



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

March 17, 2020
Honolulu, Hawai'i

Request to Authorize the Chairperson to
Enter into a Joint Funding Agreement with U.S. Geological Survey
To Conduct Seepage Analyses at Specific Stream Sites, Hawai'i

SUMMARY OF REQUEST:

Staff requests that the Commission on Water Resource Management (Commission) authorize the Chairperson to enter into a Joint Funding Agreement (JFA) with the U.S. Geological Survey (USGS) to conduct seepage analyses at seven (7) high-priority stream sites on Maui and one (1) stream site on Hawai'i Island.

BACKGROUND:

Under the State Water Code (Code), Chapter 174C, Hawai'i Revised Statutes (HRS), the Commission has the responsibility of establishing Instream Flow Standards (IFS) on a stream-by-stream basis whenever necessary to protect the public interest in the waters of the State. Early in its history, the Commission recognized the complexity of establishing IFS for the State's estimated 376 perennial streams and instead set interim IFS at "status quo" levels. These interim IFS were defined as the amount of water flowing in each stream (with consideration for the natural variability in stream flow and conditions) at the time the administrative rules governing them were adopted in 1988 and 1989.

The Hawai'i Supreme Court, upon reviewing the Waiāhole Ditch Contested Case Decision and Order, held that such "status quo" interim IFS were not adequate to protect streams and required the Commission to take immediate steps to assess stream flow characteristics and develop quantitative interim IFS for affected Windward O'ahu streams, as well as other streams statewide. The Hawai'i Supreme Court also emphasized that "instream flow standards serve as the primary mechanism by which the Commission is to discharge its duty to protect and promote the entire range of public trust purposes dependent upon instream flows."

The Commission is tasked with establishing instream flow standards by analyzing “the importance of the present or potential instream values with the importance of the present or potential uses of water for non-instream purposes, including the economic impact of restricting such uses.” While the Code outlines the instream and offstream uses to be analyzed, it assumes that hydrological conditions will also be analyzed as part of setting IFS. The complexity lies in the variability of local surface water conditions that are dependent upon a wide range of factors, including, but not limited to rainfall, geology, topology and human impacts, as well as the availability of such information.

In striving to fulfill the mandates of the Code and the Hawai‘i Supreme Court, the Commission staff has proceeded to focus on priority areas in developing measurable instream flow standards. One such example is a study completed by the USGS in 2014, in cooperation with the Commission, on the *Low-Flow Characteristics of Streams in the Lahaina District, West Maui, Hawai‘i* (Scientific Investigation Report 2014-5087). Following on the findings of the study, the Commission staff developed measurable interim instream flow standards for the surface water hydrologic units of Ukumehame, Olowalu, Launiupoko, Kaula‘ula, Kahoma, and Honolulu.

In order to better understand the effects of restoration, following the setting of instream flow standards in West Maui, the Commission staff hopes to better understand the effects of restoration efforts and groundwater conditions on streamflow. Seepage analyses are important for quantifying the effects of surface-water diversion on recharge and for evaluating whether groundwater withdrawals can impact base flow.

A seepage analysis consists of streamflow measurements collected on the same day at specific sites along a stream under stable-flow conditions to determine the magnitude of streamflow gains and losses. Stream reaches can either gain water (groundwater discharge into stream) or lose water (stream discharge into groundwater body), depending on the altitude of the water table relative to the streambed. Seepage analyses are useful for characterizing the spatial distribution of flow along a stream, including the identification of flowing and dry stream reaches. When coupled with low-flow discharge estimates at sites along the same stream, results of a seepage analysis can provide natural water-availability information for stream reaches and help determine whether the stream flows continuously from the mountain to the ocean (mauka to makai flow).

On March 6, 2020, following initial discussions, USGS prepared the attached Study Proposal (Exhibit 1) which specifically targets seven (7) high-priority streams identified by Commission staff. The full pre-Proposal prepared by USGS originally included 57 priority streams statewide and may be addressed under future Joint Funding Agreements as funding is available.

SCOPE OF SERVICES AND FUNDING:

The attached proposal seeks to complete seepage-analysis discharge measurements on seven (7) high-priority streams, including Honokōhau, Honokōwai, Kahoma, Kanahā, and Olowalu Streams and Ukumehame Gulch on West Maui, and Waikoloa Stream on Hawai‘i island. Pre-flow-restoration seepage-analysis measurements are available for the six (6) West Maui streams and additional seepage-analysis measurements are needed to assess post-flow-restoration

conditions. Waikoloa Stream is currently diverted for municipal use and seepage-analysis data is limited. The scope of this effort includes a reconnaissance survey of discharge-measurement sites and one seepage analysis per selected West Maui stream to determine seepage gains and losses. Results of seepage analyses conducted pre- and post-flow restoration allow for effects of flow restoration on streamflow to be quantified for the West Maui streams. The pre-restoration seepage run for Waikoloa Stream on Hawai'i island is being conducted as part of a current study to quantify low-flow characteristics statewide. This effort will include documenting results of the Waikoloa Stream seepage run in a USGS Data Release.

One (1) year is required to complete the seepage analyses for the six (6) West Maui streams and document results of seven (7) seepage analyses (including Waikoloa Stream). The total cost of these seepage analyses is \$111,662 (Commission (\$99,622) and USGS (\$12,000)). Every effort will be made to plan seepage-analysis discharge measurements during dry-weather, low-flow conditions. However, unforeseen weather changes during measurement days may affect the representativeness of discharge measurements or cause the mid-day abandonment of the measurements. A small contingency is included in the budget to repeat an abandoned or nonrepresentative seepage analysis. If the contingency is not needed, then the contingency will be applied to conducting field work for a seventh stream selected by Commission staff to be included in this study.

FUNDING

The funds for the Commission's share of the work (\$99,622) are available from the Department's FY 2020 Budget, LNR 404, Water Resources Program. Funding for the seepage analyses work will come from the Commission's general fund, special fund, or a combination of both, depending upon available funding.

ENVIRONMENTAL REVIEW (CHAPTER 343)

Hawai'i Revised Statutes (HRS) Chapter 343 is triggered due to the use of State funds; however, Chapter 343 does not apply because this is a data collection and research study. Hawai'i Administrative Rule §11-200.1-15(c)(5) exempts classes of action including, "*Basic data collection, research, experimental management, and resource and infrastructure testing and evaluation activities that do not result in a serious or major disturbance to an environmental resource.*"

RECOMMENDATION:

Staff recommends that the Commission:

1. Declare that, after considering the potential effects of the proposed project, in accordance with Chapter 343, HRS, and Chapter 11-200.1, HAR, that the project will have minimal or no significant impact on the environment and is therefore exempt from the preparation of an environmental assessment.

2. Authorize the Chairperson to enter into a Joint Funding Agreement between the Commission on Water Resource Management and the U.S. Geological Survey to conduct seepage-analysis discharge measurements on seven (7) high-priority streams for a period of one (1) year until June 30, 2021. This Joint Funding Agreement in the amount of \$111,666 will be shared by the Commission (\$96,622) and the U.S. Geological Survey (\$12,000).
3. Authorize the Chairperson to make such further amendments or modifications of the contract agreement (consistent with the terms set forth above) as may be necessary to accomplish the goals described here, provided that any amendment or modification does not require additional Commission funding.

The terms of this agreement may be subject to the availability of funding and the approval of the Chairperson and the Department's Deputy Attorney General. Contract execution would be done in accordance with Chapter 103D, HRS, and Chapter 3-122, Hawai'i Administrative Rules.

Ola i ka wai,

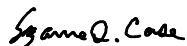


M. KALEO MANUEL
Deputy Director

Exhibits

1. U.S. Geological Survey, Pacific Islands Water Science Center, Proposal, March 6, 2020.
2. Chapter 343, HRS, Exemption Notification

APPROVED FOR SUBMITTAL:



SUZANNE D. CASE
Chairperson

Implementation of Water-Resource Management Monitoring Program to Improve Understanding of Surface Water and Groundwater Interaction, State of Hawai‘i

U.S. Geological Survey, Pacific Islands Water Science Center Proposal, March 6, 2020

A fundamental component of water-resource management and protection is an effective monitoring program that considers the spatial and temporal scale of data-collection needs, current and future water-resource issues, data quality and accessibility, and cost-effectiveness of acquiring the data. In cooperation with Hawai‘i State Commission on Water Resource Management (CWRM), the U.S. Geological Survey (USGS) and the University of Hawai‘i Water Resources Research Center (UH-WRRC) developed a Hawai‘i water-resource monitoring program—rainfall, streamflow, and groundwater data-collection programs—that meets State needs for water-resource assessment, management, and protection in Hawai‘i (Cheng and others, in preparation). Priority areas for rainfall data collection were identified by the UH-WRRC researchers and priority areas for data collection with respect to surface-water and groundwater resources were identified by CWRM, County water departments, and other stakeholders. Current and foreseeable issues related to water-resource management and climate-change impacts were used to develop a set of criteria for evaluating data-collection sites for the monitoring program and a set of goals the program should achieve. Development of the monitoring program fulfills the 2019 Water Resource Protection Plan Action Plan, Goal 1, Project 1.1, Task 1.1.1 (State of Hawai‘i, 2019, p. 59–60).

One goal of the surface-water data-collection program is to better understand the effects of restoration efforts and groundwater conditions on streamflow. To meet this goal, seepage analyses are needed on selected streams. Seepage analyses are important for quantifying the effects of surface-water diversion on recharge and for evaluating whether groundwater withdrawals can impact base flow. A seepage analysis consists of streamflow measurements collected on the same day at specific sites along a stream under stable-flow conditions to determine the magnitude of streamflow gains and losses. Stream reaches can either gain water (groundwater discharge into stream) or lose water (stream discharge into groundwater body), depending on the altitude of the water table relative to the streambed. Seepage analyses are useful for characterizing the spatial distribution of flow along a stream, including the identification of flowing and dry stream reaches. When coupled with low-flow discharge estimates at sites along the same stream, results of a seepage analysis can provide natural water-availability information for stream reaches and help determine whether the stream flows continuously from the mountain to the ocean (mauka to makai flow).

The monitoring program identifies 104 streams needing seepage-analysis discharge measurements. Seepage analyses are identified for streams in surface-water priority areas and streams in areas where understanding of hydrogeological conditions is limited. Identified streams include those that have undergone hydrologic change since previous seepage-analysis discharge measurements were made and those where information is needed on the effects of diversions on streamflow. Seepage analyses conducted under various flow conditions can help to consider a range of seepage gains and losses. The CWRM identified 57 priority streams (table 1) from the 104 streams in the monitoring program for seepage-analysis discharge measurements. This list of

priority streams includes streams where flow has been partially restored to comply with established quantitative instream-flow standards and streams being considered for quantitative instream-flow standard development.

The objective of this effort is to improve understanding of surface water and groundwater interaction, which is consistent with the implementation of the State's water-resource monitoring program. As part of this initial implementation effort, the CWRM selected a subset of seven high-priority streams from the 57 priority streams for seepage-analysis discharge measurements. The seven high-priority streams include Honokōhau, Honokōwai, Kahoma, Kanahā, and Olowalu Streams and Ukumehame Gulch on west Maui, and Waikoloa Stream on Hawai'i island. Pre-flow-restoration seepage-analysis measurements are available for the 6 west Maui streams and additional seepage-analysis measurements are needed to assess post-flow-restoration conditions. Waikoloa Stream is currently diverted for municipal use and seepage-analysis data is limited. The scope of this effort includes a reconnaissance survey of discharge-measurement sites and one seepage analysis per selected west Maui stream to determine seepage gains and losses. Results of seepage analyses conducted pre- and post- flow restoration allow for effects of flow restoration on streamflow to be quantified for the west Maui streams. The pre-restoration seepage run for Waikoloa Stream on Hawai'i island is being conducted as part of a current study to quantify low-flow characteristics statewide. This effort will include documenting results of that Waikoloa Stream seepage run in a USGS Data Release.

One year is required to complete seepage analyses for six streams and document results of seven seepage analyses in a USGS Data Release at a cost of \$111,622, which will be shared by the CWRM (\$99,622) and the USGS (\$12,000). Every effort will be made to plan seepage-analysis discharge measurements during dry-weather, low-flow conditions. However, unforeseen weather changes during measurement days may affect the representativeness of discharge measurements or cause the mid-day abandonment of the measurements. A small contingency is included in the budget to repeat an abandoned or nonrepresentative seepage analysis. If the contingency is not needed, then the contingency will be applied to conducting field work for a seventh stream selected by the CWRM to be included in this study.

Cheng, C.L., Izuka, S.K., Kennedy, J.J., Giambelluca, T.W., and Frazier, A.G., Water-Resource Management Monitoring Needs, State of Hawai'i: U.S. Geological Survey Scientific Investigations Report (in preparation).
State of Hawai'i, 2019, Hawai'i Water Plan, Water Resource Protection Plan 2019 Update: Hawai'i Department of Land and Natural Resources, Commission on Water Resource Management, accessed November 10, 2019, at http://files.hawaii.gov/dlnr/cwrmp/planing/wrpp2019update/WRPP_201907.pdf.

Table 1: Priority streams identified by the CWRM for seepage-analysis discharge measurements.

Kaua'i	East Maui	Moloka'i
Hanalei River	East Wailuaiki Stream	Kaunakakai Gulch
Kapa'a Stream	Ha'ipua'ena Stream	Kawela Gulch
Waimea River	Hanawī Stream	Waikolu Stream
Wainiha River	Hanehoi Stream	
	Honomanū Stream	Hawai'i
O'ahu	Honopou Stream	Alakahi Stream
Kahana Stream	Ho'olawa Stream	Kawainui Stream
Kaupuni Stream	Kailua Stream	Waiākea Stream
Mākaha Stream	Kapaula Stream	Waikoloa Stream
Maunawili Stream	Kaupakulua Gulch	Wailoa Stream
Waiāhole Stream	Kopiliula Stream	Wailuku River
Waihe'e Stream	Makapipi Stream	
Waikāne Stream	Nailiilihaele Stream	
	Nua'ailua Stream	
West Maui	'O'opuola Stream	
Honokōhau Stream	Palauhulu Stream	
Honokōwai Stream	Pi'ina'au Stream	
Honolua Stream	Pua'aka'a Stream	
Kahoma Stream	Punalau Stream	
Kanahā Stream	Puohokamoā Stream	
Kaua'ula Stream	Waikamoi Stream	
Olowalu Stream	Wailuanui Stream	
Ukumehame Gulch	Waiohue Stream	
Waiehu Stream	Waiokamilo Stream	
Waihe'e River	West Wailuaiki Stream	
Waikapū Stream		
Wailuku River		

CHAPTER 343 HRS EXEMPTION NOTIFICATION

Regarding the preparation of an environmental assessment pursuant to Chapter 343, HRS and Chapter 11-200, HAR

Project Title: FY 2020 Joint Funding Agreement with U.S. Geological Survey to Conduct Seepage Analyses at Specific Stream Sites, Hawai‘i

Project / Reference No.: Not Applicable

Project Location: Honokōhau, Honokōwai, Kahoma, Kanahā, and Olowalu Streams and Ukumehame Gulch, Maui; Waikoloa Stream, Hawai‘i

Project Description: Seepage analyses at specific stream sites, Maui and Hawai‘i islands

Chap. 343 Trigger(s): Use of State funds

Exemption Class No.: In accordance with Hawai‘i Administrative Rule Section 11-200.1-15(c)(5), the subject request is exempt from the preparation of an environmental assessment pursuant to Exemption Class No. 5, that states, "Basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource".

Consulted Parties: U.S. Geological Survey, Pacific Islands Water Science Center
Department of Land and Natural Resources, Engineering Division

Cumulative Impact of Planned Successive Actions in Same Place Significant? None. Staff believes there will be no cumulative impacts.

Action May Have Significant Impact on Particularly Sensitive Environment? No. There are no particular sensitive environmental issues on the identified streams.

Analysis: The proposed action is limited to U.S. Geological Survey staff walking in the stream channel and using non-invasive flow measurement techniques to measure streamflow at multiple points along a stream channel in a single day. Therefore, staff believes that the proposed actions would result in no significant impact to the natural, environmental, and/or cultural resources in the area, and that it should be found to be exempt from the preparation of an environmental assessment.

Recommendation:

That the Commission on Water Resource Management find that this project will have minimal or no significant impact on the environment and is therefore exempt from the preparation of an environmental assessment under the above exemption classes.