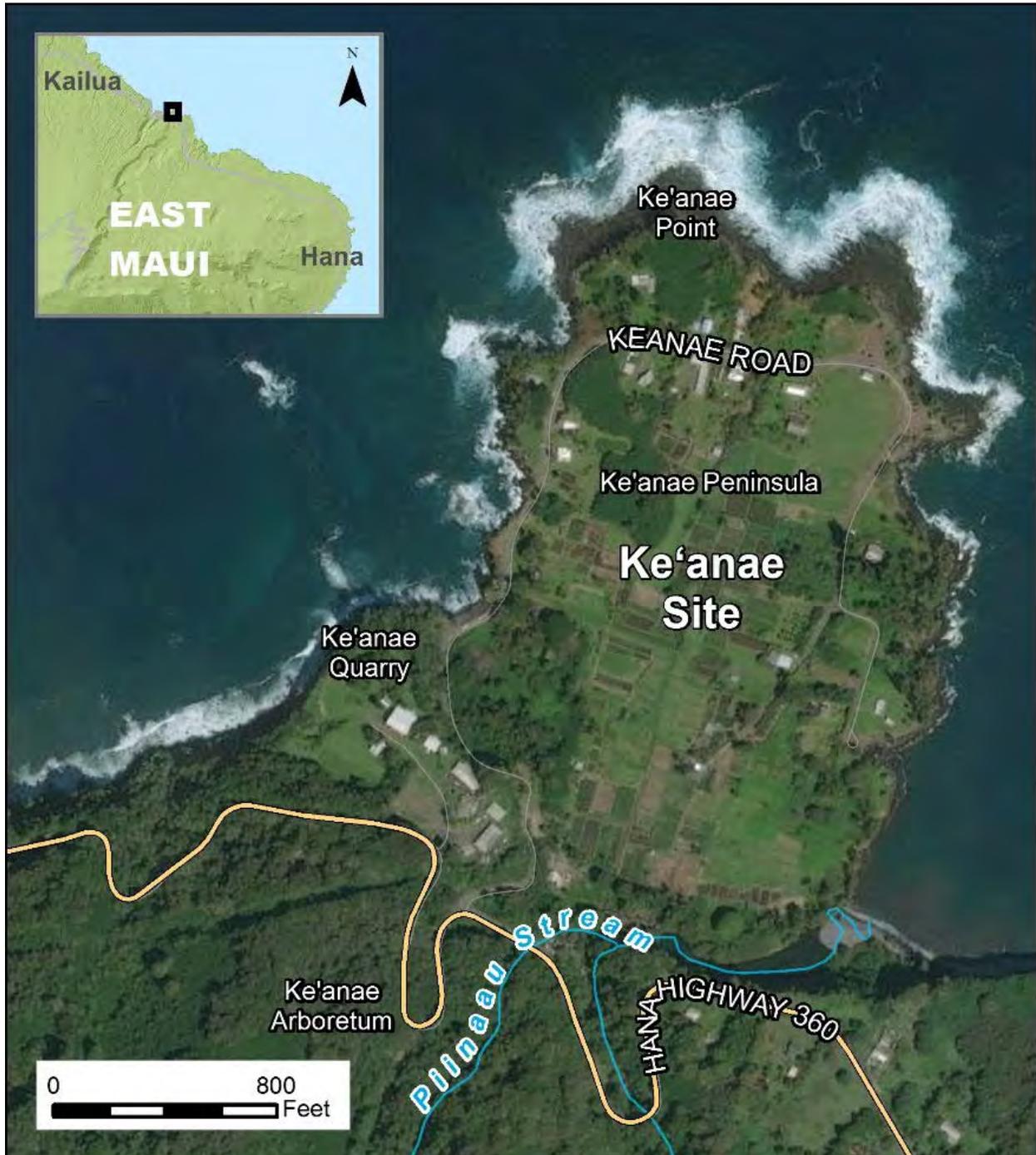


Figure 5: Ke'anae Area Map

Water flow from the diversion structure through the *'auwai* is inefficient. There is water loss through seepage, evaporation, and ancillary vegetation consumption. This presents a problem for the downstream farmers that do not receive adequate water to cultivate their crops. In addition, these open *'auwai* require a high level of maintenance to minimize erosion and water loss. Currently, erosion occurs which can have a detrimental effect on the crops if water delivery is interrupted. Additionally, because of the shallow depth of flow in the *'auwai*, the temperature of the water increases as it traverses through the *'auwai*. The resulting warm water in the farthest reaches of the *'auwai* can often result in crop loss.

Table 3: Ke'anae Site Photos



Water splitting to small farmers lo'i kalo at 400 feet along the main *'auwai*.



Several, side-by-side lo'i kalo along the *'auwai*, facing south.



Larger splits pass more volume onto both sides of the Ke'anae Peninsula.



Bifurcated *'auwai*, at the head of the peninsula flowing north.

Potential Design Solutions

Option A: Replacement of *'auwai* with piping.

Option B: Stabilize *'auwai* banks just downstream of diversion box

Option C: Clear the boulders in the *'auwai* upstream of the flume

Honopou

This site is located along Honopou Road. An *'auwai* receives water from Honopou stream and carries it downstream to taro farms located along Honopou Road.

During heavy rains, stream diversions at upstream properties have led to erosion along the wall of the *'auwai* separating it from Honopou stream. This erosion has led to serious concerns that the *'auwai* could possibly fail resulting in no water delivery to the farms located downstream.



Figure 6: Honopou Area Map

Table 4: Honopou Site Photos



Existing Honopou Stream.



Existing 'auwai and Honopou Stream.



Existing 'auwai and Honopou Stream.

Potential Design Solutions

Option A: Repair the wall of the 'auwai with grouted rip rap.

Option B: Repair the wall of the 'auwai with hand placed un-grouted rip rap.

Nahiku

This site is located between Makapipi Falls at Hana Highway and the steep shoreline. An 'auwai receives water from an unnamed stream and carries it downstream to taro farms in the area.



Figure 7: Nahiku Area Map

Table 5: Nahiku Site Photos



Dual pipes conveying flow downstream of the 'auwai. Existing pipe within the 'auwai.



Head of the 'auwai.



Lo'i patches in Nahiku.

Potential Design Solutions

Option A: Replace the two smaller pipes with one larger pipe.

Option B: Repair the actual 'auwai in its entirety.

Project Prioritization Matrix

Once potential project design options were established, the feasibility of completing each project was assessed. In order to achieve this, an evaluation matrix was developed and consisted of a list of criteria and the associated overarching objective, as shown below. Each criterion was assigned a weighted number from 1 to 5 or from low-high significance, i.e. significance in terms of project influence.

- **Community Support.** Community in favor of potential improvement(s).
- **Environmental, cultural, and natural resources.** Beneficial impacts to environmental, cultural, and natural resources.
- **Traditional and customary native Hawaiian rights.** Beneficial impacts to traditional and customary native Hawaiian rights.
- **Landownership - Public Land.** Public funding directed exclusively to public property only.
- **Legislative intent.** Consistent with legislative intent to serve public benefit and support food security and self-sufficiency.
- **Permitting.** Permit requirements satisfied within schedule.
 - **Corps of Engineers** (SECTION 10, 404). 1 month timeframe estimate
 - **Department of Health** (NPDES, Section 401). 1 month timeframe estimate
 - **Department of Land and Natural Resources (DLNR), State of Historic Preservation Division** (SHPD). 90 days from submittal
 - **DLNR, Office of Conservation and Coastal Lands** (CDUA). 1 month timeframe estimate
 - **DLNR, Land Management Division** (LMD). 90 days to process right of entry.
 - **Maui County SMA – MINOR.** 1 month timeframe estimate
- **Design.**
 - **Design.** Design solution effectively addresses current need.
 - **Constructability.** Available site access, material availability, ease of construction, i.e. Right of Entry, Easements, Cost.
 - **Value.** Cost effective long term solution.

Preliminary agency consultation meetings were held to discuss the permitting requirements for the various types of potential design solutions and conceptual design and costs were assembled. Based on the collection of these components the criteria under each design option was assigned a rating from 1-5 or least-most aligned with the criteria which resulted in the final scoring as shown below.

Location	Design Option	Score	Rank
Ke'anae	A: Replacement of 'auwai with piping	138	
	B: Stabilize 'auwai banks just downstream of diversion box	172	2
	C: Clear the boulders in the 'auwai upstream of the flume	160	
Wailuanui	A: Repair the 'auwai with grouted rip rap or similar means	171	3
	B: Replace the 'auwai with 2-24" HDPE pipe	175	1
Waikani Falls	A: CCTV inspection of the piping to identify the blockage or damage	169	4
	B: Repair/replace the damaged or blocked pipe and repair/replace the inlet at the pond	133	
Honopou	A: Repair the banks of Honopou stream with grouted rip rap	159	6
	B: Repair the banks of Honopou stream with hand placed un-grouted rip rap	147	
Nahiku	A: Replace the two smaller pipes with one larger pipe	163	5
	B: Repair the actual 'auwai in its entirety	145	

The final scores resulted in a ranking of the project list which was then examined against the project budget of \$4.5M.

Project	Construction
Wailuanui B: Replace the 'auwai with 2-24" HDPE pipe	\$ 1,022,000
Ke'anae B: Stabilize 'auwai banks just downstream of diversion box	\$ 109,000
Wailuanui A: Repair the 'auwai with grouted rip rap or similar means	\$ 2,173,000
Waikani Falls A: CCTV inspection of the piping to locate and identify the blockage or damage	\$ 14,859
Nahiku A: Replace the two smaller pipes with one larger pipe	\$ 78,900
Honopou A: Repair the wall of the 'auwai with grouted rip rap	\$ 271,000
Construction Subtotal	\$ 3,668,759
Design and Permitting Subtotal (10%)	\$ 366,876
Construction Management (5%)	\$ 183,438
Planning Subtotal	\$ 239,017
Grand Total	\$ 4,458,090

Refer to Appendix B for the complete Matrix.

Recommended Water Improvement Projects

The proposed improvements include:

- Wailuanui
 - Replace the *'auwai* with 2-24" HDPE pipe.
 - Repair the *'auwai* with grouted rip rap or similar means.
- Waikani Falls
 - CCTV inspection of the piping to locate and identify the blockage or damage.
- Ke'anae
 - Stabilize *'auwai* banks just downstream of diversion box.
- Honopou
 - Repair the wall of the *'auwai* with grouted rip rap.
- Nahiku
 - Replace the two smaller pipes with one larger pipe.

Each improvement is described in the following sections and describe the design solution, initial agency coordination, conceptual design cost and schedule.

Wailuanui – ‘Auwai Restoration

The proposed project is emergency maintenance of the existing ‘auwai system for safety considerations and will clear the ‘auwai and the banks of vegetation and debris to re-establish the historical profile of the ‘auwai and replace a section of ‘auwai with 2-24” HDPE pipe and also repair the ‘auwai with grouted rip rap or similar means:



Figure 8: Wailuanui Property Information Map

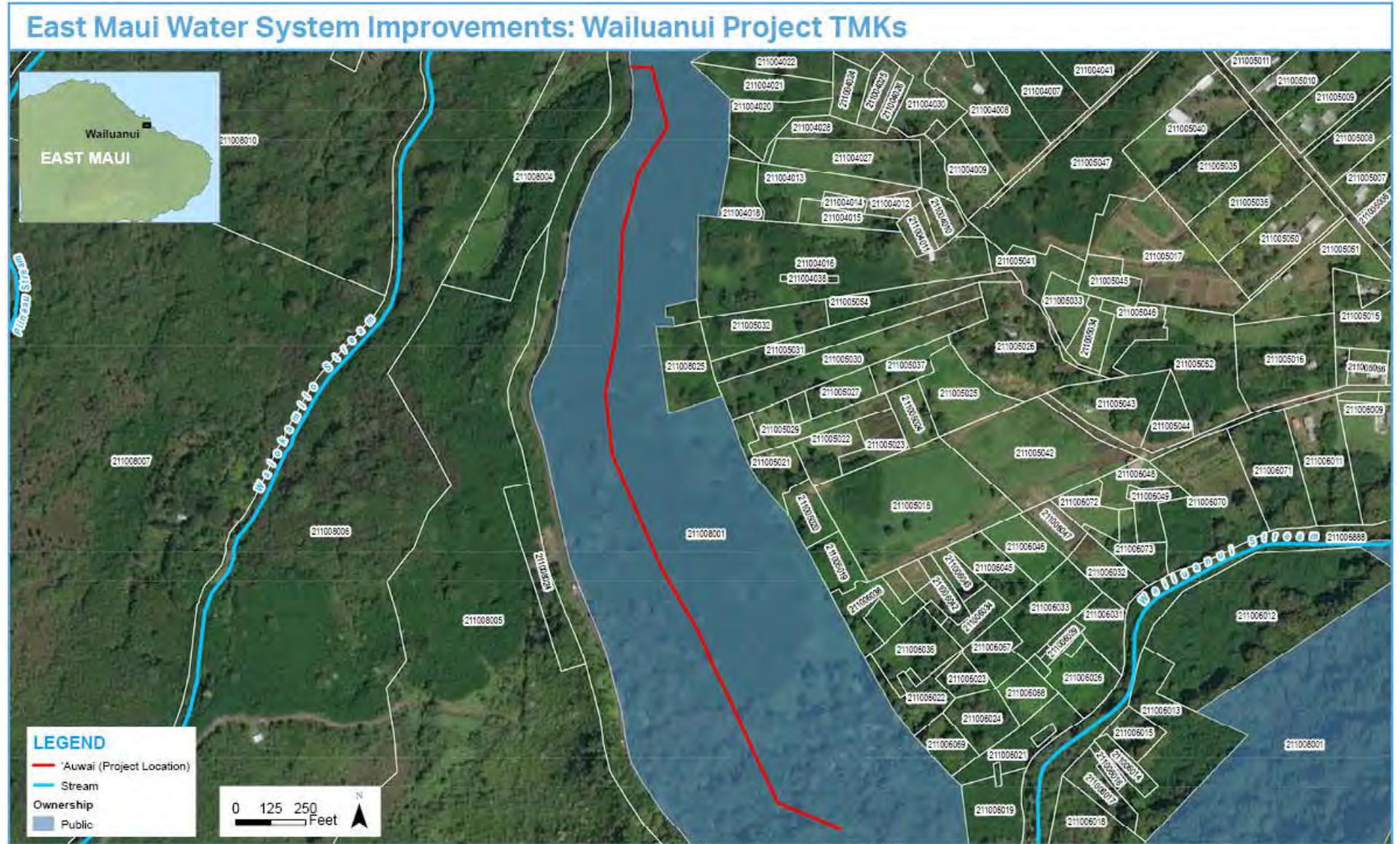
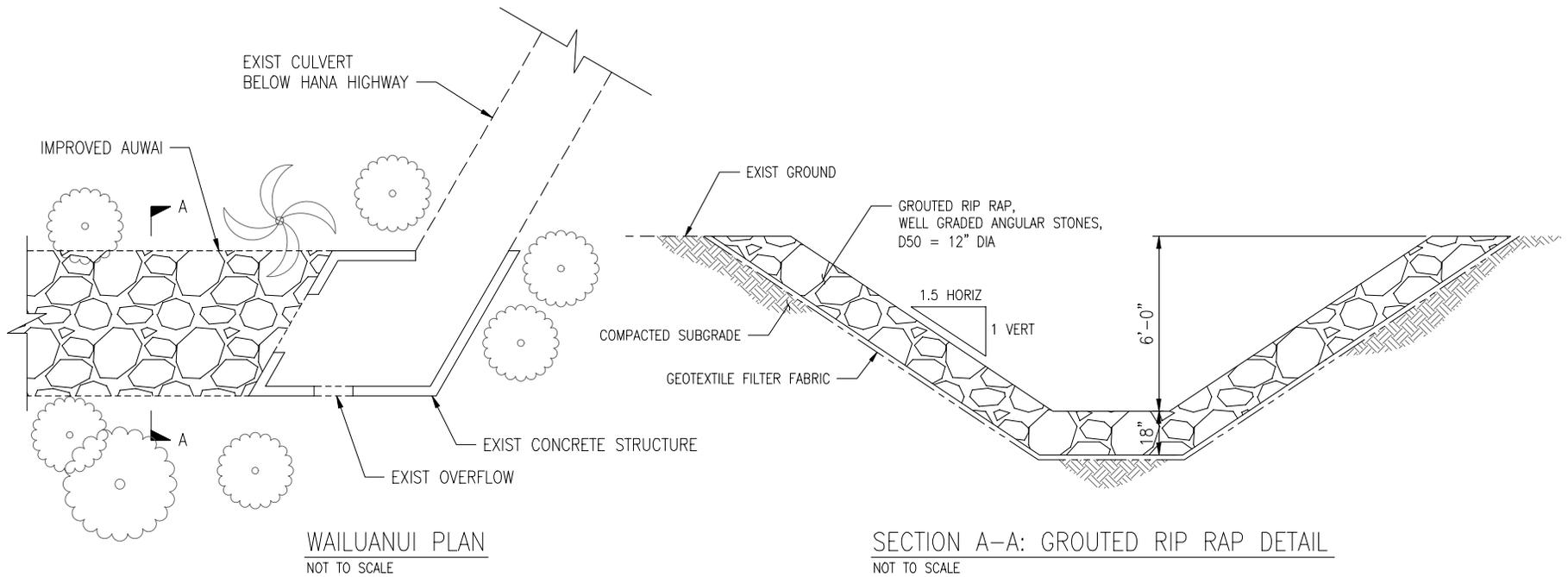


Figure 9: Wailuanui Project TMKs



1001 BISHOP ST., SUITE 1600, HONOLULU, HAWAII 96813

SITE 2 - WAILUANUI OPTION A

EAST MAUI WATER SYSTEM IMPROVEMENTS
 SITE 2 - WAILUANUI
 SEPTEMBER 2019

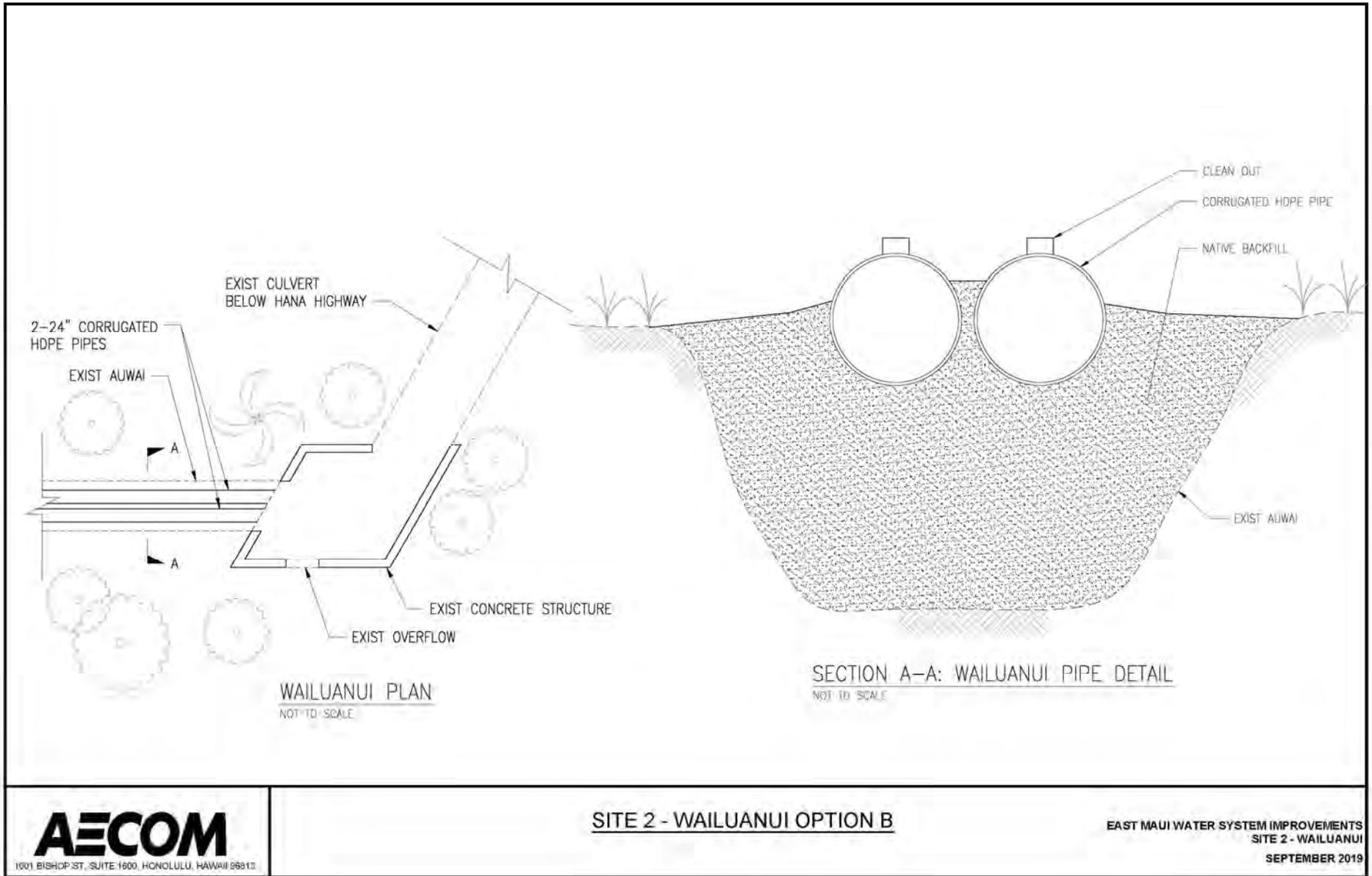


Figure 10: Wailuanui 'Auwai Improvement Plan

Agency Consultation

Appendix C summarizes meeting determinations and discussion topics from agency consultations during the summer of 2019. The Wailuanui project traverses one large property owned by the State. This property is zoned for Agriculture. Because this project crosses a state property an appropriate land disposition may be required from LMD. While general project plans and areas were shared with these agencies during these initial meetings, once 60% drawings are prepared, formal determinations for exemptions from various agency permits can be requested. For more detailed information on the meetings, see Appendix C, Agency Coordination Meeting Minutes, of this report.

Table 6: Wailuanui ‘Auwai Restoration Agency Consultation Summary

Agency	Description considerations,
COE	Based on meetings with the agency, this project and the specific ‘auwai system being considered for improvement are likely U.S. Army Corps of Engineers (COE) jurisdictional waters. Proposed ‘auwai improvements may be exempt for CWA Section 404 permit requirements under 40 CFR § 232.3 - Activities not requiring permits. and 33 CFR § 323.4 - Discharges not requiring permits. However, this exemption may not cover discharge and fill for construction, including diversions and temporary access roads.
DOH	If the project covers over 1 acre an NPDES will be required. A Section 401 WQC permit will also be required but a waiver from public notification can be requested and the minor scope of the project can allow the permit processing to be expedited.
DLNR, CWRM	CWRM has confirmed that their agency does not regulate ‘auwai systems.
OEQC	Under HAR 11-200-8, certain actions are identified as exempt on the DOA Comprehensive Exemption List and HAR 11-200.1-15 outlines general types of actions eligible for exemption. Some of these involve repairs, operations, maintenance and reconstruction of water (irrigation) systems. DOA as lead agency would prepare an exemption determination after completing an analysis of possible project impacts.
DLNR, SHPD	The State Historic Preservation Division (SHPD) reviews all projects involving state funds regardless of known historical status. The SHPD review process involves submitting a letter with supporting information to SHPD to request their determination of the project's effects to historic properties. This determination request can take up to 90 days to process.
DLNR, OCCL	This project area is located outside the State Conservation District and therefore does not require the issuance of a Conservation District Use Permit.
County of Maui – Special Management Area	This project area is located within the Special Management Area (SMA) zone. If, after the submittal of an SMA Assessment form, this project is determined to fall outside the County definition of “development”, it would need no review or approval under the provisions of SMA regulations. If this project is determined to meet the definition of “development” and since the cost of the project cost exceeds \$500,000, a Major SMA permit would be required. This process can take up to 6 months and involves a public hearing.
DLNR, LMD	Since there are some known state lands involved in the project, LMD may require a right of entry during construction and long term easement after construction is completed. Further discussion with LMD is necessary to determine the appropriate land disposition for use of state lands.

Cost

Preliminary construction costs are based on improving 300 linear feet of the 'auwai with grouted rip rap. The cost estimate is relatively conservative due to limited access and limited observation of actual site conditions. This cost does take into consideration the use of a helicopter to mobilize equipment and material to the project site. The cost was based on use of heavy equipment to perform clearing and grubbing, earthwork, and installation of grouted rip rap.

Table 7: Wailuanui 'Auwai Restoration Cost Estimate

**ENGINEER'S COST ESTIMATE
EAST MAUI IMPROVEMENTS
WAILUANUI AUWAI REPLACEMENT (24" HDPE INSTALLATION)**

Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
BASE BID					
1	Mobilization (Not to exceed 6% of the sum of all items excluding bid price of this item)	1	L.S.	\$60,000.00	\$ 60,000.00
2	Clearing and Grubbing	13200	S.F.	\$10.00	\$ 132,000.00
3	24" Pipe Installation, including excavation/backfill, grading, materials	2640	L.F.	\$300.00	\$ 792,000.00
4	Installation, Maintenance, Monitoring, and Removal of BMP	1	L.S.	\$18,000.00	\$ 18,000.00
5	Field Archaeological On-Site Monitoring	1	Allow	\$20,000.00	\$ 20,000.00
A. SUM OF ALL ITEMS:					\$1,022,000.00

Preliminary construction costs are based on mobilization, clearing and grubbing, installation of two 24" HDPE pipes (1320 LF each), installation and removal of BMP, and field archaeological on-site monitoring. Mobilizing material and equipment to the site via construction of a gravel access path.

**ENGINEER'S COST ESTIMATE
EAST MAUI IMPROVEMENTS
SITE 2 - WAILUANUI AUWAI REPAIR (300 ft section)**

Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
1	Mobilization (Not to exceed 6% of the sum of all items excluding bid price of this item)	1	L.S.	\$111,000.00	\$ 111,000.00
2	Clearing and Grubbing	9900	S.F.	\$8.00	\$ 79,200.00
4	Earthwork including excavation, compaction, and grading	580	C.Y.	\$380.00	\$ 220,400.00
5	Grouted Rip Rap	580	C.Y.	\$1,500.00	\$ 870,000.00
6	Installation, Maintenance, Monitoring, and Removal of BMP	1	L.S.	\$30,000.00	\$ 30,000.00
7	Additional Water Pollution, Dust, and Erosion Control	1	Allow	\$30,000.00	\$ 20,000.00
8	Field Archaeological On-Site Monitoring	1	Allow	\$10,000.00	\$ 10,000.00
9	Helicopter Costs	1	L.S.	\$634,000.00	\$ 634,000.00
A. SUM OF ALL ITEMS:					\$1,974,600.00
B. CONTINGENCY (10%):					\$197,460.00
C. TOTAL CONSTRUCTION COST					\$2,172,060.00
D. ROUNDED TOTAL CONSTRUCTION COST					\$2,173,000.00

Schedule

The Wailuanui *'Auwai* restoration would span 6 months inclusive of design, construction and related permits. This assumes that there are some areas of concurrency between the design, permitting, and construction phases.

Critical path items include:

Design: To expedite the design phase, a 60% and 100% design submittal is proposed. The duration for the initial submittal will be approximately 1 month. This time does not include field work such as topographic surveying or additional field measurements, but this can be started prior to official commencement of the design work. Due to limited access to the project site, topographic surveying work may require additional working days. Once plans are finalized and approved, the bidding can commence.

Permitting: This project is likely exempt from many types of permits from stakeholder agencies. Once 60% design plans are completed for this project, formal exemption requests would be submitted for the various agencies. Formal determinations would then take from one to three months to process. The longest process anticipated would be the review by SHPD. While that agency outlines 90 day reviews, the actual review process has been known to be up to one year due to chronic staffing shortage. In addition, discussion with LMD will be required to determine appropriate land disposition, including right of entry during construction and easement after construction is complete. All of these agencies' reviews can occur concurrently with the design process once the 60% designs are complete.

Construction: The initial phase of construction will be mobilizing and staging which would likely require the use of a helicopter due to limited site access. During the design phase, coordination will be held with the farmers to establish a staging area for construction and landing area for the helicopter. This work would require close coordination with the farmers to make sure they maintain access to the water during construction. The existing *'auwai* will need to be cleared and grubbed of all vegetation and debris prior to installation of the grouted rip rap and two 24" HDPE pipes.

Waikani Falls – Pipeline Assessment

Ultimately, the proposed project would be to replace the inlet structure and piping; however, because the inlet structure is located within the pond, there are permitting issues that would take time in excess of what's available. The interim project would be to utilize closed-circuit television (CCTV) technology to travel into the pipe and obtain videos and photos of the blockage to more clearly understand the issue and subsequently potential options to address the obstruction. This investigation would also provide a more accurate location of the blockage.

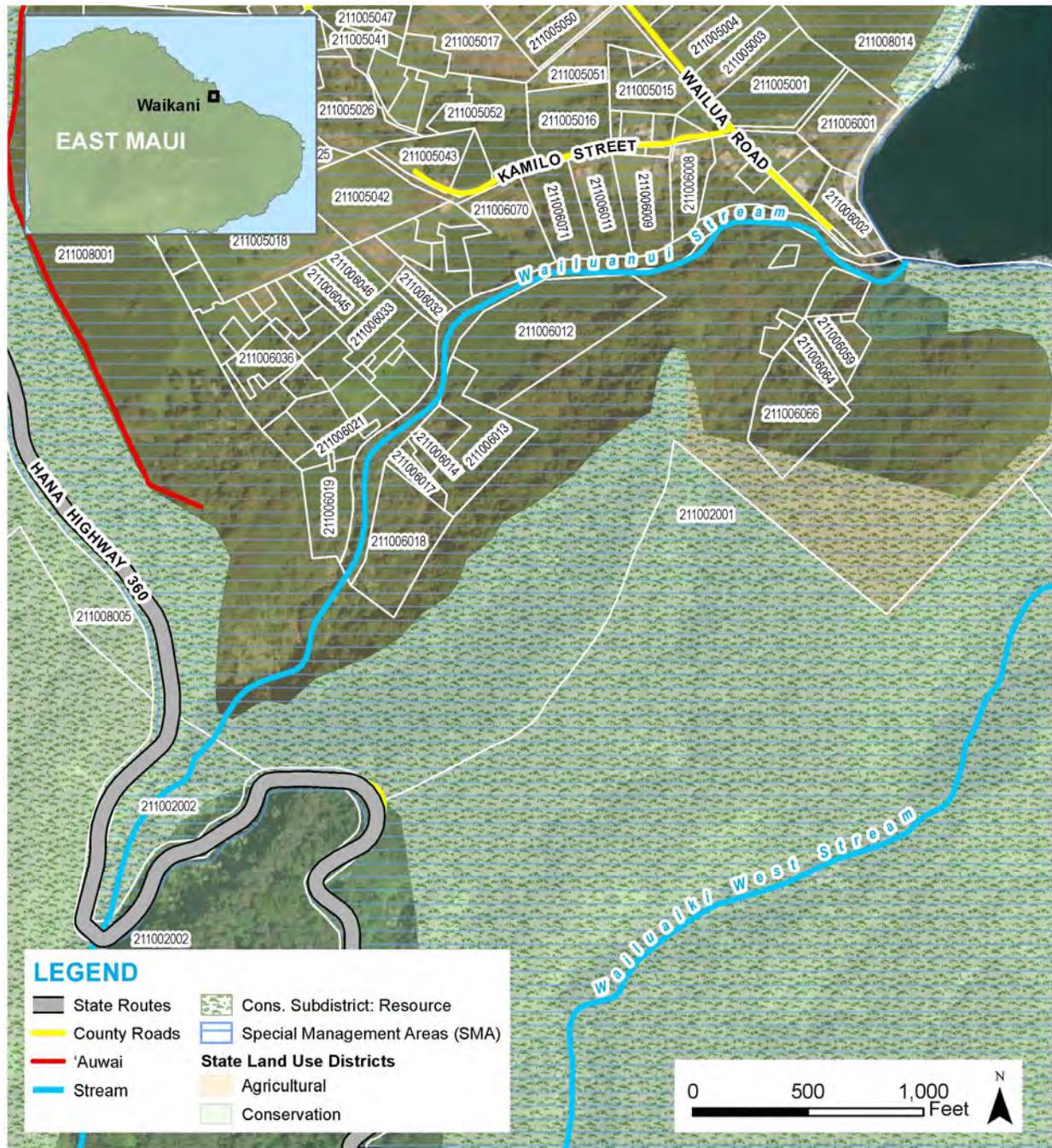


Figure 11: Waikani Falls Property Information Map

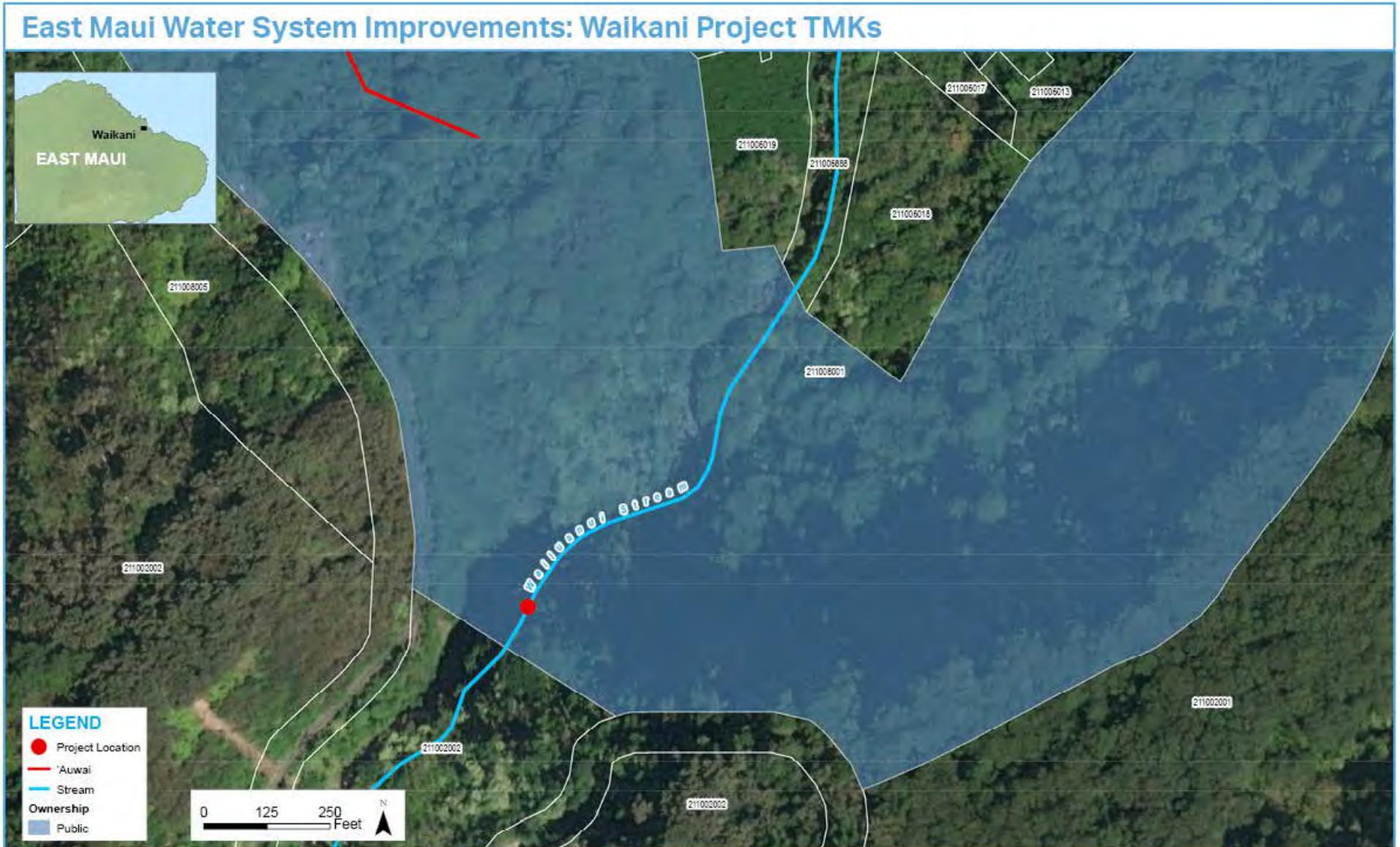
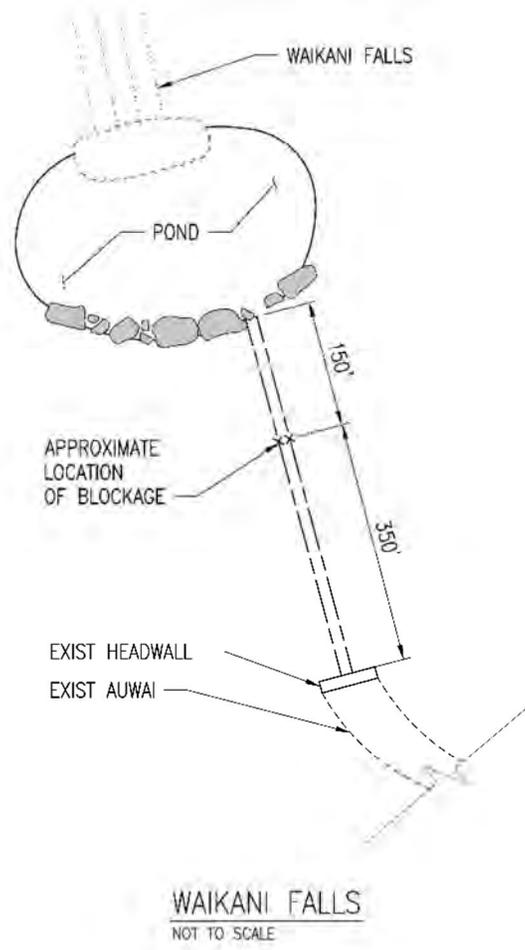


Figure 12: Waikani Falls Property Information Map



AECOM

1001 BISHOP ST, SUITE 1600, HONOLULU, HAWAII 96813

SITE 3 - WAIKANI FALLS

EAST MAUI WATER SYSTEM IMPROVEMENTS
SITE 3 - WAIKANI FALLS
AUGUST 2019

Figure 13: Waikani Falls Improvement Plan

Agency Consultation

Appendix C summarizes meeting determinations and discussion topics from agency consultations during the summer of 2019. The Waikani Falls project traverses one large property owned by the State. This property is zoned for agriculture. The initial proposed project of temporarily placing a CCTV device in the *‘auwai* pipe is likely exempt from permitting requirements. The second phase of this project (involving possible repair of the pipe) crosses a state property and, therefore, an appropriate land disposition may be required from LMD, including right of entry during construction and easement once construction is complete. While general project plans and areas were shared with these agencies during these initial meetings, once 60% drawings are prepared, formal determinations for exemptions from various agency permits can be requested. For more detailed information on the meetings, see Appendix C, Agency Coordination Meeting Minutes, of this report.

Table 8: Waikani Falls Pipeline Assessment Agency Consultation Summary

Agency	Description
COE	Based on meetings with the agency, this project and the specific <i>‘auwai</i> system being considered for improvement are likely U.S. Army Corps of Engineers (COE) jurisdictional waters. The placement of temporary CCTV equipment and the proposed subsequent pipe repair and other improvements at Wailuanui Stream may be exempt for CWA Section 404 permit requirements under 40 CFR § 232.3 - Activities not requiring permits. and 33 CFR § 323.4 - Discharges not requiring permits. However, this exemption may not cover discharge and fill for construction, including diversions and temporary access roads.
DOH	A Section 401 WQC permit will be required but a waiver from public notification can be requested and the minor scope of the project can allow the permit processing to be expedited.
DLNR, CWRM	CWRM has confirmed that their agency does not regulate <i>‘auwai</i> systems.
OEQC	Under HAR 11-200-8, certain actions are identified as exempt on the DOA Comprehensive Exemption List and HAR 11-200.1-15 outlines general types of actions eligible for exemption. Some of these involve repairs, operations, maintenance and reconstruction of water (irrigation) systems. DOA as lead agency would prepare an exemption determination after completing an analysis of possible project impacts.
DLNR, SHPD	The State Historic Preservation Division (SHPD) reviews all projects involving state funds regardless of known historical status. The SHPD review process involves submitting a letter with supporting information to SHPD to request their determination of the project's effects to historic properties. Due to the temporary nature of the placement of the CCTV device, it is likely that a determination of "no affect" could be made for that aspect of the project. This determination request can take up to 90 days to process.
DLNR, OCCL	This project area is located outside the State Conservation District and therefore does not require the issuance of a Conservation District Use Permit.
County of Maui – Special Management Area	This project area is located within the Special Management Area (SMA) zone. The temporary placement of CCTV equipment likely falls outside the County definition of "development". If, after the submittal of an SMA Assessment form this project is not determined to be "development", it would need no review or approval under the provisions of SMA regulations.
DLNR, LMD	Since the project traverses state lands, LMD may require a right of entry during construction and long term easement after construction is completed. Further discussion with LMD is necessary to determine the appropriate land disposition for use of state lands.

Cost

The estimate based upon the assumption that the contractor can get their CCTV equipment within pipe access range using an ATV. Estimate includes mobilization and three eight-hour days of work (one on-site and two offsite preparing and reconfiguring the CCTV van). Assuming ATV rental/delivery from Kahului.

Table 9: Waikani Falls Pipeline Assessment Cost Estimate

**ENGINEER'S COST ESTIMATE
 EAST MAUI IMPROVEMENTS
 WAIKANI FALLS PIPELINE ASSESSMENT**

Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
BASE BID					
1	Mobilization, including 1 day ATV rental (Not to exceed 6% of the sum of all items excluding bid price of this item)	1	L.S.	\$2,634.00	\$ 2,634.00
2	CCTV Work, including equipment, camera operator and assistant. Includes three 8 hour work days, one day on site and two days off-site preparing and re-configuring CCTV van.	24	hr	\$481.25	\$ 11,550.00
3	Sanitizing chemicals and other materials	1	L.S.	\$675.00	\$ 675.00
A. SUM OF ALL ITEMS:					\$14,859.00

Schedule

Permitting: This project is likely exempt from many types of permits from stakeholder agencies. Once 60% design plans are completed for this project, formal exemption requests would be submitted for the various agencies. Formal determinations would then take from one to three months to process. The longest process anticipated would be the review by SHPD. While that agency outlines 90 day reviews, their process has been known to take much longer than that. In addition, discussion with LMD will be required to determine appropriate land disposition requirements including right of entry during construction and easement after construction is complete. All of these agencies' reviews can occur concurrently with the design process once the 60% designs are complete.

Execution: The CCTV exploration is expected to identify the location and cause of the blockage. This will include a summary of the findings and recommendations for restoring the pipeline.

Ke'anae – Stabilize 'Auwai Banks Just Downstream of Diversion Box

The proposed project is to stabilize 'auwai banks just downstream of diversion box.



Figure 14: Ke'anae Property Information Map



Recommended design solution is to replicate the front facing divider along the right side of the diversion box.

Figure 16: Ke'anae 'Auwai Improvement Plan

Agency Consultation

Table 10 summarizes meeting determinations and discussion topics from agency consultations during the summer of 2019. The Ke‘anae project traverses numerous properties, but all are zoned for agricultural use and none cross Conservation District lands. While general project plans and areas were shared with these agencies during these initial meetings, once 60% drawings are prepared, formal determinations for exemptions from various agency permits can be requested. For more detailed information on the meetings, see Appendix C, Agency Coordination Meeting Minutes, of this report.

Table 10: Ke‘anae ‘Auwai Replacement Agency Consultation Summary

Agency	Description
COE	Based on meetings with the agency, this project and the specific ‘auwai system being considered for improvement are likely U.S. Army Corps of Engineers (COE) jurisdictional waters. Proposed ‘auwai improvements may be exempt for CWA Section 404 permit requirements under 40 CFR § 232.3 - Activities not requiring permits and 33 CFR § 323.4 - Discharges not requiring permits. However, this exemption may not cover discharge and fill for construction, including diversions and temporary access roads.
DOH	If the project covers over 1 acre an NPDES will be required. A Section 401 WQC permit will also be required but a waiver from public notification can be requested and the minor scope of the project can allow the permit processing to be expedited.
DLNR, CWRM	CWRM has confirmed that their agency does not regulate ‘auwai systems.
OEQC	Under HAR 11-200-8, certain actions are identified as exempt on the DOA Comprehensive Exemption List and HAR 11-200.1-15 outlines general types of actions eligible for exemption. Some of these involve repairs, operations, maintenance and reconstruction of water (irrigation) systems. DOA as lead agency would prepare an exemption determination after completing an analysis of possible project impacts.
DLNR, SHPD	The State Historic Preservation Division (SHPD) reviews all projects involving state funds regardless of known historical status. The SHPD review process involves submitting a letter with supporting information to SHPD to request their determination of the project's effects to historic properties. This determination request can take up to 90 days to process.
DLNR, OCCL	This project area is located outside the State Conservation District and therefore does not require the issuance of a Conservation District Use Permit.
County of Maui – Special Management Area	This project area is located within the Special Management Area (SMA) zone. If, after the submittal of an SMA Assessment form, this project is determined to fall outside the County definition of “development”, it would need no review or approval under the provisions of SMA regulations. If this project is determined to meet the definition of “development” and since the cost of the project does not exceed \$500,000, a minor SMA permit would be required. This permit does not involve a public hearing and permit approval is granted by the Planning Director.
DLNR, LMD	Since there are some known state lands around the project area (TMK 11003028), LMD may require a right of entry during construction and long term easement after construction is completed. Further discussion with LMD is necessary to determine the appropriate land disposition for use of state lands.

Cost

Preliminary construction costs are based on improving 20 linear feet of the ‘auwai with grouted rip rap. The cost was based on use of heavy equipment to perform earthwork and installation of grouted rip rap. This cost does take into construction of an access road and restoration of all staging areas and access areas.

Table 11: Ke'anae Cost Estimate

**ENGINEER'S COST ESTIMATE
EAST MAUI IMPROVEMENTS
SITE 1 - KEANAЕ AUWAI REPLACEMENT (20 ft section)
OPTION B - GROUTED RIP RAP**

Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
1	Mobilization (Not to exceed 6% of the sum of all items excluding bid price of this item)	1	L.S.	\$5,000.00	\$ 5,000.00
2	Earthwork including excavation, compaction, and grading	18	C.Y.	\$380.00	\$ 6,840.00
3	Grouted Rip Rap	18	C.Y.	\$1,500.00	\$ 27,000.00
4	Installation, Maintenance, Monitoring, and Removal of BMPs	1	L.S.	\$5,000.00	\$ 5,000.00
5	Additional Water Pollution, Dust, and Erosion Control	1	Allow	\$5,000.00	\$ 5,000.00
6	Field Archaeological On-Site Monitoring	1	Allow	\$10,000.00	\$ 10,000.00
7	Gravel Access Road	1	L.S.	\$30,000.00	\$ 30,000.00
8	Restoration of staging and access areas	1	L.S.	\$10,000.00	\$ 10,000.00
A. SUM OF ALL ITEMS:					\$98,840.00
B. CONTINGENCY (10%):					\$9,884.00
C. TOTAL CONSTRUCTION COST					\$108,724.00
D. ROUNDED TOTAL CONSTRUCTION COST					\$109,000.00

Schedule

The Ke'anae stabilize 'auwai banks just downstream of diversion box would span 6 months inclusive of design, construction, and related permits. This assumes that there are some areas of concurrency between the design, permitting, and construction phases.

Critical path items include:

- Design:** The initial concept design is relatively straight forward; as such, multiple design phase submittals may not necessary. To expedite the design phase, a 60% and 100% design submittal is proposed. The duration for the initial submittal will be approximately 1 month. This time does not include field work such as topographic surveying or additional field measurements, but this can be started prior to official commencement of the design work. Once plans are finalized and approved, the bidding can commence.
- Permitting:** This project is likely exempt from many types of permits from stakeholder agencies. Once 60% design plans are completed for this project, formal exemption requests would be submitted for the various agencies. Formal determinations would then take from one to three months to process. The longest process anticipated would be the review by SHPD. While that agency outlines 90 day reviews, their process has been known to take much longer than that. In addition, discussion with LMD will be required to determine appropriate land disposition, including right of entry during construction and easement after construction is complete. All of these agencies' reviews can occur concurrently with the design process once the 60% designs are complete.
- Construction:** The initial phase of construction will be mobilizing and staging. During the design phase, coordination will be held with the farmers to establish a staging area and access roads into the site.

Honopou – Streambank Stabilization

The proposed project would emergency stabilization of the bank of the 'auwai adjacent to Honopou stream with grouted riprap to prevent a catastrophic failure and loss of water to the taro farms.



Figure 17: Honopou Property Information Map

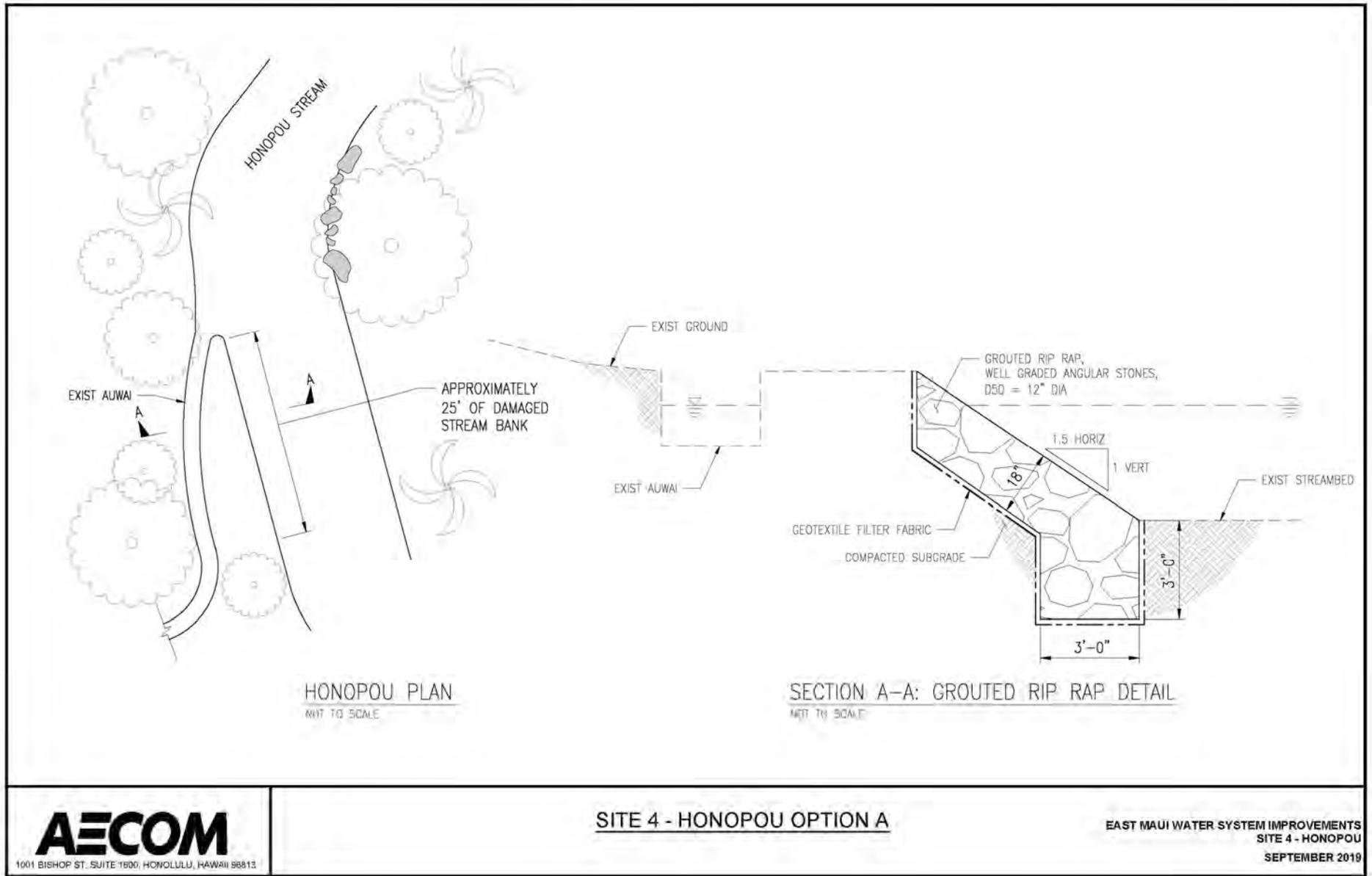


Figure 19: Honopou Streambank Stabilization Plan

Agency Consultation

summarizes meeting determinations and discussion topics from agency consultations during the summer of 2019. The Honopou project traverses one large property owned by the State. This property is zoned for agriculture. Since this project crosses a state property, an appropriate land disposition from LMD may be required, including right of entry during construction and an easement once construction is complete. Unlike the other projects determined to be exempt from Corps of Engineers permits, this proposed stabilization of stream banks could be covered by a Nationwide Permit 13. Because a COE permit is required, the requirement for a WQC Section 401 permit is required to be issued by the State Department of Health. While general project plans and areas were shared with these agencies during these initial meetings, once 60% drawings are prepared, formal determinations for exemptions from various agency permits can be requested. For more detailed information on the meetings, see Appendix C, Agency Coordination Meeting Minutes, of this report.

Table 12: Honopou Streambank Stabilization Agency Consultation Summary

Agency	Description
COE	This project and the specific <i>'auwai</i> system being considered for improvement are likely U.S. Army Corps of Engineers (COE) jurisdictional waters. Since this project involves work directly within a natural waterway, the proposed stabilization of stream banks can be covered by a Nationwide Permit 13 - Bank Stabilization provided the activity meets all the following criteria: (a) No material is placed in excess of the minimum needed for erosion protection; (b) The activity is no more than 500 feet in length along the bank.
DOH	If the project covers over 1 acre an NPDES will be required. A Section 401 WQC permit will also be required but a waiver from public notification can be requested and the minor scope of the project can allow the permit processing to be expedited
DLNR, CWRM	CWRM has confirmed that their agency does not regulate <i>'auwai</i> systems.
OEQC	Under HAR 11-200-8, certain actions are identified as exempt on the DOA Comprehensive Exemption List and HAR 11-200.1-15 outlines general types of actions eligible for exemption. Some of these involve repairs, operations, maintenance and reconstruction of water (irrigation) systems. DOA as lead agency would prepare an exemption determination after completing an analysis of possible project impacts.
DLNR, SHPD	The State Historic Preservation Division (SHPD) reviews all projects involving state funds regardless of known historical status. The SHPD review process involves submitting a letter with supporting information to SHPD to request their determination of the project's effects to historic properties. This determination process can take up to 90 days.
DLNR, OCCL	This project area is located outside the State Conservation District and therefore does not require the issuance of a Conservation District Use Permit.
County of Maui – Special Management Area	This project area is located within the Special Management Area (SMA) zone. If, after the submittal of an SMA Assessment form, this project is determined to fall outside the County definition of “development”, it would need no review or approval under the provisions of SMA regulations. If this project is determined to meet the definition of “development” and since the cost of the project does not exceed \$500,000, a minor SMA permit would be required. This permit does not involve a public hearing and permit approval is granted by the Planning Director.
DLNR, LMD	Since the project traverses state lands (TMK 29001018), LMD may require a right of entry during construction and long term easement after construction is completed. Further discussion with LMD is necessary to determine the appropriate land disposition for use of state lands.

Cost

Preliminary construction costs are based on improving 45 linear feet of the streambank with grouted rip rap. Installation of grouted rip rap would require working within the limits of Honopou Stream and therefore require in-water BMPs and construction of a temporary cofferdam which is included in this cost. Water quality monitoring was also included in the cost. This cost does take into consideration location and access to the project site and restoration of the existing access road.

Table 13: Honopou Streambank Stabilization Cost Estimate

**ENGINEER'S COST ESTIMATE
 EAST MAUI IMPROVEMENTS
 SITE 4 - HONOPOU AUWAI STABILIZATION (45 ft section)
 OPTION A - GROUDED RIP RAP**

Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
1	Mobilization (Not to exceed 6% of the sum of all items excluding bid price of this item)	1	L.S.	\$13,000.00	\$ 13,000.00
2	Earthwork including excavation, compaction, and grading	33	C.Y.	\$400.00	\$ 13,200.00
3	Grouted Rip Rap	33	C.Y.	\$1,800.00	\$ 59,400.00
4	Installation, Maintenance, Monitoring, and Removal of BMP, including temporary cofferdam, turbidity barrier, and filter sock	1	L.S.	\$50,000.00	\$ 50,000.00
5	Additional Water Pollution, Dust, and Erosion Control	1	Allow	\$20,000.00	\$ 20,000.00
6	Field Archaeological On-Site Monitoring	1	Allow	\$10,000.00	\$ 10,000.00
7	Restoration of staging areas and access roads	1	L.S.	\$20,000.00	\$ 20,000.00
8	Water Quality Monitoring	1	L.S.	\$60,000.00	\$ 60,000.00
A. SUM OF ALL ITEMS:					\$245,600.00
B. CONTINGENCY (10%):					\$24,560.00
C. TOTAL CONSTRUCTION COST					\$270,160.00
D. ROUNDED TOTAL CONSTRUCTION COST					\$271,000.00

Schedule

The Honopou Streambank Stabilization would span 7 months inclusive of design, construction, and related permits.

Critical path items include:

- **Design:** To expedite the design phase, a 60% and 100% design submittal is proposed. The duration for the initial submittal will be approximately 1 month. This time does not include field work such as topographic surveying or additional field measurements, but this can be started prior to official commencement of the design work. Once plans are finalized and approved, the bidding can commence.
- **Permitting:** This project is likely exempt from many types of permits from stakeholder agencies. Once 60% design plans are completed for this project, formal exemption requests (or a Corps of Engineers Nationwide Permit) would be submitted to the respective agencies. Formal determinations would then take from one to three months to process. The longest process anticipated would be the review by SHPD. While that agency outlines 90 day reviews, their process has been known to take much longer than that. In addition, discussion with LMD will be required to determine appropriate land disposition requirements including right of entry during construction and easement after construction is complete. All of these agencies' reviews can occur concurrently with the design process once the 60% designs are complete.
- **Construction:** The initial phase of construction will be mobilizing and staging. During the design phase, coordination will be held with the farmers to establish a staging area and use of the existing access road into the site. The access road is narrow so smaller loads may be required to transport materials to the staging area. This work would require close coordination with the farmers to make sure they maintain access to the water during construction. Prior to construction, all site BMPs and in-water BMPs shall be installed, including construction of the temporary cofferdam to create a dry work area. Construction delays are possible due to high stream flows from storm events that could impact the project site.

Nahiku – Pipe Replacement

This site is located between Makapipi Falls at Hana Highway and the steep shoreline. An *'auwai* receives water from a stream and carries it downstream to taro farms in the area. The existing 2" pipes frequently clog resulting in inhibited flow due to an inability to flush out even relatively small organic matter and other obstructions from the pipes. The proposed project would replace the rusted, clogged and inadequately sized pipes with a single large pipe designed to allow better flushing and flow through the piping system.

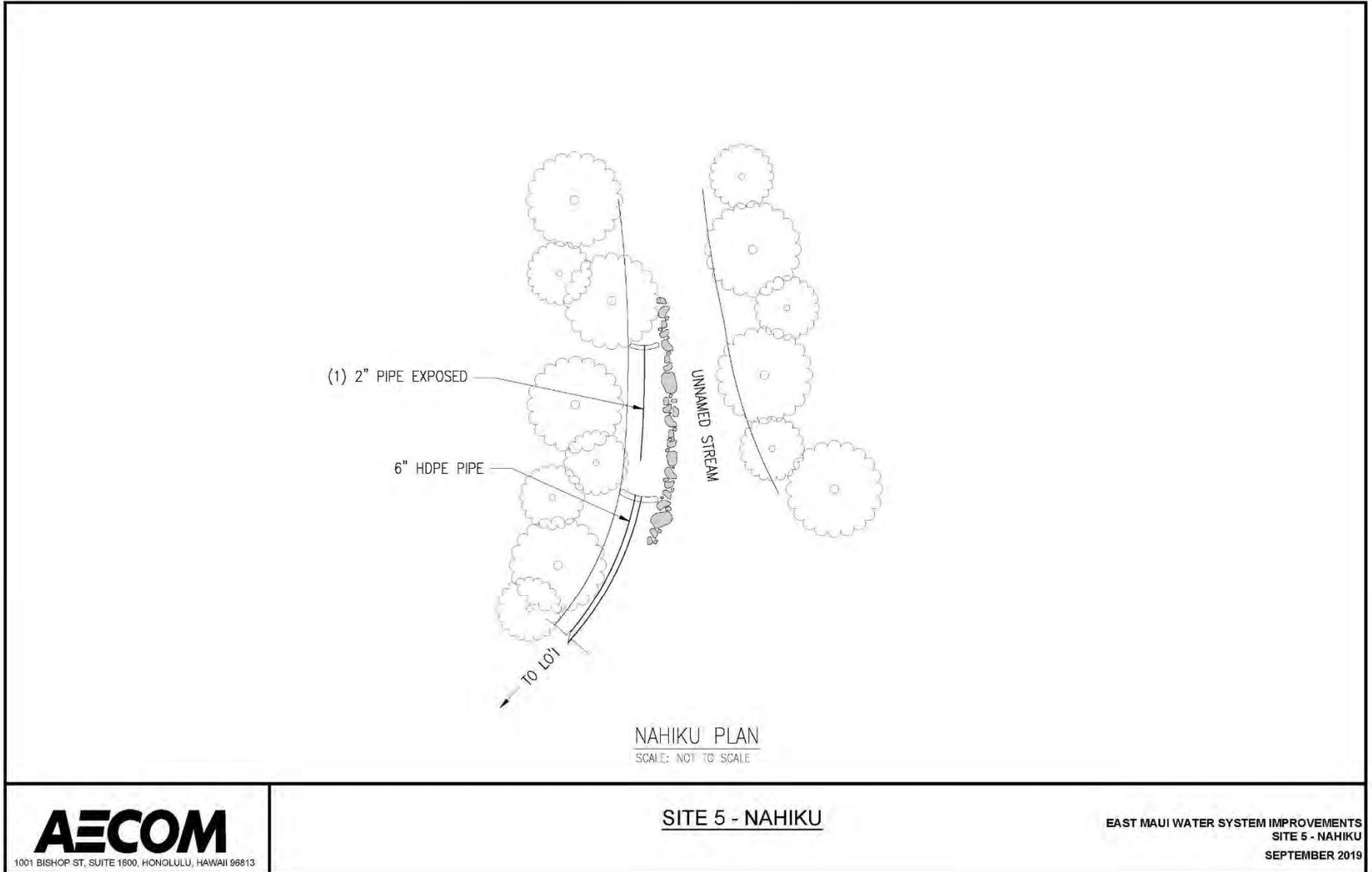


Figure 22: Nahiku Pipe Replacement Plan

Agency Consultation

Table 14 summarizes meeting determinations and discussion topics from agency consultations during the summer of 2019. The Nahiku project traverses one large property owned by the State. This property is zoned for agriculture. Since this project crosses a state property, an appropriate land disposition from LMD may be required, including right of entry during construction and an easement once construction is complete. While general project plans and areas were shared with these agencies during these initial meetings, once 60% drawings are prepared, formal determinations for exemptions from various agency permits can be requested. For more detailed information on the meetings, see Appendix C, Agency Coordination Meeting Minutes, of this report.

Table 14: Nahiku Pipe Replacement Agency Consultation Summary

Agency	Description
COE	This project and the specific <i>'auwai</i> system being considered for improvement are likely U.S. Army Corps of Engineers (COE) jurisdictional waters. Proposed <i>'auwai</i> improvements may be exempt for CWA Section 404 permit requirements under 40 CFR § 232.3 - Activities not requiring permits. and 33 CFR § 323.4 - Discharges not requiring permits. However, this exemption may not cover discharge and fill for construction, including diversions and temporary access roads.
DOH	If the project covers over 1 acre an NPDES will be required. A Section 401 WQC permit will also be required but a waiver from public notification can be requested and the minor scope of the project can allow the permit processing to be expedited.
DLNR, CWRM	CWRM has confirmed that their agency does not regulate <i>'auwai</i> systems.
OEQC	Under HAR 11-200-8, certain actions are identified as exempt on the DOA Comprehensive Exemption List and HAR 11-200.1-15 outlines general types of actions eligible for exemption. Some of these involve repairs, operations, maintenance and reconstruction of water (irrigation) systems. DOA as lead agency would prepare an exemption determination after completing an analysis of possible project impacts.
DLNR, SHPD	The State Historic Preservation Division (SHPD) reviews all projects involving state funds regardless of known historical status. The SHPD review process involves submitting a letter with supporting information to SHPD to request their determination of the project's effects to historic properties. This determination process can take up to 90 days.
DLNR, OCCL	This project area is located outside the State Conservation District and therefore does not require the issuance of a Conservation District Use Permit.
County of Maui – Special Management Area	This project area is located within the Special Management Area (SMA) zone. If, after the submittal of an SMA Assessment form, this project is determined to fall outside the County definition of “development”, it would need no review or approval under the provisions of SMA regulations. If this project is determined to meet the definition of “development” and since the cost of the project does not exceed \$500,000, a minor SMA permit would be required. This permit does not involve a public hearing and permit approval is granted by the Planning Director.
DLNR, LMD	The project traverses state lands. LMD may require a right of entry during construction and long term easement after construction is completed. Further discussion with LMD is necessary to determine the appropriate land disposition for use of state lands.

Cost

This cost estimate includes mobilization, clearing and grubbing, demolition/removal of existing smaller pipes, installation of one 6" HDPE pipe (200 LF), installation and removal of BMP, and field archaeological on-site monitoring and assumes construction of a 1,000-ft gravel access path.

Table 15: Nahiku Pipe Replacement Cost Estimate

ENGINEER'S COST ESTIMATE EAST MAUI IMPROVEMENTS NAHIKU PIPE REPLACEMENT (6" HDPE INSTALLATION)					
Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
	BASE BID				
1	Mobilization, including 1,000 feet of gravel access path (Not to exceed 6% of the sum of all items excluding bid price of this item)	1	L.S.	\$3,500.00	\$ 3,500.00
2	Clearing and Grubbing	1000	S.F.	\$10.00	\$ 10,000.00
3	Demolition/Removal of Existing Pipes	200	L.F.	\$15.00	\$ 3,000.00
4	6" HDPE Pipe Installation	200	L.F.	\$200.00	\$ 40,000.00
5	Installation, Maintenance, Monitoring, and Removal of BMP	1	L.S.	\$2,400.00	\$ 2,400.00
6	Field Archaeological On-Site Monitoring	1	Allow	\$20,000.00	\$ 20,000.00
A. SUM OF ALL ITEMS:					\$78,900.00

Schedule

The Nahiku pipe replacement would span 6 months inclusive of design, construction, and related permits.

Critical path items include:

Design: To expedite the design phase, a 60% and 100% design submittal is proposed. The duration for the initial submittal will be approximately 1 month. This time does not include field work such as field verification measurements, but this can be started prior to official commencement of the design work. Once plans are finalized and approved, the bidding can commence.

Permitting: This project is likely exempt from many types of permits from stakeholder agencies. Once 60% design plans are completed for this project, formal exemption requests would be submitted for the various agencies. Formal determinations would then take from one to three months to process. The longest process anticipated would be the review by SHPD. While that agency outlines 90 day reviews, their process has been known to take much longer than that. In addition, discussion with LMD will be required to determine appropriate land disposition requirements including right of entry during construction and easement after construction is complete. All of these agencies' reviews can occur concurrently with the design process once the 60% designs are complete.

Construction: The initial phase of construction will be mobilizing and staging and construction of the gravel access road. During the design phase, coordination will be held with the farmers to establish locations of the staging area and access road into the site.

Summary

The design and permitting phase are expected to begin in November 2019 and depending on additional findings through the design/permitting/cost process, the projects may need to be revised.

Ultimately this phase of the project will result in the following construction bid packages:

- Wailuanui: Replace the *'auwai* with 2-24" HDPE pipe and with grouted rip rap or similar means.
- Ke'anae: Stabilize *'auwai* banks just downstream of diversion box.
- Honopou: Repair the wall of the *'auwai* with grouted rip rap.
- Nahiku: Replace the two smaller pipes with one larger pipe.
- CCTV Results and Recommendations at Waikani Falls

Anticipated bid opening for the construction phase is expected by June 2020.

Based on the discussions with the stakeholders, there are additional improvements that could be made at each site at a later time. These recommendations are as follows:

- Waikani Falls: The existing obstructed pipe could be repaired or replaced upon completion of the CCTV investigation, The CCTV inspection would help to identify where the blockage is occurring and whether or this section of pipe should be repaired or replaced entirely. In addition, the intake in the pond would need to be reconstructed to prevent rocks and sediment from entering and clogging the pipe. Based on the preliminary investigations, this pipe is located within the stream which would require permitting with the Army Corp of Engineers and would require more time than currently allotted for this project.
- Ke'anae: There are large boulders upstream of the flume that obstructs flow in the *'auwai*. Water delivery to the farms would improve if these boulders are removed. Because this area is in private property, this project cannot be completed under this project due to the amount of coordination involved with the landowner. Additionally, the farmers toward the end of the *'auwai* have experienced inefficient water delivery, as well as high water temperatures, which are both damaging to the kalo. To address this issue, we discussed the use of a main pipe that would replace the *'auwai* that feeds the downstream farmers. This effort would require a large amount of coordination with all adjacent farmers to ensure adequate water delivery to all adjacent farms. In addition, the main *'auwai* crosses multiple properties which are privately owned. A large amount of coordination and property easements may be required and there is inadequate time to complete this during this project,
- Honopou: During the site visits and in discussions with stakeholders, we learned that one of the primary reasons for the erosion along the *'auwai* is due to a stream diversion by a neighboring property. In order to mitigate the erosion, it is recommended that this stream be restored to the original condition and direction of flow to prevent further detrimental impacts to the *'auwai* and stream banks.

Appendix A Community Engagement Process

- A.1 Letter from Brian Kau, Hawai'i Department of Agriculture, and List of Recipients
- A.2 Follow-up Correspondence from Ku'iwalu and List of Recipients
- A.3 Summary of Site Visits
- A.4 Publication of Public Meetings
- A.5 Updated notification to stakeholders of Public Meetings and List of Recipients
- A.6 Sign-in Sheet of Attendees at Public Meetings

Appendix A.1 Letter from Brian Kau, Hawai'i Department of Agriculture, and List of Recipients

DAVID Y. IGE
Governor

JOSH GREEN
Lt. Governor



State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 South King Street
Honolulu, Hawaii 96814-2512
Phone: (808) 973-9600 FAX: (808) 973-9613

PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

GLENN K. MURANAKA
Deputy to the Chairperson

May 7, 2019

Aloha!

In 2018, the Hawai'i State Legislature appropriated capital improvement project (CIP) funding for the East Maui Water Systems Improvement Project (Project). The CIP funds are for plans, design, and construction for irrigation and water delivery systems in East Maui to support agricultural purposes. The legislative intent was to primarily support the small farmers in East Maui in furtherance of the State's goals of food security and self-sufficiency. For these reasons, the legislature appropriated the CIP funds to the Hawai'i Department of Agriculture (HDOA) to promote local food production.

We have a very ambitious schedule over the coming months. With technical support from AECOM and Ku'iwalu Consulting (Project Team), HDOA is ready to proceed with Phase 1 of the Project which entails information gathering, outreach to key stakeholders, and condition assessments of potential projects consistent with the legislative intent.

To facilitate Phase 1, the Project Team (specifically Puna Kaneakua from AECOM and Dawn Chang from Ku'iwalu) will be meeting with key stakeholders, including representatives from relevant government agencies, East Maui farmers, landowners, representatives from the native Hawaiian community, and elected officials. The purpose of these meetings that will be done over the next couple of months, will be to gather relevant input from the stakeholders as the Project Team begins to identify and assess potential projects for HDOA's consideration.

To be clear, although no projects have been determined, the potential projects that HDOA will consider are primarily for infrastructure repair or improvements to facilitate the East Maui farmers in achieving food security and self-sufficiency. The selected projects will not involve allocation of water resources.

If you have any questions please contact Janice Fujimoto at (808) 973-9493 or via email at Janice.fujimoto@hawaii.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Kau".

Brian Kau, P.E.
Administrator and Chief Engineer

State Agencies

Department of Agriculture
Department of Hawaiian Home Lands
Department of Land and Natural Resources,
Commission on Water Resource
Management

County of Maui

Department of Water Supply

Elected Officials

State Senator Rosalyn H. Baker
State Senator Donavan M. Dela Cruz
State Senator J. Kalani English
State Senator Kurt Fevella
State Senator Mike Gabbard
State Senator Les Ihara, Jr.
State Senator Kaiali'i Kahele
State Senator Gilbert Keith-Agaran
State Senator Jarrett Keohokalole
State Senator Clarence K. Nishihara
State Senator Karl Rhoads
State Senator Gil Riviere
State Senator Russell E. Ruderman
State Senator Maile S.L. Shimabukuro
State Senator Laura H. Thielen
State Representative Rida Cabanilla
Arakawa
State Representative Romy M. Cachola
State Representative Richard P. Creagan
State Representative Lynn DeCoite
State Representative Sharon E. Har
State Representative Troy N. Hashimoto
State Representative Daniel Holt
State Representative Nicole E. Lowen
State Representative Angus L.K. McKelvey
State Representative Val Okimoto
State Representative Richard H.K. Onishi
State Representative Amy A. Perruso
State Representative David A. Tarnas
State Representative Cynthia Thielen
State Representative Chris Todd
State Representative Tina Wildberger
State Representative Justin H. Woodson
State Representative Ryan I. Yamane
State Representative Kyle T. Yamashita

Organizations

Aha Moku Council
Alexander & Baldwin
Hawai'i Farm Bureau
Kīpahulu Wai Hui
Mahi Pono
Maui County Farm Bureau
Na Moku Aupuni O Ko'olau Hui

Individuals

Sam Akoi
Dan Clark
Lezley Jacintho
Moses Kahiamoe, Jr.
Jerome Kekiwi, Jr.
Mikala Minn
Mavis Oliveira
Jeffrey Paisner
Hokuao Pellegrino
Max Pichay
Megan Powers
Ramana and Nalanipo Sawyer
Lyn Scott
Edward & Mahealani Wendt
Zack Williams

Appendix A.2 Follow-up Correspondence from Ku'iwalu and List of Recipients

From: Kanani Kealalio
Sent: Tuesday, May 21, 2019 12:19 PM
To: [REDACTED]
Cc: Dawn Chang <dnschang@kuiwalu.com>
Subject: HDOA - East Maui Water Systems Improvement Project

Sent on behalf of Dawn Chang

May 21, 2019

Aloha [REDACTED],

I believe you have received from Brian Kau, with the Hawai'i Department of Agriculture (HDOA) a letter providing you an update on their East Maui Water Systems Improvement Project. Attached is the letter for your reference. As the letter indicates I am part of the HDOA Project Team and will be contacting key stakeholders to gather relevant input to identify and assess potential projects for HDOA's consideration as potential water improvement projects. The legislative intent that will provide capital improvement funding (CIP) for the Project, is for plans, design, and construction for irrigation and water delivery systems in East Maui to support agricultural purposes. In particular, they are looking for projects that will support small farmers in East Maui to promote local food production.

My style of outreach for most projects that I'm involved in, is to have personal one-on-one, candid talk story meetings with key stakeholders who can share their mana'o with me, and thus I'm reaching out to you. I am particularly interested in hearing from you, of potential projects that could be considered by HDOA for use of the CIP funds. Due to legislation, HDOA must expend the CIP funds by 2020. Thus, they are interested in identifying projects that can be planned, designed, and procured through the bid process for construction by summer 2020. For example, projects on government owned lands, infrastructure improvements that can be maintained by an agency or organization, projects that have community support, and projects that will ultimately support local farmers to promote local food production.

I'm including Kanani Kealalio with my office who will initiate contact to coordinate a convenient time for us to meet. I greatly appreciate your kōkua in sharing your mana'o and look forward to our talk story.

Mālama pono a me a hui hou,
Dawn Chang

Dawn N.S. Chang, Principal | Ku'iwalu Consulting | 1003 Bishop St., Suite 750, Pauahi Tower, Honolulu, Hawai'i 96813 | D: (808) 539-3583 | F: (808) 539-3581 | E: dnschang@kuiwalu.com | www.kuiwalu.com

Kanani Kealalio
1003 Bishop St., Suite 750
Honolulu, Hawaii 96813
Tel: 808-539-3588
Fax: 808-539-3581



State Agencies

Department of Agriculture
Department of Hawaiian Home Lands
Department of Land and Natural Resources, Commission on Water Resource Management

County of Maui

Department of Water Supply

Elected Officials

State Senator Rosalyn H. Baker
State Senator J. Kalani English
State Senator Gilbert Keith-Agaran
State Representative Lynn DeCoite
Maui County Councilmember Shane Sinenci

Organizations

Aha Moku Council
Alexander & Baldwin
Hawai'i Farm Bureau
Kīpahulu Wai Hui
Mahi Pono
Maui County Farm Bureau
Na Moku Aupuni O Ko'olau Hui

Individuals

Sam Akoi
Dan Clark
Lezley Jacintho
Moses Kahiamoe, Jr.
Jerome Kekiwi, Jr.
Mikala Minn
Mavis Oliveira
Jeffrey Paisner
Hokuao Pellegrino
Max Pichay
Megan Powers
Ramana and Nalanipo Sawyer
Lyn Scott
Edward and Mahealani Wendt
Zack Williams

Appendix A.3 Summary of Site Visits

Date	Site Location(s)	Group/Person(s) Visited
6/18/2019	Wailuanui – Site 1	Na Moku Aupuni O Ko’olau Hui Mahealani Wendt, Bush Martin and Avraham “Avi” Elkayam

	Wailuanui – Site 2	Na Moku Aupuni O Ko’olau Hui Mahealani Wendt, Bush Martin and Avraham “Avi” Elkayam
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Date	Site Location(s)	Group/Person(s) Visited
7/3/2019	Ke’anae Peninsula	Ke’anae Taro Farmers Dan and Sharon Clark and Max Pichay

Date	Site Location(s)	Group/Person(s) Visited
7/24/2019	Honopou	Honopou Kalo Farmers Lyn Scott, Sanford Kekahuna, Michael Magliato and Lezley Jacintho

Date	Site Location(s)	Group/Person(s) Visited
8/6/2019	Nahiku	Nahiku Taro Farmers Zack Williams and Russell Stoner

Date	Site Location(s)	Group/Person(s) Visited
8/6/2019	Kīpahulu	Kīpahulu Wai Hui Pat and Patrick O’Connell Aina O Kīpahulu Lily Boerner and Carol Best

Appendix A.4 Publication of Public Meetings

NOTICE OF PUBLIC MEETINGS

The Hawaii Department of Agriculture (HDOA) announces two (2) public meetings relating to the East Maui Water Systems Improvements Project (Project). In 2018, the Hawaii State Legislature appropriated capital improvement project (CIP) funding for the Project. The CIP funds are for plans, design & construction for irrigation & water delivery systems in East Maui to support agricultural purposes. The legislative intent was to primarily support small farmers in East Maui to further the State's goals of food security & self-sufficiency.

The purpose of the meetings is to provide the community with updates on the Project, present potential conceptual plans for improvements/repair of water systems as identified by East Maui farmers for consideration, assess any other potential water repairs/improvements identified by the community, & address any public comments.

The Project intends to support farmers by addressing agricultural water-related infrastructure repairs/improvements throughout East Maui. The Project goal is to repair/improve existing water infrastructure to assist East Maui farmers.

Please consider attending one of the public meetings:

Friday, 9/27/19, 6-8 p.m. @ Haiku Elementary School Cafeteria, 105 Pauwela Rd, Haiku, Maui;

Saturday, 9/28/19, 4-6 p.m. @ Keanae Congregational Church, located on the Peninsula, 13705 Hana Hwy, Keanae, Maui.

For further information, or if you need an auxiliary aid/service or other accommodation due to a disability, please contact Janice Fujimoto at 808-973-9473 or via email at janice.fujimoto@hawaii.gov as soon as possible, preferably by September 20, 2019. If a response is received after September 20, 2019, we will try to obtain the auxiliary aid/service or accommodation, but we cannot guarantee that the request will be fulfilled.

(MN: Aug. 17, 2019)

Appendix A.5 Updated notification to stakeholders of Public Meetings and List of Recipients

From: Kanani Kealalio
Sent: Thursday, August 15, 2019 12:41 PM
To: Dawn Chang <dnschang@kuiwalu.com>
Subject: Announcement of Public Meeting related to HDOA's East Maui Water Systems Improvement Project

Sent on behalf of Dawn Chang:

August 15, 2019

Aloha Mai Kākou,

A short while ago, you received the attached letter from Brian Kau with the Hawai'i Department of Agriculture (HDOA). His letter provided an introduction to HDOA's East Maui Water Systems Improvement Project (Project). As the letter indicated, Phase 1 of the Project would entail the Project Team (specifically Puna Kaneakua from AECOM and myself) meeting with key stakeholders to gather relevant input to identify and assess potential projects for HDOA's consideration. On behalf of HDOA, we have just about completed Phase 1 of the Project and would like to provide the community with updates on the Project, present potential conceptual plans for improvements/repair of water systems as identified by East Maui farmers for consideration, assess any other potential water repairs/improvements identified by the community, and address any public comments.

There will be two public meetings on Maui and we would invite you to attend one of the public meetings.

- Friday, 9/27/19, 6-8 p.m. @ Haiku Elementary School Cafeteria, 105 Pauwela Road, Haiku, Maui;
- Saturday, 9/28/19, 4-6 p.m. @ Keanae Congregational Church, located on the Keanae Peninsula, 13705 Hana Hwy, Keanae, Maui.

I wanted to provide a courtesy advanced notice of the meeting announcement. Attached for your reference and appropriate distribution is a copy of the notice that will be published in the Maui News on Saturday, August 17, 2019. Should you have any questions regarding the public meeting, please contact Janice Fujimoto at 808-973-9473 or via email at Janice.fujimoto@hawaii.gov.

Mālama pono,
Dawn Chang

Dawn N.S. Chang, Principal | Ku'iwalu Consulting | 1003 Bishop St., Suite 750, Pauahi Tower, Honolulu, Hawai'i 96813 | D: (808) 539-3583 | F: (808) 539-3581 | E: dnschang@kuiwalu.com | www.kuiwalu.com

Kanani Kealalio
1003 Bishop St., Suite 750
Honolulu, Hawaii 96813
Tel: 808-539-3588
Fax: 808-539-3581



State Agencies

Department of Agriculture
Department of Hawaiian Home Lands
Department of Land and Natural Resources,
Commission on Water Resource
Management

County of Maui

Department of Planning
Department of Water Supply

Elected Officials

State Senator Rosalyn H. Baker
State Senator Donavan M. Dela Cruz
State Senator J. Kalani English
State Senator Kurt Fevella
State Senator Mike Gabbard
State Senator Les Ihara, Jr.
State Senator Kaiiali'i Kahele
State Senator Gilbert Keith-Agaran
State Senator Jarrett Keohokalole
State Senator Clarence K. Nishihara
State Senator Karl Rhoads
State Senator Gil Riviere
State Senator Russell E. Ruderman
State Senator Maile S.L. Shimabukuro
State Senator Laura H. Thielen
State Representative Rida Cabanilla
Arakawa
State Representative Romy M. Cachola
State Representative Richard P. Creagan
State Representative Lynn DeCoite
State Representative Sharon E. Har
State Representative Troy N. Hashimoto
State Representative Daniel Holt
State Representative Nicole E. Lowen
State Representative Angus L.K. McKelvey
State Representative Val Okimoto
State Representative Richard H.K. Onishi
State Representative Amy A. Perruso
State Representative David A. Tarnas
State Representative Cynthia Thielen
State Representative Chris Todd
State Representative Tina Wildberger
State Representative Justin H. Woodson
State Representative Ryan I. Yamane
State Representative Kyle T. Yamashita
Maui County Councilmember Shane Sinenci

Organizations

Aha Moku Council
Aina O Kīpahulu
Alexander & Baldwin
Hawai'i Farm Bureau
Kīpahulu Wai Hui
Mahi Pono
Maui County Farm Bureau
Na Moku Aupuni O Ko'olau Hui

Individuals

Sam Akoi
Carol Best
Lily Boerner
Dan and Sharon Clark
Avraham "Avi" Elkayam
Lezley Jacintho
Moses Kahiamoe, Jr.
Sanford Kekahuna
Jerome Kekiwi, Jr.
Michael Magliato
Norman "Bush" Martin
Mikala Minn
Patrick and Pat O'Connell
Mavis Oliveira
Jeffrey Paisner
Hokuao Pellegrino
Max Pichay
Megan Powers
Ramana and Nalanipo Sawyer
Lyn Scott
Russell Stoner
Edward and Mahealani Wendt
Zack Williams

Appendix A.6 Sign-in Sheet of Attendees at Public Meetings

**Hawai'i Department of Agriculture Public Meeting
 for
 East Maui Water Systems Improvements Project**

Friday, September 27, 2019
 6:00 p.m. to 8:00 p.m.

Haiku Elementary School, Cafeteria
 105 Pauwela Road
 Haiku, Maui 96708

SIGN-IN SHEET

	PRINT FIRST & LAST NAME/ORGANIZATION (if any)	E-MAIL OR MAILING ADDRESS	Would you like to be kept informed?
1.	Shay & Ian Chan Hodge <i>City of Maui</i>	shay.chanhodge@gmail.com	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
2.	Gladys & Sharmen Baroa	gladys.baroa@co.maui.hi.us	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
3.	Lesley Jacintho	lesleyjacintho@gmail.com	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
4.	Faith Chase	faith@farmersvoicehawaii.com	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
5.			YES <input type="checkbox"/> NO <input type="checkbox"/>
6.			YES <input type="checkbox"/> NO <input type="checkbox"/>
7.			YES <input type="checkbox"/> NO <input type="checkbox"/>
8.			YES <input type="checkbox"/> NO <input type="checkbox"/>
9.			YES <input type="checkbox"/> NO <input type="checkbox"/>
10.			YES <input type="checkbox"/> NO <input type="checkbox"/>

Pg 1 of 2

**Hawai'i Department of Agriculture Public Meeting
 for
 East Maui Water Systems Improvements Project**

Saturday, September 28, 2019
 4:00 p.m. to 6:00 p.m.

Ke'anae Congregational Church
 13705 Hana Highway (Ke'anae Peninsula)
 Ke'anae, Maui 96708

SIGN-IN SHEET

	PRINT FIRST & LAST NAME/ORGANIZATION (if any)	E-MAIL OR MAILING ADDRESS	Would you like to be kept informed?	
	Dan Clark	ondoc@hawaiiangel.net	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1.	Russell DeLoite	M. Iloka Sweet Potato @ gmail.com	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	Lynn DeLoite	repde@capital.hawaii.gov	<input type="checkbox"/>	<input type="checkbox"/>
3.	Edward Wendt Mahealani Wendt	mailuanui@exede.net	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.			<input type="checkbox"/>	<input type="checkbox"/>
5.			<input type="checkbox"/>	<input type="checkbox"/>
6.			<input type="checkbox"/>	<input type="checkbox"/>
7.			<input type="checkbox"/>	<input type="checkbox"/>
8.			<input type="checkbox"/>	<input type="checkbox"/>
9.			<input type="checkbox"/>	<input type="checkbox"/>
10.			<input type="checkbox"/>	<input type="checkbox"/>

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Hawai'i Department of Agriculture Public Meeting
 for
 East Maui Water Systems Improvements Project

Saturday 28
 Friday, September 27, 2019
 6:00 p.m. to 8:00 p.m.
 4:00 6:00

Ke-anae Congregational Church
 13705 Hana Hwy (Ke-anae Peninsula)
 Ke-anae, Maui 96708

SIGN-IN SHEET

	PRINT FIRST & LAST NAME/ORGANIZATION (if any)	E-MAIL OR MAILING ADDRESS	Would you like to be kept informed?	
			YES	NO
11.	Jerome Kekwi Jr.	kanakakab@gmail.com	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12.	ED WENDT	185 WILCO	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13.	Janet Redo	Keanae wredo@gmail.com	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14.	George Aquino	gkeanae@gmail.com	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15.	Michael Kuspnick	mweemine@aol.com	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16.			<input type="checkbox"/>	<input type="checkbox"/>
17.			<input type="checkbox"/>	<input type="checkbox"/>
18.			<input type="checkbox"/>	<input type="checkbox"/>
19.			<input type="checkbox"/>	<input type="checkbox"/>
20.			<input type="checkbox"/>	<input type="checkbox"/>

Appendix B Prioritization Matrix

- B.1 Criteria
- B.2 Design Options
- B.3 Scorecard
- B.4 Proposed Projects
- B.5 Ke'anae
- B.6 Wailuanui
- B.7 Waikani Falls
- B.8 Honopou
- B.9 Nahiku

Appendix B.1 Criteria

Criteria	Objective	Significance 1-5 Low-High
Community Support	Community in favor of potential improvement(s).	4
Environmental, cultural, and natural resources	Beneficial impacts to environmental, cultural, and natural resources.	3
Traditional and customary native Hawaiian rights	Beneficial impacts to traditional and customary native Hawaiian rights.	3
Landownership	Public Land. Public funding directed exclusively to public property only.	4
Legislative intent	Consistent with legislative intent to serve public benefit and support food security and self-sufficiency.	5
PERMITTING		
COE (SECTION 10, 404)	Permit requirements satisfied within schedule. Submit determination request (1 month timeframe estimate).	1
DOH (NPDES, Section 401)	Permit requirements satisfied within schedule. 1 month timeframe estimate). No NPDES permit required if project area is less than one acre.	1
SHPD	Permit requirements satisfied within schedule. A determination is required under HRS Chapter 6E (90 days from submittal). Consultation with stakeholders about impacts to cultural and historic resources is required under 6E due to criterion E significance of site.	2
OCCL - CDUA	Permit requirements satisfied within schedule.	1
Maui County SMA - MINOR	Permit requirements satisfied within schedule. 3 months time frame estimate.	1
DESIGN		
Design	Design solution effectively addresses current need.	4
Constructability	Available site access, material availability, ease of construction, i.e. Right of Entry, Easements, Cost.	3
Value	Cost effective long term solution	4

Appendix B.2 Design Options

	Option A	Option B	Option C
Ke'anae	Replacement of 'auwai with piping.	Stabilize 'auwai banks just downstream of diversion box.	Clear the boulders in the 'auwai upstream of the flume.
Wailuanui	Repair portions of the 'auwai with grouted rip rap or similar means.	Replace portions of the 'auwai with 2-24" HDPE pipe.	
Waikani Falls	CCTV inspection of the piping to locate and identify the blockage or damage in order to develop a proposed repair/replacement method.	Repair/replace the damaged or blocked pipe and repair/replace the inlet at the pond.	
Honopou	Repair the wall of the 'auwai with grouted rip rap.	Repair the wall of the 'auwai with hand placed un-grouted rip rap.	
Nahiku	Replace the two smaller pipes with one larger pipe.	Repair the actual 'auwai in its entirety.	

Appendix B.3 Scorecard

Criteria		Waikani											
		Ke'anae			Wailuanui		Falls		Honopou		Nahiku		
Option	Significance 1-5 Low-High	A	B	C	A	B	A	B	A	B	A	B	
		Rating (1-5; least-most aligned)											
Community Support	4	5	4	4	5	5	5	5	5	5	5	5	
Environmental, cultural, and natural resources	3	5	5	5	5	5	5	3	5	5	5	5	
Traditional and customary native Hawaiian rights	3	3	5	5	5	5	5	5	5	5	5	5	
Landownership	4	1	5	1	5	5	5	5	5	5	5	5	
Legislative intent	5	3	5	4	5	5	4	4	2	2	2	2	
PERMITTING													
COE (SECTION 10, 404)	1	5	5	5	5	5	5	2	5	5	5	4	
DOH (NPDES, Section 401)	1	5	5	5	5	5	5	2	5	5	5	5	
SHPD	2	4	5	5	4	4	5	4	5	5	4	4	
OCCL - CDUA	1	5	5	5	5	5	5	5	5	5	5	5	
Maui County SMA - MINOR	1	5	5	5	5	5	5	5	5	5	5	5	
DESIGN													
Design	4	5	5	5	5	5	5	3	5	4	5	5	
Constructability	3	5	5	5	4	4	3	1	3	3	5	2	
Value	4	3	4	5	4	5	5	3	5	3	5	3	
Total		138	172	155	171	175	169	133	159	147	163	145	

Appendix B.4 Proposed Projects

Area	Score	Preferred Option	Description	Construction Cost
Wailuanui B	175	Replace the 'auwai with 2-24" HDPE pipe.	Includes mobilization, clearing and grubbing, installation of two 24" HDPE pipes (1320 LF each), installation and removal of BMP, and field archaeological on-site monitoring. Mobilizing material and equipment to the site via construction of a gravel access path.	\$ 1,022,000
Ke'anae B	172	Stabilize 'auwai banks just downstream of diversion box.		\$ 109,000
Wailuanui A	171	Repair the 'auwai with grouted rip rap or similar means.	Estimate based upon repair of a 300 foot section of 'auwai. Repairs to include clearing/grubbing, stabilizing banks of the 'auwai. Mobilizing equipment to the site via helicopter. Relatively higher cost than piping, but inline with traditional practices.	\$ 2,173,000
Waikani Falls A	169	CCTV inspection of the piping to identify the blockage or damage.	Estimate based upon the assumption that the contractor can get their CCTV equipment within pipe access range using an ATV. Estimate includes mobilization and three eight hour days of work (one on-site and two offsite preparing and reconfiguring the CCTV van). Estimate does not include ATV rental cost.	\$ 14,859
Nahiku A	163	Replace the two smaller pipes with one larger pipe.	Includes mobilization, clearing and grubbing, demolition/removal of existing smaller pipes, installation of one 6" HDPE pipe (200 LF), installation and removal of BMP, and field archaeological on-site monitoring. Assuming construction of a gravel access path.	\$ 78,900
Honopou A	159	Repair the banks of Honopou stream with grouted rip rap.	Estimate based upon repair of a 45 foot section of the bank, restoration of access road, and water quality monitoring. Actual repair area may be smaller and reduce the overall cost.	\$ 271,000
Construction Subtotal				\$ 3,668,759
Design & Permitting Subtotal (10%)				\$ 366,876
Construction Management (5%)				\$ 183,438
Planning Subtotal (Contract to Date)				\$ 239,017
GRAND TOTAL				\$ 4,458,090
Remaining Available Balance of \$4.5M Funding				\$ 41,910

Appendix B.5 Ke‘anae

Criteria	Significance 1-5 Low-High	Ke‘anae					
		A		B		C	
Community Support	4	Local farmers support the proposed project. There are separate water issues that need to be worked out internally with the various adjacent farms.	5	Local farmers support the proposed project. This improvement would improve overall water delivery to all the farmers on the Ke‘anae Peninsula.	4	Local farmers support the proposed project. This improvement would improve overall water delivery to all the farmers on the Ke‘anae Peninsula.	4
Environmental, cultural, and natural resources	3	Beneficial impacts to environmental, cultural and natural resources through more efficient water delivery.	5	Beneficial impacts to environmental, cultural and natural resources through more efficient water delivery and reduced maintenance.	5	Beneficial impacts to environmental, cultural and natural resources through more efficient water delivery and reduced maintenance.	5
Traditional and customary native Hawaiian rights	3	Proposed project improves water delivery and reliability for use in downstream lo‘i kalo. Some farmers may feel that pipe is not inline with traditional practices.	3	Proposed project improves water delivery and reliability for use in downstream lo‘i kalo. Less impactful to traditional practices than piping.	5	Proposed project improves water delivery and reliability for use in downstream lo‘i kalo. Less impactful to traditional practices than piping.	5
Landownership	4	Private/Public. Portions of the project on private lands could be an issue.	1	Project would occur on Private lands.	1	Project would occur on Private lands.	5
Legislative intent	5	Yes, but only services a small group of farmers.	3	Yes, this project would benefit all farmers on the Ke‘anae Peninsula.	4	Yes, this project would benefit all farmers on the Ke‘anae Peninsula.	5
PERMITTING							
COE (SECTION 10, 404)	1	Likely eligible for formal Exemption process from a 404 permit. This project may be defined as “construction and maintenance of...irrigation ditches.” There would be no impact to the schedule.	5	Likely eligible for formal Exemption process from a 404 permit. This project may be defined as “construction and maintenance of...irrigation ditches.” There would be no impact to the schedule.	5	Likely eligible for formal Exemption process from a 404 permit. This project may be defined as “construction and maintenance of...irrigation ditches.” There would be no impact to the schedule.	5
DOH (NPDES, Section 401)	1	401 permit required. No schedule impacts as DOH has stated that they expedite these minor type of permits.	5	401 permit required. No schedule impacts as DOH has stated that they expedite these minor type of permits.	5	401 permit required. No schedule impacts as DOH has stated that they expedite these minor type of permits.	5

Criteria	Significance 1-5 Low-High	Ke'anae					
		A		B		C	
SHPD	2	Review required as there are known cultural resources. No schedule impacts.	4	Review required as there are known cultural resources, however, work will take place away from cultural resources. No schedule impacts.	5	Review required as there are known cultural resources, however, work will take place away from cultural resources. No schedule impacts.	5
OCCL - CDUA	1	No CDUA permit required.	5	No CDUA permit required.	5	No CDUA permit required.	5
Maui County SMA - MINOR	1	May qualify for SMA exemption or possible minor permit. No schedule impacts.	5	May qualify for SMA exemption or possible minor permit. No schedule impacts.	5	May qualify for SMA exemption or possible minor permit. No schedule impacts.	5
DESIGN							
Design	4	Design would be relatively straight forward. While accepted by certain members of the community, there would be further coordination needed to get full buy in.	5	Design would be straight forward as this is more of a maintenance activity rather than a design project.	5	Yes, however, will not be as efficient as piping due to some evaporative loss and possible vegetative growth that will require maintenance.	5
Constructability	3	Site access available. Less complicated than other sites.	5	Site access available from Hana highway.	5	Site access available. Less complicated than other sites.	5
Value	4	\$350,000 Estimate based upon 1,500 linear feet of 18" corrugated pipe, concrete headwall, and gravel access road. Relatively high cost for the number of farmers served.	3	\$81,000 Relatively low cost for the number of farmers served.	5	\$109,000	4
Total	0		138		155		172

Appendix B.6 Wailuanui

Criteria	Significance 1-5 Low-High	Wailuanui			
		A		B	
Community Support	4	Proposed project would allow safe access to the 'Auwai for maintenance. The proposed project is supported by the community.	5	Proposed project would allow safe access to the 'Auwai for maintenance and would alleviate the need for frequent maintenance. The proposed project is supported by the community.	5
Environmental, cultural, and natural resources	3	Proposed project would improve access and water flow which would have a positive impact on the downstream areas.	5	Proposed project would improve access and water flow which would have a positive impact on the downstream areas.	5
Traditional and customary native Hawaiian rights	3	Proposed project improves water delivery and reliability for use in downstream lo'i kalo.	5	Proposed project improves water delivery and reliability for use in downstream lo'i kalo	5
Landownership	4	Public	5	Public	5
Legislative intent	5	Yes, this project would provide more consistent water flow to the Wailuanui farmers.	5	Yes, this project would provide more consistent water flow to the Wailuanui farmers.	5
PERMITTING					
COE (SECTION 10, 404)	1	Likely eligible for formal Exemption process from a 404 permit. This project may be defined as "construction and maintenance of...irrigation ditches." To be determined to be exempt, the activity can be no more than 500 feet in length. There would be no impact to the schedule.	5	Likely eligible for formal Exemption process from a 404 permit. This project may be defined as "construction and maintenance of...irrigation ditches." To be determined to be exempt, the activity can be no more than 500 feet in length. There would be no impact to the schedule.	5
DOH (NPDES, Section 401)	1	401 permit required. No schedule impacts as DOH has stated that they expedite these minor type of permits.	5	401 permit required. No schedule impacts as DOH has stated that they expedite these minor type of permits.	5
SHPD	2	Review required as there are known cultural resources. No schedule impacts.	4	Review required as there are known cultural resources. No schedule impacts.	4
OCCL - CDUA	1	No CDUA permit required.	5	No CDUA permit required.	5
Maui County SMA - MINOR	1	May qualify for SMA or possible minor permit. No schedule impacts.	5	May qualify for SMA exemption or possible minor permit. No schedule impacts	5
DESIGN					
Design	4	Design solution is feasible.	5	Design solution is feasible.	5
Constructability	3	Access to the site is difficult. Materials would need to be mobilized via helicopter which drives up the cost.	4	Access to the site is difficult. Materials may need to be mobilized via helicopter, which drives up the cost.	4
Value	4	\$2,173,000 Estimate based upon repair of a 300 foot section of 'auwai. Repairs to include clearing/grubbing, stabilizing banks of the 'auwai. Mobilizing equipment to the site via helicopter. Relatively higher cost than piping, but inline with traditional practices.	4	\$1,022,000 Includes mobilization, clearing and grubbing, installation of two 24" HDPE pipes (1320 LF each), installation and removal of BMP, and field archaeological on-site monitoring. Mobilizing material and equipment to the site via construction of a gravel access path.	5
Total	0		171		175

Appendix B.7 Waikani Falls

Criteria	Significance 1-5 Low-High	Waikani Falls			
		A		B	
Community Support	4	Local farmers are in support of the proposed pipeline assessment.	5	Local farmers are in support of the replacement of the blocked pipe section.	5
Environmental, cultural, and natural resources	3	Proposed project would not have an impact on environmental, cultural or natural resources.	5	Proposed project would involve work in the stream and would require abatement measures to mitigate impacts to the environmental, cultural and natural resources in the area.	3
Traditional and customary native Hawaiian rights	3	Proposed project will assess the existing pipeline condition and will have no impact to traditional and customary native Hawaiian rights.	5	Proposed project would improve water flow to the Wailuanui farmers and would have a beneficial impact to the traditional and customary native Hawaiian rights.	5
Landownership	4	Public	5	Public	5
Legislative intent	5	Yes, this project would provide insight as to why the pipeline is blocked and provide a path forward for repair of the pipeline.	4	Yes, this project would restore water flow to the east side of Wailuanui.	4
PERMITTING					
COE (SECTION 10, 404)	1	This would be an assessment only and would not require permitting from COE. There would be no impact to the schedule.	5	Due to the work in the stream a Nationwide Permit 13 may be required and would impact the schedule.	2
DOH (NPDES, Section 401)	1	This would be an assessment only and would not require permitting from DOH. There would be no impact to the schedule.	5	Due to the work in the stream a 401 permit is required and would impact the schedule.	2
SHPD	2	This is considered a maintenance project and no consultation or 6E determination is required.	5	Review required as there are known cultural resources. No schedule impacts.	4
OCCL - CDUA	1	No CDUA permit required.	5	No CDUA permit required.	5
Maui County SMA - MINOR	1	Exempt from SMA requirements as this is an assessment only.	5	May qualify for SMA exemption or possible minor permit. No schedule impacts	5
DESIGN					
Design	4	No design required.	5	Replacing the pipe would be a relatively simple design solution. The challenge may be in designing a new headwall and inlet system to protect the pipe from falling boulders.	3
Constructability	3	Access to the site is difficult. Path clearing may be required to allow mobilization of CCTV equipment.	3	Access to the site is difficult. Pipe and other materials may need to be mobilized to the site via helicopter which would drive up cost.	1
Value	4	\$14,859 Estimate based upon the assumption that the contractor can get their CCTV equipment within pipe access range using an ATV. Estimate includes mobilization and three eight hour days of work (one on-site and two offsite preparing and reconfiguring the CCTV van). Estimate does not include ATV rental cost.	5	Pending	3
Total	0		169		133

Appendix B.8 Honopou

Criteria	Significance 1-5 Low-High	Honopou			
		A		B	
Community Support	4	Local farmers are in support of the proposed project which would ensure reliable water delivery.	5	Local farmers are in support of the proposed project which would ensure reliable water delivery.	5
Environmental, cultural, and natural resources	3	Beneficial impacts to environmental, cultural and natural resources through more reliable water delivery.	5	Beneficial impacts to environmental, cultural and natural resources through more reliable water delivery.	5
Traditional and customary native Hawaiian rights	3	Proposed project improves water delivery and reliability for use in downstream lo'i kalo.	5	Proposed project improves water delivery and reliability for use in downstream lo'i kalo.	5
Landownership	4	Public.	5	Public.	5
Legislative intent	5	Yes, however this project only serves a small group of farmers.	2	Yes, however this project only serves a small group of farmers.	2
PERMITTING					
COE (SECTION 10, 404)	1	Likely eligible for formal Exemption process from a 404 permit. This project may be defined as "construction and maintenance of...irrigation ditches." There would be no impact to the schedule.	5	Likely eligible for formal Exemption process from a 404 permit. This project may be defined as "construction and maintenance of...irrigation ditches." There would be no impact to the schedule.	5
DOH (NPDES, Section 401)	1	401 permit required. No schedule impacts as DOH has stated that they expedite these minor type of permits.	5	401 permit required. No schedule impacts as DOH has stated that they expedite these minor type of permits.	5
SHPD	2	Possible this can be characterized as a maintenance project; should assume need to submit project for 6E determination (90 days) but no consultation with stakeholders required.	5	Possible this can be characterized as a maintenance project; should assume need to submit project for 6E determination (90 days) but no consultation with stakeholders required.	5
OCCL - CDUA	1	No CDUA permit required.	5	No CDUA permit required.	5
Maui County SMA - MINOR	1	May qualify for SMA exemption or possible minor permit. No schedule impacts.	5	May qualify for SMA exemption or possible minor permit. No schedule impacts.	5
DESIGN					
Design	4	Design solution is relatively straight forward.	5	Design solution is relatively straight forward. This solution may not be as long lasting as a grouted rip rap solution.	4
Constructability	3	Available site access via existing gravel access road. Construction will require in-water work.	3	Available site access via existing gravel access road. Construction will require in-water work.	3
Value	4	\$271,000 Estimate based upon repair of a 45 foot section of the bank, restoration of access road, and water quality monitoring. Actual repair area may be smaller and reduce the overall cost.	5	\$315,000 Estimate based upon repair of a 45 foot section of the bank, restoration of access road, and water quality monitoring. Actual repair area may be smaller and reduce the overall cost. This repair would not be as long lasting as the grouted rip rap solution.	3
Total	0		159		147

Appendix B.9 Nahiku

Criteria	Significance 1-5 Low-High	Nahiku			
		A		B	
Community Support	4	Local farmers are in support of the proposed project which would ensure reliable water delivery.	5	Local farmers are in support of the proposed project which would ensure reliable water delivery.	5
Environmental, cultural, and natural resources	3	Beneficial impacts to environmental, cultural and natural resources through more reliable water delivery.	5	Beneficial impacts to environmental, cultural and natural resources through more reliable water delivery.	5
Traditional and customary native Hawaiian rights	3	Proposed project improves water delivery and reliability for use in downstream lo'i kalo.	5	Proposed project improves water delivery and reliability for use in downstream lo'i kalo.	5
Landownership	4	Public.	5	Public.	5
Legislative intent	5	Yes, however this project only serves a small group of farmers.	2	Yes, however this project only serves a small group of farmers.	2
PERMITTING					
COE (SECTION 10, 404)	1	Likely eligible for formal Exemption process from a 404 permit. This project may be defined as "construction and maintenance of...irrigation ditches." There would be no impact to the schedule.	5	Likely eligible for formal Exemption process from a 404 permit. This project may be defined as "construction and maintenance of...irrigation ditches." To be determined to be exempt, the activity can be no more than 500 feet in length. There would be no impact to the schedule.	4
DOH (NPDES, Section 401)	1	401 permit required. No schedule impacts as DOH has stated that they expedite these minor type of permits.	5	401 permit required. No schedule impacts as DOH has stated that they expedite these minor type of permits.	5
SHPD	2	Review required as there are known cultural resources. No schedule impacts.	4	Review required as there are known cultural resources. No schedule impacts.	4
OCCL - CDUA	1	No CDUA permit required.	5	No CDUA permit required.	5
Maui County SMA - MINOR	1	May qualify for SMA exemption or possible minor permit. No schedule impacts.	5	May qualify for SMA exemption or possible minor permit. No schedule impacts.	5
DESIGN					
Design	4	Design solution is relatively straight forward.	5	Design solution is relatively straight forward.	5
Constructability	3	Access to the site is by foot only. The smaller pipes proposed could be hand carried into the site.	5	Access to the site is by foot only. Grout could be hand carried into the area, but this would drive up cost. The current bridge to access the site is not rated for heavy equipment.	2
Value	4	\$78,900 Includes mobilization, clearing and grubbing, demolition/removal of existing smaller pipes, installation of one 6" HDPE pipe (200 LF), installation and removal of BMP, and field archaeological on-site monitoring. Assuming construction of a gravel access path.	5	\$265,000 Estimate based upon repair of a 100 linear feet of the 'auwai and gravel access road.	3
Total	0		163		145

Appendix C Agency Coordination Meeting Minutes

- C.1 OCCL Meeting
- C.2 COE Meeting
- C.3 OEQC Meeting
- C.4 DOH Meeting
- C.5 SHPD Meeting

EAST MAU‘I WATER SYSTEM IMPROVEMENTS OCCL MEETING MINUTES

Project Name: East Mau‘i Water System Improvements
Date/Time: July 23, 2019/1:00 P.M. – 2:00 P.M.
Location: State Office of Conservation and Coastal Lands (OCCL)
Meeting Goal: Determine if Conservation District Use Permits or some type of OCCL review would be required for our various projects

I. Meeting Attendees

- Michael Cain – OCCL Planner
- Puna Kaneakua – AECOM Project Manager/Engineer
- Jeff Merz – AECOM Planner

II. Background and Notes

AECOM provided the background and purpose of the proposed projects, state funding for the projects, infrastructure upgrades being considered, the public outreach to date (and role of Ku‘iwalu) and the planned public hearings in the coming months.

The focus of the discussion was on typical types of upgrades and what types of permitting would be required/not required from OCCL. The specific geographical locations were listed as examples.

OCCL noted that any projects proposed outside the State Conservation District would fall out of the purview of OCCL. Only projects in the Conservation District would be subject to permitting and review provisions of Hawaii Administrative Rules Chapter 13-5.

OCCL outlined the various types of review/permits that may be required for these types of projects.

Under provisions of HAR 13-5-24, and specifically cited by OCCL under category P-8 *Structures and Land Uses, Existing*

- No permit (A) is required for minor repair, maintenance, and operation to an existing structure, facility, use, land, and equipment.
- A site approval permit (B) for demolition, removal, or minor alteration of existing structures, facilities, land and equipment.
- Departmental approval (C) for moderate alteration of existing structures, facilities, uses, and equipment.

Category D is for a Board approval, but it is unlikely any of the proposed projects would rise to the level of needing this type of approval.

If a Site Approval (B) is needed, there is a \$50 processing fee and the process for approval takes approximately 30 days.

The tight schedule (June 2020) was discussed. OCCL noted that it is very unlikely the OCCL permit process would take very long.

OCCL noted that the agency is currently in the process of drafting new rules to address lo'i and kalo farming, but that process is in the early stages and will likely not be applicable to our projects.

OCCL requested that once specific Tax Map Keys (TMKs) are known for the various projects, that:

- Owners be confirmed.
- A meeting with the DLNR Land Division occur to investigate the status of ownership, existing permits, violations, liens, etc. for each of the parcels (TMKs).
- Confirm with the Land Division if any of the lands are kuleana lands as designated under the Great Mahele/Kuleana Act of 1850. (*Kuleana rights arose in the mid-1800s and protected the entitlement of Hawaiian tenant farmers and their descendants to, among other things, access landlocked real estate parcels*). Source: Wikipedia.
- Investigate if the projects up for improvement consideration pre-date 1964 and are therefore “grandfathered” in and therefore need no permits to rehabilitate the infrastructure.

OCCL recommended that an analysis of disturbance to roadways, surrounding ground and related areas during the construction period be completed as that may influence the type of OCCL approval needed.

OCCL suggests that DOA as applicant for these various projects, make a formal statement via a letter to OCCL that the various projects are exempt from an EA/EIS under HRS Chapter 343 where they qualify under a referenced exemption category in the DOA HEPA Exemption List. This statement will then be submitted to OCCL who will then concur with the DOA exemption determination.

OCCL offered another review and permitting determination of our projects once specific areas/TMKs are determined and we have completed a background review of same through the Land Division.

III. Action Items for AECOM

- Determine specific TMKs for various projects
- Analyze construction features and disturbance of roads/other lands.
- Meet with Land Division for background on each TMK.

EAST MAU‘I WATER SYSTEM IMPROVEMENTS COE MEETING MINUTES

Project Name: East Mau‘i Water System Improvements

Date/Time: August 1, 2019/2:00 P.M. – 3:00 P.M.

Location: U.S. Army Corps of Engineers (COE) Regulatory Office

Meeting Goal: Determine if Department of the Army (DA), Clean Water Act (CWA) Section 404 Permits will be required for proposed water system improvements; if so, identify major steps in the permitting process

I. Meeting Attendees:

- Albert Williams – COE Regulatory Specialist
- Puna Kaneakua – AECOM Project Manager/Engineer
- Courtney Cacace – AECOM Environmental Planner/Biologist
- Dawn Chang – Ku‘iwalu Principle

II. Background and Notes

- A. The State of Hawai‘i Department of Agriculture is proposing water system improvements in East Mau‘i to benefit agricultural users (e.g., taro farmers).
- B. These farms rely on water from their ‘*auwai* (traditional Hawaiian ditches that irrigate lo‘i kalo [taro patches]). These ‘*auwai* are feed by streams.
- C. The East Mau‘i Irrigation (EMI) Company has an extensive ditch, tunnel, and flume system that cuts across East Mau‘i intercepting water from these streams and conveying it to arid areas of the Island for sugar cultivation and the County water supply.
- D. The taking of water from these streams has impacted traditional Hawaiian taro farmers who cultivate lo‘i kalo.
- E. Based on recent court decisions EMI has opened gates and returned flow to approximately 13 streams in East Mau‘i from which water was previously diverted. This has allowed the local farmers to resume more extensive kalo cultivation in lo‘i traditional used prior to the water diversions. However, many of the ‘*auwai* and other parts of water systems that support these lo‘i kalo are in need of repair and improvement.
- F. The Department of Agriculture has received funding for water system improvements in East Mau‘i to benefit agricultural users. However, this funding must be incomed in a construction contract by June 2020. Which means project(s) must be selected, designed, and permitted prior to June 2020. Therefore, the extent and timeline for permitting is a consideration in project selection.

III. Potential Projects

- A. The following four potential water system improvement project were presented and discussed as examples of potential projects that may be undertaken in order to identify potential Clean Water Act (CWA) Section 404 permitting requirements that may apply to these and other similar projects.
 1. Ke‘anae Peninsula ‘*Auwai* Improvements
 2. Wailuanui Valley ‘*Auwai* Improvements
 3. Waikani Falls (Wailuanui Stream) Pipe Investigation and Repair
 4. Honopou Stream Bank Stabilization

IV. Ke‘anae Peninsula and Wailuanui Valley ‘*Auwai* Improvements

- A. Ke‘anae Peninsula ‘*Auwai* Improvements - may replace sections of ‘*auwai* with pipes
- B. Wailuanui Valley ‘*Auwai* Improvements - may repair and stabilize eroded banks of the ‘*auwai* with rip-rap or shotcrete
- C. The ‘*auwai* on the Ke‘anae Peninsula and in Wailuanui Valley are located within 1,500 feet of the Pacific Ocean (a water subject to the ebb and flow of the tides); and therefore, are likely COE Jurisdictional Waters of the U.S., per the 2015 *Clean Water Rule* and 33 CFR § 328.3 - *Definitions of Waters of the U.S.*
 1. 33 CFR § 328.3 (a) “Waters of the U.S.” mean:
 - a) 33 CFR § 328.3 (a)(1) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
 2. 33 CFR § 328.3 (c)(2) “Neighboring” means:
 - a) 33 CFR § 328.3 (c)(2)(iii) All waters located within 1,500 feet of the high tide line of a water identified in paragraphs (a)(1) or (a)(3) of this section, and all waters within 1,500 feet of the ordinary high water mark of the Great Lakes. The entire water is neighboring if a portion is located within 1,500 feet of the high tide line or within 1,500 feet of the ordinary high water mark of the Great Lakes.
- D. Proposed improvements to the ‘*auwai* may be exempt for CWA Section 404 permit requirements under 40 CFR § 232.3 – *Activities not requiring permits* and 33 CFR § 323.4 - *Discharges not requiring permits*
 1. 40 CFR § 232.3(c) The following activities are exempt from section 404 permit requirements:
 - a) 40 CFR § 232.3(c)(3) Construction or maintenance of farm or stock ponds or irrigation ditches or the maintenance (but not construction) of drainage ditches. Discharge associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant and

functionally related to irrigation ditches are included in this exemption.

Note: only applies to ongoing farming operations.

2. 33 CFR § 323.4(a) Except as specified in paragraphs (b) and (c) of this section, any discharge of dredged or fill material that may result from any of the following activities is not prohibited by or otherwise subject to regulation under section 404:
 - a) 33 CFR § 323.4(a)(3) Construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance (but not construction) of drainage ditches. Discharges associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant and functionally related to irrigation ditches are included in this exemption.
Note: only applies to ongoing farming operations.
3. These exemptions listed above may not cover the discharge of dredge and fill material needed for construction means and methods such as temporary access roads in waters or wetlands needed for equipment access and/or certain types of material potentially used for BMPs or water diversions such as cofferdams and gravel/sand bag berms and could require a 404 permit. Existing structures used for diversions, such as gates in bifurcated headwalls, do not require a 404 permit.

V. Waikani Falls (Wailuanui Stream) Pipe Investigation and Repair or Replacement

- A. Existing pipe delivers water from the pool at Waikani Fall to farmers lo‘i. The underground pipe is damaged and in need of repair or partial replacement. Sections of the pipe potentially run under and adjacent to Wailuanui Stream.
- B. Wailuanui Stream is likely a Jurisdictional Waters of the U.S., per the 2015 *Clean Water Rule* and 33 CFR § 328.3 - *Definitions of Waters of the U.S.*
 1. 33 CFR § 328.3 (a) “Waters of the U.S.” mean:
 2. 33 CFR § 328.3 (a) (5) All tributaries, as defined in paragraph (c)(3) of this section, of waters identified in paragraphs (a)(1) through (3) of this section; (*See definitions of (a)(1) Waters above*)
- C. Proposed pipe repair and/or replacement and/or other improvements at Wailuanui Stream may be exempt for CWA Section 404 permit requirements under 40 CFR § 232.3 – *Activities not requiring permits* and 33 CFR § 323.4 - *Discharges not requiring permits*
 1. 40 CFR § 232.3(c) The following activities are exempt from section 404 permit requirements:
 - a) 40 CFR § 232.3(c)(2) Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design. Emergency reconstruction must occur within a reasonable period of time after damage occurs in order to qualify for this exemption.

- b) 40 CFR § 232.3(c)(3) Construction or maintenance of farm or stock ponds or irrigation ditches or the maintenance (but not construction) of drainage ditches. Discharge associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant and functionally related to irrigation ditches are included in this exemption.
Note: only applies to ongoing farming operations.
- 2. 33 CFR § 323.4(a) Except as specified in paragraphs (b) and (c) of this section, any discharge of dredged or fill material that may result from any of the following activities is not prohibited by or otherwise subject to regulation under section 404:
 - a) 33 CFR § 323.4(a)(2) Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design. Emergency reconstruction must occur within a reasonable period of time after damage occurs in order to qualify for this exemption.
 - b) 33 CFR § 323.4(a)(3) Construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance (but not construction) of drainage ditches. Discharges associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant and functionally related to irrigation ditches are included in this exemption. *Note: only applies to ongoing farming operations.*
- 3. These exemptions listed above may not cover the discharge of dredge and fill material needed for construction means and methods such as temporary access roads in waters or wetlands needed for equipment access and/or certain types of material potentially used for BMPs or water diversions such as cofferdams and gravel/sand bag berms and could require a 404 permit. Existing structures used for diversions, such as gates in bifurcated headwalls, do not require a 404 permit.

VI. Honopou Stream Bank Stabilization

- A. Stream bank erosion has occurred at the junction point between Honopou Stream and an existing 'auwai. The erosion appears to be caused by a recently constructed stream diversion just upstream.
- B. The proposed project may stabilize a short section of the banks of Honopou Stream where erosion has occurred. Rip-rap would likely be used for bank stabilization.
- C. Wailuanui Stream is likely a Jurisdictional Waters of the U.S., per the 2015 *Clean Water Rule* and 33 CFR § 328.3 - *Definitions of Waters of the U.S.*
 - 1. 33 CFR § 328.3 (a) "Waters of the U.S." mean:
 - 2. 33 CFR § 328.3 (a) (5) All tributaries, as defined in paragraph (c)(3) of this section, of waters identified in paragraphs (a)(1) through (3) of this section; (*See definitions of (a)(1) Waters above*)

- D. Proposed bank stabilization can be covered under Nationwide Permit (NWP) No. 13. *Bank Stabilization*. Bank stabilization activities necessary for erosion control or prevention, such as vegetative stabilization, bioengineering, sills, rip rap, revetment, gabion baskets, stream barbs, and bulkheads, or combinations of bank stabilization techniques, provided the activity meets all of the following criteria: (a) No material is placed in excess of the minimum needed for erosion protection; (b) The activity is no more than 500 feet in length along the bank.

VII. Army Corps Exemption Verification and Permitting

- A. To request written exemption verification from the COE submit: maps, plans (if available), a narrative describing the work, and an explanation of what exemption the proposed activity would be covered under.
 - 1. COE will generally reply with exemption verification within 30-days.
- B. To apply for NWP Coverage, submit Honolulu District COE NWP Pre-Construction Notification (PCN) form and all required maps, plans, and supplemental information. PCN form can be requested from the COE (the form is not currently available online).
 - 1. COE will generally issue NWP coverage within 60-day.
 - 2. Issuance of a DA Permit (aka. 404 Permit) triggers the requirement for a CWA Section 401 Water Quality Certification (WQC) from the State Department of Health (DOH) Clean Water Branch (CWB) and federal resource agency consultations (e.g., NHPA Section 106 and ESA Section 7).
 - a) Permitting with DOH CWB and consultations with SHPD and USFWS can delay and hold up issuance of DA permit, especially if archeological or biological resource surveys are required by federal resource agencies.

EAST MAU‘I WATER SYSTEM IMPROVEMENTS OEQC MEETING MINUTES

Project Name: East Mau‘i Water System Improvements
Date/Time: August 8, 2019/3:30 P.M. – 4:30 P.M.
Location: State of Hawai‘i Office of Environmental Quality Control
Meeting Goal: Introduce projects and discuss the environmental review process under HRS 343 and HAR 11-200 for each type of project

I. Meeting Attendees

- Scott Glenn – Director OEQC
- Puna Kaneakua – AECOM Project Manager/Engineer
- Jeff Merz – AECOM Planner

II. Background and Notes

- A. The community engagement was discussed including the engagement of Ku‘iwalu with Dawn Chang who is coordinating the community outreach process. These outreach efforts entailed meeting with the local farmers in the area, identifying issues with the water delivery systems and investigating potential projects that could improve the irrigation and water delivery systems to their respective farms.
- B. The funding legislation was discussed and need for it to be encumbered (via an accepted bid package) June 2020
- C. Types of projects being considered were discussed with the review of informational “placemats” for each.
 1. Ke‘anae – Open ‘Auwai Replacement in various sections with pipe
 2. Wailuanui – ‘Auwai Repair and clearance of vegetation and debris. Possible reinforcement in areas with some type of hardened surface TBD
 3. Waikani – Collapsed, broken pipe investigation with CCTV. With second longer term phase to replace the broken pipe sections.
 4. Honopou – Streambank Stabilization possibly involving hardening with materials TBD
 5. Nahiku – Pipe replacement
 6. Kīpahulu – Water Tank Improvements

- D. A discussion of the meetings with other agencies completed or planned - OCCL, Maui County Planning (SMA) COE, SHPD, DLNR Land Division, CWRM, OEQC, followed. 5 of the 6 projects are located in the SMA and engagement will follow with Maui County Planning Department to see if they fit into any types of exemptions under HRS 205A.
- E. Chapter 343 triggers were disclosed for each project – state funds, state lands and Conservation District lands.

III. Questions for Director:

- *Do these projects appear to fall under any provisions of the HDOA exemption list, or any of the ten classes of exemptions listed under HAR 11-200-15,16,17?*

Response: The Director prefaced his response by noting the DOA or any agency exemption list, is guidance only. However, the exemption categories outlined in HAR 11-200 15 are the law. He also confirmed that OEQC's role is not to make an exemption (or EIS/EA) determination for a project. This determination must be completed by the proposing agency or its agent and a determination must be supported by evidence and analysis done by the agency or agent.

For these projects DOA or its agents would complete the exemption process including record keeping of exemption notices as outlined in HAR 11-200 16 and 17. It is recommended that thorough consideration be given to sensitive environments, species, cultural and historical resources as part of the analysis for exemption by the DOA.

It is also advisable when determining a possible exemption, that the analysis and conclusions supporting same be reviewed by a third-party agency, stakeholder or community group with knowledge of the project to secure their concurrence that the exemption is valid and warranted.

Agencies can also possibly make a finding of de minimis as discussed in HAR 11-200.1-16 (2)(b) to forego the formal exemption process altogether. This may be able to be done for some of these projects but should be used judiciously by an agency.

Action: Inquire if DOA has an exemption process/review template our outline they use to analyze a project for a possible exemption. If they do, we would get a copy of it for possible use for these projects.

- *Does the newly approved revisions to 343/11-200 affect what processes we will be subject to?*

Response: The new revisions require that agencies keep records of how many exemptions they process and approve and that these be recorded and published in the OEQC Bulletin once a month. The public can then be informed on what has been determined to be exempt from agencies.

- *Who would be the proposing/accepting agency for these exemptions or any other environmental documents for these projects?*

Response: Likely DOA.

AECOM meetings with CWRM and the Land Division agency representative was discussed. It was noted that CWRM is concerned about issuing revocable permits on state property as this is not a good long term or even midterm solution.

Stream diversions were discussed and it was acknowledged that no stream diversions will occur.

It was suggested that we contact the Department of Water- Maui for input. Consider asking that agency to act as third party reviewer for concurrence that proposed exemptions are valid and warranted

Action: Contact Department of Water to discuss proposed projects and seek their feedback. Also inquire with that agency for information on what size tank is the threshold that triggers the preparation of an EA/EIS.

The revised HAR-11-200 document was discussed including some additions the significance criteria and that wording in same has changed from “significant impact” to “adverse impact” as positive impacts should not trigger the same level of environmental review.

Action: When analyzing our projects, check the 2017 Sea Level Rise Vulnerability and Adaptation Report for applicability to our projects.

https://www.soest.hawaii.edu/GG/FACULTY/ITO/GG740/Hawaii_state_Sealevel_Report.pdf

EAST MAU‘I WATER SYSTEM IMPROVEMENTS
DOH MEETING MINUTES

Project Name: East Mau‘i Water System Improvements
Date/Time: August 20, 2019/8:00 A.M. – 9:00 A.M.
Location: Department of Health - Clean Water Branch, Pearl City
Meeting Goal: Determine if Department of Health Section 401 Permits or NPDES Permits will be required for proposed water system improvements; if so, identify major steps in the permitting process

I. Meeting Attendees

- Darryl Lum – DOH Clean Water Branch
- Glenn Ha‘a – DOH Clean Water Branch
- Puna Kaneakua – AECOM Project Manager/Engineer
- Jeff Merz – AECOM Planner

II. Background and Notes

The following potential water system improvement project were presented and discussed as examples of potential projects that may be undertaken in order to identify potential Clean Water Act (CWA) Section 401 permitting requirements that may apply to these and other similar projects.

- Ke‘anae Peninsula ‘*Auwai* Improvements
- Wailuanui Valley ‘*Auwai* Improvements
- Waikani Falls (Wailuanui Stream) Pipe Investigation and Repair
- Honopou Stream Bank Stabilization
- Nahiku Pipe Replacement
- Kīpahulu Tank Replacement

Our outreach efforts and work with Ku‘iwalu was discussed.

III. Issues Discussed

Our meeting with the Corps of Engineers was discussed and how that agency has determined that all but one of the projects is within the waters of the U.S. As such the project can either be found to be “no permit required” or likely would fall into an exemption category under provisions of the COE.

If these projects are determined to be subject to an exemption, a DOH WQC (401) permit would likely be triggered. 401 permits are triggered when a federal agency issues a “license.” A formal exemption issued from the COE is considered a license.

The process of the WQC 401 was discussed. DOH noted that the agency is trying to streamline the 401 permit process by shortening processing time. We would still complete a permit application and meet all the submittal criteria, but DOH can process them in days or a few weeks.

As part of our application for the WQC/401 permit, we can request a waiver from the public notification. Approval of his waiver would be granted by the Chief of the Clean Water Branch. Approval from this notification can be granted as well when the project is non-controversial, minor and/or is being issued a Nationwide permit by the Corps.

A 60% plan packet is recommended to submit for the permit application. Application fees are applicable even though the applicant is a state agency DOA. The application would also include a plan to monitor potential discharge into state waters – BMPs.

The applicability of an NPDES permit was discussed. If project work is over 1 acre, an NPDES permit is required. Hydro-testing would need an NPDES permit if water drains to state waters. It is recommended that discharge water be disposed of into grassy areas away from the waterway.

It was reiterated that if we are applying for a WQC/401, we bring in whatever paperwork from the COE along with our application and DOH can quickly process applications that are deemed to have minimal impacts and are not controversial.

EAST MAU'I WATER SYSTEM IMPROVEMENTS

SHPD MEETING MINUTES

Project Name: East Mau'i Water System Improvements

Date/Time: August 23, 2019/8:00 A.M. – 9:30 A.M.

Location: Hawaii State Historic Preservation Division (SHPD) Office, Kapolei, HI

Meeting Goal: Introduce projects and seek guidance on appropriate approach for requesting a determination under HRS Chapter 6E-8

I. Meeting Attendees:

- SHPD: Susan Lebo, Archaeology Branch Chief; Samantha Cragen, Oahu Archaeologist; Hinano Rodrigues, History & Culture Branch Chief (by phone)
- AECOM: Puna Kaneakua, Adriane Truluck
- Ku'iwalu: Dawn Chang

II. Agenda Items:

A. Project Funding – legislative CIP funds

1. The project is fully State funded and the trigger for SHPD review is HRS Chapter 6E-8.
2. There is no Federal funding but if U.S. Army Corps of Engineers (COE) permits are required, Section 106 consultation may also be required. We do not believe it will be triggered; however, we should check with COE to confirm.
3. Hinano suggested that, if uncertain about COE permitting trigger, consider mentioning Section 106 as part of any correspondence relating to cultural and community consultation in order to have documented this if necessary.
4. Funding is on a short timeline and must be encumbered by June 2020, which is driving a desire to identify any potential permitting complications that could make it difficult to fund one or more of the potential projects. Projects that can't be developed to a bid package level by then may be dropped.

B. Community Engagement

1. Dawn described in detail the robust community engagement process to date, and how it has been used to identify and recommend projects to be developed as part of this initiative.
2. Two public meetings are coming up on Maui.

- a) Hinano recommended consultation as required for the areas that fall under Criterion E for cultural significance be addressed as part of the public meetings, and consultation documented so it can be included in the SHPD 6E-8 submittal. See individual project discussion notes below.
- C. Types of proposed projects being considered. Discussion included historic properties in and near proposed project areas; specific impacts, concerns, etc.
- 1. Ke‘anae
 - a) Ke‘anae project involves adding a pipe to one open ‘auwai within the existing ditch footprint. No excavation would occur.
 - b) Historic properties include the surrounding cultural landscape, and the *lo‘i* complex of which the ‘auwai is a part. Hana Highway National Register district is nearby but not affected.
 - c) Issues include the significance under Criterion E for cultural practices. This requires consultation with interested parties relevant to the traditional cultural uses. While this is an inherent part of the project, Criterion E consultation needs to be identified as part of the public meeting agenda and all affected parties along the ‘auwai given an opportunity to comment. This would be documented in the 6E submittal to SHPD.
 - 2. Wailuanui
 - a) Wailuanui project involves hardening and stabilizing the banks of a damaged stretch of ‘auwai. No excavation would occur; natural local rock could be used for the stabilization.
 - b) Historic properties include the surrounding cultural landscape, and the *lo‘i* complex of which the ‘auwai is a part. Hana Highway National Register district is nearby but not affected.
 - c) Issues include the significance under Criterion E for cultural practices (same as Ke‘anae above).
 - 3. Waikani
 - a) This is a currently characterized as a maintenance project – just investigating the pipe blockage. For this type of activity, no consultation or 6E determination would be required.
 - 4. Honopou
 - a) This project involves a replacement of an existing pipe. There is no ground disturbance.
 - b) No inventoried historic properties have been documented in or adjacent to the project area.
 - c) It is possible that this project could be characterized as a maintenance project and not require consultation. No commitment on this from SHPD.

5. Nahiku

- a) This project involves a replacement of an existing pipe. There is no ground disturbance.
- b) No inventoried historic properties have been documented in the project area. A historic district and some inventoried sites are located on nearby TMKs but not affected by the project.
- c) It is possible that this project could be characterized as a maintenance project and not require consultation. No commitment on this from SHPD.

6. Kīpahulu

- a) This project involves constructing a new water tank to replace an old wood tank that fell down. There may be some limited ground disturbance for tank footings.
- b) The project would be located within the edge of the 800-acre Kīpahulu National Register historic district. The project footprint is small and would not have an impact on the historic district's integrity.
- c) Due to the potential for ground disturbance this project would need to have SHPD review for 6E-8.
- d) Hinano recommended that Tweedie and John Lind (Sp.?) be contacted as part of the consultation on any project planned in Kīpahulu.

D. Discuss best approach when preparing HRS Chapter 6E determination request and supporting materials

1. Hinano recommended (and Susan concurred) that DOA needs to decide whether this will be put out for permitting as one project or a set of individual separate projects. If it is characterized as a single project at first, and then broken up into individual ones, it may be segmentation.
2. For Ke'anae and Wailuanui potential projects, Criterion E for cultural significance of the project area would require consultation with OHA and interested parties under 6E. This could be done in coordination with the planned public meetings. However, it would need to be clear to participants that they have an opportunity for consultation on cultural resources under 6E and the consultation should be documented as such for inclusion in the 6E determination request package.
3. If we are submitting a request with a recommendation of "no historic properties affected" we need to be sure we document consultation for Criterion E, identify the historic properties (including integrity and significance), and describe the project design selected by DOA. Design should be at least 60% complete for submittal. Project area should include construction, staging, access.
4. Dawn asked if the report (which covers consultation for all projects together) could be submitted with the 6E request letter. SHPD said yes, but they won't review it specifically. If projects are submitted separately, it can be attached as "additional materials" to each submittal in addition to the required materials per the intake form.

5. DOA needs to determine ahead of the permitting process whether this is a single project with multiple parts, or a series of individual separate projects. This has an impact on effect determinations and being unclear about it risks segmentation. SHPD will review whichever way it is submitted.

E. Schedule

1. Funds must be encumbered June 2020, with a bid package going out by that date.
2. Public meetings coming up. Be sure to include 6E consultation as part.
3. Design 60% package and provide to SHPD for review and concurrence with determination request. SHPD has 90 days to review and respond.

III. Action Items

- A. Adriane to send copy of CLR (McGregor 1995 document) to Susan and Hinano.
- B. Adriane to send project placemats and agenda to Hinano (completed: emailed 8/23)
- C. AECOM to discuss with DOA and secure a determination from the agency on whether this is to be characterized as one project, or a series of separate projects.
- D. AECOM to ensure that in public meeting plans, 6E consultation is accommodated.
- E. AECOM to check with COE to determine if any of the projects that have the potential to trigger a permit should start 106 consultation just in case.