

State of Hawaii Commission on Water Resource Management
Work Plan to Increase Surface Water Use Reporting

Objective

To increase the reporting of surface water use from large irrigation systems in the State of Hawaii.

Background on the Current State Water Use Program

The collection and analysis of water use information is essential to understand the behavior and response of water resources to stresses from water withdrawals. Such information also ensures that demand is managed effectively within the sustainable limits of supply. Water use information can also be used to: evaluate the effectiveness of alternative water management policies, regulations, and conservation activities; analyze water infrastructure efficiency; assess the impacts of population growth and corresponding increases in water demands; develop trends in water use; and make projections for future use given climate-driven changes in water supply.

In 1987, the State Water Code was enacted and Hawaii Revised Statutes §174C-26 required water users to file a declaration of water use with the Commission on Water Resource Management (CWRM). Hawaii Administrative Rule §13-168-5(c) specifies that declarations of water use shall at a minimum include information on the following:

“[T]he location of the water sources and all usage-related facts, or information within his knowledge or possession...the manner, purposes, and time in which the water source is being used and operated, the rate and volume of water being withdrawn or diverted therefrom, and the method or means of measuring and controlling the water taken or used.”

In 1989, CWRM began the process of registering declarations of water use and stream diversion works in accordance with the State Water Code and administrative rules. By 1990, the declaration of water use program identified approximately 1,550 users statewide who were using water from wells, stream diversions, and water systems. Approximately 250 declarants were identified by CWRM as having “medium-to-large” uses. The remaining 1,300 water use declarations were for small uses, identified by CWRM to include individual domestic supplies, water systems involving small water capacities (pump motors less than five horsepower, or gravity-fed pipes less than two inches in diameter), and agricultural irrigation of fewer than three acres.

The Hawaii Administrative Rules of the State Water Code require owners or operators of wells and stream diversion works to measure their water use and submit regular monthly reports of the use. In particular, HAR §13-168-7(a) and (c) provide that:

(a) The owner or operator of any well or stream diversion works from which water is being used shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage on a monthly (calendar or work schedule) basis.

If a well or stream diversion works is one of a battery of interconnected water sources, a centralized measuring device or facility may be approved by the commission.

(c) At the discretion of the commission, requirements for measuring and reporting monthly water usage may be lessened, modified, or exempted for owners or operators of small individual wells or stream diversion works. The lessening, modification, or exemption of such requirements shall be approved, disapproved, or otherwise decided by the commission on a case-by-case basis.

The monthly water use reporting requirement has been difficult to implement and enforce. Enforcement of the water-use reporting requirements began in 1988, with the monthly collection of water use reports from major users, including county departments of water supply and large plantations. Water purveyors and large plantations already had monitoring equipment in place to measure and record water usage. However, the monthly reporting requirement specified in HAR §13-168-7(a) proved burdensome on other users, as evidenced by the requests for reporting exemptions received by CWRM.

Current Efforts to Collect Surface Water Use Data

While CWRM has made strides in ground water use reporting, there is a deficit of surface water use data statewide. Water use reporting is needed for stream diversions, particularly those providing water to large irrigation systems. For specific regions, water use studies have been conducted either by the USGS or other government agencies. However, surface water use data has not been collected by CWRM on a broad scale, largely due to prior exemptions that focused reporting requirements on ground water uses. With the exception of a few users that were required to report as part of a dispute resolution, surface water use reporting is very limited.

CWRM has taken the following actions to support surface water use reporting:

- Produced a handbook in 2009 with guidelines for appropriate devices and means of measuring water use that would not be unduly burdensome on water users. This handbook serves as a starting point to inform users of the various types of methods that are available as CWRM continues to develop its surface water use reporting program.
- Developed a Water Resource Management Information System (WRIMS) in 2012 that allows water use reporters to file their reports on-line and monitor their historical use from each source via the internet. This new tool was developed to facilitate reporting by water users and to enable CWRM staff to more efficiently enforce compliance with the reporting requirement.
- Contracted with the USGS in 2013 to conduct on-site training workshops statewide for measuring water flow and reporting water use for large-scale stream diversion ditch systems. This education and outreach effort will aid current ditch operators and owners in meeting the mandate for surface water use reporting.
- Rescinded all prior exemptions from surface water use reporting.

Following the development of WRIMS, CWRM staff began a statewide effort to enforce the water use reporting mandate. Staff have worked with some public and private water diverters to develop surface water use monitoring plans that include identifying monitoring locations and methods, assisting with equipment installation, creating an online WRIMS account, and beginning to measure and report surface water use.

State Priorities for Improving Water Use Data

CWRM is continuing to work with landowners and system operators statewide to get more surface water gaging and water use reporting data into WRIMS. Priorities include:

- Complete efforts to verify surface water diversions and ditch systems on all islands.
- Expand education and outreach to landowners and surface water system operators to further develop surface water monitoring and water use data collection statewide.
- Enforce reporting requirements using the Department of Land and Natural Resource's Civil Resource Violation System.
- Vigorously work on updating its information system with previously completed efforts to verify surface water diversions (Kauai and Maui) in order to identify key surface water users to focus implementation of surface water use reporting requirements.

Steps Proposed to Address Water Use Reporting Priorities

- Identify and inventory the status of stream diversions providing water to large irrigation systems.
- Work with owners and surface water system operators to identify acceptable locations to install meters/flow measurement devices to record water use.
- Prioritize locations for monitoring equipment installation.
- Work with owners and/or stream diversions operators to develop cost estimates and timeline for installing meters and implementing a regular water use reporting program.
- Provide outreach to surface water users that familiarize them with the online reporting system.
- Follow up with online reporting assessments to assure compliance.

Collaboration with Other Agencies to Develop Work Plan

CWRM has been in discussion with several large irrigation system owners (public and private) to implement the approach identified above to improve surface water use reporting. This includes systems on each of the five Hawaiian Islands with surface water (Table 1). The largest manager of surface water diversions statewide is the Department of Agriculture (DOA) and the Agribusiness Development Corporation, a DOA-affiliated but semi-autonomous government organization. The DOA manages five irrigation systems, but is not currently gathering any data regarding the availability of water or the volume of water diverted by these systems. CWRM staff is working with the DOA to develop a work plan to assess the availability and use of surface water by DOA irrigation systems. Additionally, CWRM is working with private system owners who are not currently reporting to improve water use accountability.

Table 1. Large irrigation systems and the status of their surface water diversion reporting in the State of Hawaii.

| Island | System name | Owner/Manager | Reporting |
|---------|---------------------------------------|--------------------------------------|-----------|
| Kauai | East Kauai Irrigation System | East Kauai Water Users Cooperative | No |
| Kauai | Kekaha Irrigation System | Agribusiness Development Corporation | Yes |
| Kauai | Kokee Irrigation System | Agribusiness Development Corporation | Yes |
| Kauai | Waniha Ditch | McBryde Inc. | Yes |
| Kauai | Kauai Coffee Irrigation System | McBryde Inc. | Yes |
| Kauai | Ililiula-North Wailua System | Kauai Island Utility Cooperative | Yes |
| Kauai | North Intake Ditch | Kauai Island Utility Cooperative | No |
| Kauai | Upper Lihue Ditch | Grove Farm | No |
| Kauai | Hanamaulu Ditch | Grove Farm | No |
| Kauai | Kuia/Waita Ditch | Grove Farm | No |
| Kauai | Upper Haiku Ditch | Grove Farm | No |
| Oahu | Dole Irrigation System | Dole Co. | No |
| Oahu | Waiahole Irrigation System | Agribusiness Development Corporation | Yes |
| Oahu | Punaluu Ditch System | Kamehameha Schools | No |
| Oahu | Waimanalo Irrigation System | Department of Agriculture | No |
| Maui | Honokohau/Honolua System | Maui Land and Pineapple | No |
| Maui | Waihee/lao Ditch | Wailuku Water Co. | Yes |
| Maui | Spreckels Ditch | Hawaii Commercial & Sugar | Yes |
| Maui | East Maui Irrigation System | Hawaii Commercial & Sugar | Yes |
| Maui | Upcountry Maui Irrigation System | Department of Agriculture | No |
| Molokai | Molokai Irrigation System | Department of Agriculture | No |
| Molokai | Molokai Mountain System | Molokai Ranch | No |
| Hawaii | Kohala Irrigation System | Chalon Co. | No |
| Hawaii | Waimea Irrigation System | Department of Agriculture | No |
| Hawaii | Lower Hamakua Ditch Irrigation System | Department of Agriculture | No |

Timeline

A limited number of large irrigation systems are currently reporting their water use and CWRM has already conducted site visits to update the ditch and diversion database for some irrigation systems. Following this fieldwork, CWRM began to work with diversion operators to develop monitoring plans (Table 2). CWRM proposes to implement the priorities identified in the work plan by first performing a preliminary search of historical water information, conducting site

visits to inventory diversions and their status, while identifying potential water monitoring locations for each system. Then by working with each irrigation system manager/operator, CWRM will assist in the implementation of the monitoring plan. Following the monitoring plan implementation, maintenance and data analysis will continue as more data are reported. Since the DOA manages the largest number of irrigation systems, CWRM has developed timelines specifically for each of the DOA systems (Table 3).

Table 2. Current status of monitoring program development for non-DOA irrigation systems.

| System name | Owner/Manager | status of monitoring plan |
|------------------------------|------------------------------------|---------------------------|
| East Kauai Irrigation System | East Kauai Water Users Cooperative | near future |
| North Intake Ditch | Kauai Island Utility Cooperative | near future |
| Upper Lihue Ditch | Grove Farm | in development |
| Hanamaulu Ditch | Grove Farm | in development |
| Kuia/Waita Ditch | Grove Farm | in development |
| Lower Haiku Ditch | Grove Farm | in development |
| Waiahole Irrigation System | Department of Agriculture | implemented |
| Punaluu Ditch System | Kamehameha Schools | future |
| Honokohau/Honolua System | Maui Land and Pineapple | future |
| Molokai Mountain System | Molokai Ranch | in development |
| Kohala Irrigation System | Chalon Co. | near future |

Table 3. Proposed timeline for developing and implementing a surface water use monitoring program for irrigation systems managed by the Hawaii Department of Agriculture.

| System name | Jul-Dec 2016 | Jan-Jun 2017 | Jul-Dec 2017 | Jan-Jun 2018 | Jul-Dec 2018 |
|--|--------------|--------------|--------------|--------------|--------------|
| Waimanalo Irrigation System | | | | | |
| Identification of diversions and develop a monitoring plan | | | | | |
| monitoring plan implementation | | | | | |
| maintenance and analysis of monitoring data | | | | | |
| Upcountry Maui Irrigation System | | | | | |
| Identification of diversions and develop a monitoring plan | | | | | |
| monitoring plan implementation | | | | | |
| maintenance and analysis of monitoring data | | | | | |
| Molokai Irrigation System | | | | | |
| Identification of diversions and develop a monitoring plan | | | | | |
| monitoring plan implementation | | | | | |
| maintenance and analysis of monitoring data | | | | | |
| Waimea Irrigation System | | | | | |
| Identification of diversions and develop a monitoring plan | | | | | |
| monitoring plan implementation | | | | | |
| maintenance and analysis of monitoring data | | | | | |
| Lower Hamakua Ditch Irrigation System | | | | | |
| Identification of diversions and develop a monitoring plan | | | | | |
| monitoring plan implementation | | | | | |
| maintenance and analysis of monitoring data | | | | | |