Moloa'a Irrigation Cooperative
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Final Report to the Hawai'i Community Foundation – Wai Maoli Freshwater Initiative

LEAK DETECTION & METER UPGRADE TO HELP FARMERS IN MOLOA'A CONSERVE WATER

Moloa'a Irrigation Cooperative (MIC) was formed in 2010 with the goal to provide more efficient management of the agricultural water system in Moloa'a. Funding from Wai Maoli is helping us in our on-going efforts to achieve that goal.

Our proposal includes two areas of work: (1) reigning in our non-revenue, unaccounted for water and (2) helping our member farmers find their individual water losses.

METER RELOCATION AND REDUCTION IN NON-REVENUE WATER LOSSES

As noted in the First Annual Report, the relocation of the MIC Master Meter was completed in December 2020 with matching funds from the County of Kaua'i Kupa'a Kaua'i Cares Act Grant. (please see attached report) Initially, the relocation of the meter showed a dramatic drop in our non-revenue water, but since we completed the work, we have seen fluctuations in the monthly losses. After initial reductions in most of 2021, the percentages have climbed steadily through most of 2022 with the exception of July which showed a notable drop after it was discovered that a number of the turbine meters in the system were not accurate due to debris in the line and/or mechanical failure.

LEAK DETECTION AND TRAINING PROGRAM

With help from the Hawai'i Rural Water Association Circuit Rider, Greg DeVito, MIC operators and farmers have continued to train with the AML pipe locator and the LD15 Leak detection. The entire staff of HRWA attended training on the use of these instruments in 2021 and Greg has made several trips to Kaua'i to familiarize our members with the equipment. Leaks on individual farms have been discovered in a few instances that have led to repairs to lower the individual water losses.

We also held a ZOOM meeting on March 22, 2022, with Steve Hancey, Operations Manager & Support, SubSurface Locators, Inc. In addition to MIC operators, the training was attended by Rex Kamahana and Barry Pollock of Rural Community Assistance Corporation. All of the attendees went out into the field with the Quattro Correlator and communicated by phone with Mr. Hancey to gain hands-on with the equipment.

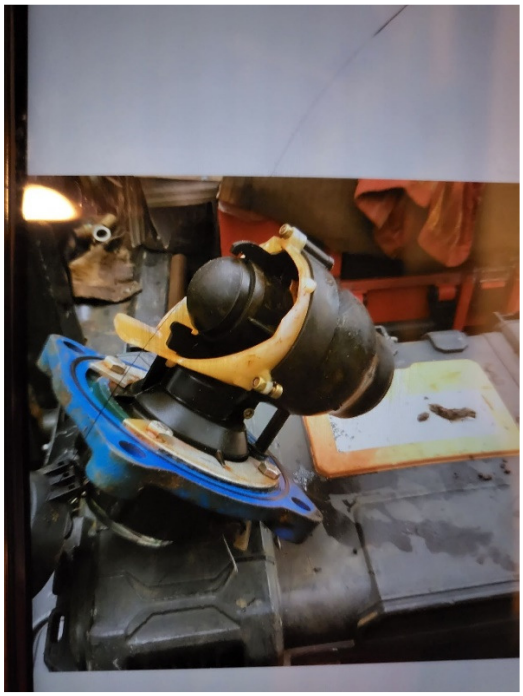
Due to the Covid-19 travel constraints, the factory trained representatives for the Quattro Correlator and the LD15 leak detection equipment were not available to travel until 2022. On May 24-25, 2022, MIC hosted a two-day training with a leak detection expert from USA Bluebook. There were 20 persons who attended the training, including eight operators from the Kaua'i Department of Water. Rex Kamahana, Circuit Rider for RCAC, came over from Moloka'i for the training, also.

As we achieve proficiency in the use of the equipment, we will continue to have individual training sessions with our farmers as well as "field-day sessions". While Covid restrictions held up progress in this area of our project, we are having our MIC Annual Membership Meeting next month and plan to sign up members who are interested in training. We are having our newly licensed Distribution System Operator, Adam Neaves, work with individual farmers with locating pipes and searching for potential leaks. We are encouraging some of our larger commercial farms that have experienced and continue to experience leaks to work with Adam. It should be noted that our grant sponsor for the Freshwater Initiative, Malama Kaua'i, played an important part in our ability to hire a new operator and have Adam eventually become qualified to become a licensed DSO in fall of 2021. This was possible due to the Rise to Work Program with the County of Kaua'i and Malama Kaua'i managing that grant program.

Adam has spent time at several farms in our project area helping to locate pipes and search for leaks. Those farms include:

Molo Roots – This farming hui was able to locate the lay-out of the irrigation system which was existing when the property was purchased in 2014. This was done using the AML locator.

Moloa'a Organica'a – Ned and Marta Whitlock own a 28.5-acre diversified farm. When EyeonWater reported leaks on a number of occasions, MIC operators were able to pinpoint the line with the pipe locator where the two-inch lateral had several leaks. Previously, the AML pipe locator came in handy when the Whitlock meter stopped recording due to debris in the turbine. Locating the pipes in the area of the meter, the operators were able to excavate without damaging any pipes in the area of the meter and backflow preventer.



Debris in Turbine for Whitlock Meter was causing meter not to report.

Hole in the Mountain Farm – Early in August 2022, it was discovered that the 2" meter on this property had stopped recording. The EyeonWater reported no water usage for this 20 acre pineapple farm. Using the AML pipe locator, the lines leading to and from the meter were located to prevent damage during excavation to remove the meter. The meter was disassembled, and it was found that debris inside had prevented the turbine from spinning.

Viva Rains Farms also had a similar issue the same week as Hole in the Mountain Farm with debris that prevented the turbine from recording the water flowing through it. This was discovered after MIC operator Paul Huber used the AML pipe locator to identify the pipe routes so the area could be excavated to remove the meter and clear the debris.

One success we have registered in narrowing our non-revenue water has been the use of the EyeonWater Badger Meter cellular platform in conjunction with the pipe locator. From May through July, we discovered that several

of our larger farms had meters that were under-reporting. As described above, we are in the process of servicing a number of the meters which are not working properly due to debris in the water lines. The AML pipe locator is invaluable in doing this work without damaging any pipes. After discovering the meter issues, our non-revenue water dropped dramatically in July 2022 to 11%.

We are considering that it is time to have a meter replacement program once our new well is supplying water to the cooperative. It is possible that the turbine meters are no longer accurate due to failing parts. This may be a major contributor to the non-revenue water issues that we have been seeing.

We are attaching the Eye On Water Excel spreadsheets for the past two years to show the variation in the percentage of non-revenue water since the Master Meter was relocated in December of 2020.

SUMMARY

MIC is extremely grateful for the benefits we have derived from the Wai Maoli program. While learning and adapting to the use of the equipment in finding leaks is still a work in progress, we feel confident that we now have a valuable tool that will help reign in our water loss now and in the future. Relocation of the main production meter is a huge improvement for the system as a whole. In addition, the workshop that we help in May of 2022, strengthened our bond and cooperation with the Kaua'i Department of Water. Our two water systems have developed a strong working relationship because we both source our water in the Moloa'a system from the same State Well. Leaning together how to find our water lines and search for leaks is a positive move forward to save water losses. Our farmers are very engaged in using these tools and we now have a new, young operator who is able to work one-on-one with our individual members.

LEAK DETECTION WORKSHOP MAY 24-25, 2022

Classroom Training with Kaua'i Department of Water Field Crew and MIC operators

Scott Renslow, USA Bluebook, explains operation of the Quattro 5000 Correlator

Field Training with Leak Detection Equipment May 24-25, 2022

Placing the sensors on the steel pipes

Adam Neaves, MIC DSO, takes first reading

KDOW crew helping with measurements/pipe location

Hands-on with Leak Detection Training – Department of Water Field Crew in Orange/Green Shirts