



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

STAFF SUBMITTAL

COMMISSION ON WATER RESOURCE MANAGEMENT

August 17, 2021
O'ahu, Hawai'i

Request and Delegation of Authority to Chairperson to
Enter into a Joint Funding Agreement with U.S. Geological Survey
For Statewide Hydrologic Data Collection and
Water Resource Monitoring for Federal Fiscal Year (FFY) 2022

SUMMARY OF REQUEST

Staff recommends that the Commission on Water Resource Management (Commission) enter into a Joint Funding Agreement (Agreement) with the U.S. Geological Survey (USGS) for the inventory and investigation of Hawai'i's water resources.

BACKGROUND

The cooperative monitoring of Hawai'i's hydrologic resources began in 1909 when the USGS entered into an Agreement with the Territory of Hawai'i. Initially, monitoring was focused on surface water, and 12 streams were gaged continuously. By 1914, there were 87 continuous-record stations, largely serving sugarcane plantation data needs. Following statehood, the Division of Water and Land Development (DOWALD) managed the Agreement with USGS for the Department of Land and Natural Resources (DLNR) to maintain funding for many gages. The program continued to grow, reaching a peak in 1966 when 197 stream gages were operational. In 1972, ground water data collection became an integral part of the Agreement. Baseline data throughout the State covered 170 observation wells.

With the passage of the State Water Code, responsibility to coordinate monitoring programs and activities concerning water resource protection and management were transferred to the Commission. The cooperative monitoring of Hawai'i's hydrologic resources is part of the Commission's mandate to "maintain an inventory of all water uses and water resources" [Haw. Rev. Stat. §174C-5(14)]. The program also helps the Commission to assess how climate variability, changing land use, and increasing water demands affect water resources. Maintaining a long-term hydrologic monitoring program with the USGS is an essential component of the Commission's Water Resource Protection Plan, including:

...the effect on the environment, procreation of aquatic life and wildlife, and water quality; study the quantity and quality of water needed for existing and contemplated uses, including irrigation, power development, geothermal power, industrial, and municipal uses; study such other related matters as drainage, reclamation, flood hazards, floodplain zoning, dam safety, and selection of reservoir sites, as they relate to the protection, conservation, quantity, and quality of water. (HAR §13-170-21)

Over the years, stream and well observation gages were discontinued for a variety of reasons. There was a shift in fiscal priorities, economic realities, completed data acquisition objectives, and reduced plantation partnership engagement as plantations ceased operations. Beginning in 1998, the Commission streamlined the Agreement by transferring the crest-stage stream-gaging program to the City and County of Honolulu (for O‘ahu) or the Department of Transportation (for neighbor islands) where this data (e.g., flooding issues) are more relevant to disaster response rather than sustainability issues. In addition, the Waiāhole Trust Fund was established in 1997 to defray the cost of monitoring the stream and rainfall gages within the region impacted by the Waiāhole Ditch.

Duplication of groundwater data collection sites were eliminated in 1998. Groundwater data gathering changed and expanded to incorporate data provided by water system purveyors and well owners, who were required by law and rule to report their water-use, water levels, and chloride levels. Commission staff has also developed in-house capacity and expertise to take over monitoring of selected well sites. As a result, the Commission’s Survey Branch is assuming the monitoring of many wells previously monitored by the USGS.

During the economic recession of the mid-2000s, watershed management grant funding through the Division of Forestry and Wildlife that supported many stream gaging stations was discontinued. In order to maintain the continuity of important monitoring records, money from the Commission budget was dedicated to the operation and maintenance costs for these stations as part of the Agreement. In 2011, the Stream Protection and Management (SPAM) Branch started monitoring interim instream flow standards (interim IFS) on the island of Maui. Since that time, additional monitoring has been needed to ensure the compliance of interim IFS throughout the State.

Commission staff has also developed the in-house capacity and expertise to install, maintain, and monitor selected surface water locations. While the overall installation cost and the operation and maintenance cost per station can be much lower when Commission staff maintains a stream gaging station, staff time dedicated to this type of work takes away from the Branch’s other duties, including the development of interim instream flow standards. Further, USGS maintains redundant high-quality assurance and quality control procedures that are not available to Commission staff. There is substantial staff effort (e.g., cost and time) to maintain a stream gaging station and with limited staff availability, the added cost to the Agreement is the only mechanism to collect the needed data. USGS also maintains high quality assurance and quality control standards which can be challenging for the Commission to replicate with limited staffing. An overall increase in monitoring needs as a result of new interim IFS, and a need to better understand how changes in climate patterns are affecting surface water availability, has led to an increase in the number of CWRM-funded USGS stream gaging stations.

Currently, Commission staff monitors 35 observation wells and maintains 40 stream gaging stations, while each county’s water supply department also monitors dozens of observation wells and reports to the Commission (Table 1).

Table 1. Summary of current (FY2022) total USGS and total Commission (CWRM) staff monitoring efforts as well as the breakdown of the number of CWRM funded USGS ground water and surface water monitoring stations.

	rainfall stations	observation well stations	continuous stream monitoring stations (not real-time)	real-time stream monitoring stations	continuous ditch monitoring stations
USGS total	21	35	6	80	5
CWRM total	0	35	33	7	8
CWRM-USGS co-funded	17	9	0	41	0
Other cooperators	3	26	0	36	5

The total cost of the Agreement, the Commission share, and the costs for operating and maintaining each type of rainfall, stream, and groundwater monitoring station has been standardized across stations and the most recent years are provided in Table 2.

The 2019 Update to the Water Resource Protection Plan identified a need to monitor the hydrological consequences of climate change across the State. Further, the 2020 USGS Hydrological Monitoring Needs Assessment for the State of Hawai‘i identified the location of new streamflow monitoring stations needed to fully implement a hydrological monitoring network to characterize the consequences of climate change. Stations re-established in locations with previous long-term streamflow monitoring can also be used to help track shifts in water availability or hydrological processes associated with climate change.

Table 2. Summary of annual cost requirements for various stations and the source of funds for the CWRM-USGS statewide hydrologic data collection agreement.

Cost of services or source of funds	FFY2018	FFY2019	FFY2020	FFY2021	FFY2022
Total Joint Funding Requirement	\$737,700	\$870,842	\$1,107,850	\$932,770	\$1,133,144
Expected (full-year) CWRM cost-share not to exceed	\$495,520	\$624,317	\$859,139	\$711,475	\$909,076 ¹
Percentage CWRM cost-share	67%	72%	78%	76%	80% ²
Waiāhole Ditch Trust Fund	\$49,080	\$67,200	\$91,564	\$84,956	\$86,018
Groundwater well continuous monitoring (per site)	\$6,500	\$6,620	\$6,740	\$6,930	
Rainfall continuous monitoring (per site)	\$9,200	\$9,400	\$9,570	\$9,850	\$9,960
Streamflow continuous monitoring (per site)	\$22,000	\$22,400	\$22,800	\$23,500	\$23,800

¹ Does not reflect credit of \$133,144 for funds contributed in FY20 and F21 for work not completed.

² Does not include contributions from other agencies including DOT, USDA Forest Service, Kamehameha Schools.

CURRENT AGREEMENT

Rainfall Monitoring

The defacto State Climate Office was originally located under DOWALD within DLNR. DOWALD acted as a repository for climate data collected by disparate entities (mostly private agricultural companies). With the passage of the State Water Code and the establishment of the

Commission, the Climate Office was transferred to the University of Hawai‘i Department of Meteorology. While UH does not serve the same function as DOWALD, they continue to be a repository for climate data and field data requests. Through the Agreement, the Commission has funded the monitoring of rainfall in important locations throughout the state for the last few decades. Rainfall stations all provide real-time continuous data that are relied upon by the Commission, Federal (e.g., National Weather Service), State and County (e.g., Departments of Civil Defense, Emergency Management, Public Works) agencies, and the public to closely monitor weather conditions. In FFY2021, the Honolulu Board of Water Supply (HBWS) took over the funding responsibility of two rainfall stations on the island of O‘ahu. In response to the publication of the Statewide Monitoring Needs Assessment¹, and in consultation with UH Mānoa, CWRM will fund USGS rainfall monitoring stations strategically where existing USGS streamflow monitoring infrastructure already exists to reduce costs: at USGS 16057900 Waiahi Stream on Kaua‘i; at USGS 16400000 Halawa Stream on Molokai; and at USGS 16620000 Honokōhau Stream on Maui.

Groundwater Monitoring

The general nature of the FFY 2022 Agreement and relationship of the parties remains the same as FFY 2021 for groundwater data collection. USGS monitors 9 ground water observation wells for the Commission, taking quarterly or bi-monthly depth and/or conductivity, temperature, and depth (CTD) profiles. In a few locations, ground water levels are monitored in real-time to protect aquifers from being over-pumped.

Streamflow Monitoring

With respect to streamflow monitoring, the Agreement in FFY 2022 will cover the installation costs of the three (3) new stations added to the Agreement in FFY 2021 and the permitting costs for additional stream gaging stations to be added to future agreements (Table 3). The installation costs vary widely depending on the location, land ownership, and accessibility. Therefore, the initial reconnaissance of these stations will provide more accurate future installation cost estimates for future agreements. In FY2020, the Commission received an increase of \$240,000 in general funds to cover the costs of additional stream gaging related to the establishment or monitoring of interim IFS, especially in streams impacted by potential water leases. Stations re-established in locations with previous long-term streamflow monitoring can also be used to help track shifts in water availability or hydrological processes associated with climate change. In FFY2021, HBWS took over the funding responsibility of four (4) streamflow stations on the island of O‘ahu.

Installation of New Streamflow Monitoring Stations in FY2022

To meet the needs of the Water Resource Protection Plan approved by the Commission in 2019, additional streamflow monitoring stations were identified in the Statewide Monitoring Needs Assessment. The permitting costs associated with three (3) stations was paid for in FY2021 with installation and half a year of operation anticipated in FY2022.

¹ US Geological Survey Scientific Investigations Report 2020-5115

One (1) new station is located on Kaupuni Stream at 374 feet, in Wai‘anae on O‘ahu. This station was active from 1960 to 1972. Tributaries of Kaupuni Stream originate in the Wai‘anae Kai Forest Reserve where the HBWS operates many development tunnels for municipal water supply. The Wai‘anae community is engaged in biocultural restoration of the ahupua‘a and this station will provide the Commission with important information regarding the establishment and maintenance of future IFS. Gaging is also needed to monitor the consequences of IFS values for downstream water availability.

One (1) station is located in West Maui on Ukumehame Stream to monitor natural flow. This station was identified by USGS and CWRM staff for its location to monitor the consequences of climate change for leeward Maui as well as serve as an index station for existing interim IFS values established in 2018 on Ukumehame and Olowalu streams. This station is currently maintained as a low-flow index station and will be fully upgraded in FY2022.

On Hawai‘i Island, USGS and Commission staff originally identified station 16700000 on Waiākea Stream near Mountain View to be re-activated. However, following conversations with past USGS staff, a number of issues with this station were raised and they recommended reactivating USGS station 16701800 on Wailuku River near Kaūmana instead. Permitting for this station was paid for in FY2021 with installation happening in FY2022.

Existing Low-Flow Streamflow Monitoring Stations for FY2022

In 2017, as part of the Statewide Low-Flow Study to be published in FFY2022, USGS staff installed a number of low-flow continuous monitoring stations to serve as index stations for regions of the state that lacked existing continuous streamflow monitoring. These low-flow stations (identified in the staff submittal on May 18, 2021) will be maintained by a separate funding agreement approved by the Commission in May 2021. The permitting for one of these stations (USGS 16717850 on Manowai‘ōpae) for the eventual upgrade to a real-time streamflow monitoring station will be paid for in FFY2022, with \$8,500 paid for by the Commission and a \$7,000 cost-share provided by the USDA Forest Service Institute for Pacific Islands Forestry.

Stations added to increase monitoring of Nā Wai ‘Ehā

To increase transparency for real-time water resource management allocation decisions following the final Decision and Order for the Nā Wai ‘Ehā surface water management area published in 2021, a real-time monitoring station will be installed in Waikapū Stream above the South Waikapū Ditch intake (USGS 16647900). Reconnaissance and permitting of this station were paid for in FFY2021 by Mahi Pono with installation in FFY2022 partially paid for by the Commission (\$10,500) and partially by Mahi Pono (\$19,921).

Funding for the Reconnaissance and Permitting of New Streamflow Monitoring Stations for FY2022

Additional streamflow monitoring stations will be added to the Agreement as identified in Table 4. The costs for reconnaissance and permitting these stations will be added to the Agreement for FFY2022. The costs for installation and operation will be added to a future agreement.

Table 4. US Geological Survey (USGS) station number, island, name, FFY2022 (CIP) cost for new stations added to the FFY 2022 Commission-USGS statewide hydrologic data collection cooperative agreement.

Station number	Island	Station name	CWRM FFY2022 cost	Notes
16409000	Molokai	Waihanau Stream nr Kalaupapa	\$15,500	Index station for Waikolu Stream and a climate monitoring station
16647900	Maui	Waikapu Str 120ft US S Waikapu Dt	\$10,500	Nā Wai ‘Ehā water management area; \$19,921 to be paid by Mahi Pono; \$8,100 to be paid by DOT
16717850	Hawai‘i	Manowai‘ōpae Stream nr Spencer Rd	\$8,500	\$7,000 to be paid by USDA Forest Service

Temporary Reductions in Station Costs

In FY2021, the Commission approved the expenditure of additional general funds to support the expansion of the Agreement to meet the Commission's hydrological monitoring needs. The increased costs associated with expansion were to fund the reconnaissance, permitting, installation and development of new streamflow monitoring stations. Due to complications relating to the spread of SARS-Cov-2, which continues to affect travel, fieldwork, and the procurement of new monitoring equipment for USGS, much of the funds designated for the installation and operation of additional stations will not be spent by the end of FFY2021. A portion of the costs associated with the fieldwork and personnel designated in the FFY2021 Agreement will be spent in FFY2022. Thus, the cost to the Commission for the FFY2022 Agreement is reduced by this offsetting amount (\$133,144) and is reflected in the Commission's total share not to exceed \$775,932.

OTHER

I. Chapter 343 – Environmental Assessment (EA) Compliance

Environmental Assessment (“EA”) Triggers

Under Hawaii Revised Statutes §343-5(a), the use of state funds triggers the need for an EA.

EA Exemption

The proposed action is exempt from an EA based on Hawaii Administrative Rule §11-200.1-15(c)(5) and the Exemption List for the Commission on Water Resource Management approved by the Environmental Council on January 5, 2021, and falls under Exemption Class 5, Part 1, No. 3, which provides for “Installation of new, small groundwater, surface water, or climatological monitoring and data collection equipment, structures that house or protect this equipment, and installation of electrical, telemetry, or communications systems to service these equipment or structures.” No exemption notice is required.

Exhibits

Exhibit 1 provides a summary of changes to the program, including the operational cost, since FFY 2011.

Exhibit 2 outlines the proposed scope of services. The Agreement covers FFY 2022 (October 1, 2021 to September 30, 2022).

Exhibit 3 lists the stations to be funded in the FFY2022 Agreement. The total cost of the Agreement will not exceed \$1,000,000. The Commission's share will not exceed \$775,932.

Under the FFY 2022 Agreement, the USGS will collect basic hydrologic data and provide data summary reports on water resources throughout the State of Hawai'i.

RECOMMENDATIONS:

Staff recommends that the Commission:

- 1) Authorize the Chairperson to enter into a Joint Funding Agreement with the U.S. Geological Survey for FFY 2022 to undertake the specified monitoring activities;
- 2) Delegate authority to the Chairperson to modify the list of monitoring stations, provided that there is no increase in cost to the Commission; and
- 3) Find that this Joint Funding Agreement is exempt from the preparation of an environmental assessment under Hawaii Revised Statutes §343 based on Hawaii Administrative Rules §11-200-8(a)(5) and the Exemption List for the Department of Land and Natural Resources approved by the Environmental Council on June 5, 2015.

The terms of this Agreement are subject to the approval of the Attorney General's Office. Contract execution will be done in accordance with Hawaii Revised Statute Chapter 103D and Hawaii Administrative Rules, Chapter 3-122.

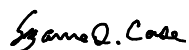
Ola i ka wai,



M. KALEO MANUEL
Deputy Director

- Exhibit (s):
1. Summary of Changes to the Cooperative Program: 2011 to 2022
 2. Proposed Scope of Services
 3. Monitoring Stations to be funded in the FFY 2020 Agreement

APPROVED FOR SUBMITTAL:



SUZANNE D. CASE
Chairperson

SUMMARY OF CHANGES TO THE COOPERATIVE PROGRAM: 2011 to 2022

Federal Fiscal Year	Streamflow station	Groundwater stations	Rainfall stations	CWRM contribution	Changes and Comments
2011	28	20	14	\$404,900	1. CWRM cost share increases to 50% 2. Additional Federal match used to reinstate monitoring stations 3. Waiāhole Trust Fund provided \$35,495 for Waiāhole stations
2012	27	18	14	\$487,760	1. CWRM cost share increases to 57% 2. Waiāhole Trust Fund to provide \$41,850 for Waiāhole stations 3. USGS monitoring costs increased by about 10%
2013	28	18	14	\$417,650	1. Waiāhole Trust Fund to provide \$39,850 for Waiāhole stations 2. Moanalua Stream station (16227500) added for Rain Follows the Forest Initiative
2014	25	14	15	\$433,218	1. Waiāhole Trust Fund to provide \$41,650 for Waiāhole stations
2015	26	14	16	\$444,700	1. Mt. Wai'ale'ale Rain Gage added 2. South Fork Kaukonahua stream gage (16208000) added 3. Waiāhole Trust Fund to provide \$41,650 for Waiāhole stations
2016	26	14	16	\$486,933	1. CWRM cost share increases to 65% 2. Waiāhole Trust Fund to provide \$41,650 for Waiāhole stations
2017	27	12	17	\$494,148	1. Waiāhole Trust Fund to provide \$45,264 for Waiāhole stations 2. Waimea River nr Waimea stream gage (16031000) added
2018	27	9	17	\$495,520	1. CWRM cost share increases to 67% 2. CWRM staff to assume monitoring of three wells previously monitored by the USGS
2019	32	9	17	\$624,317	1. Waiāhole Trust Fund to provide \$67,200 for Waiāhole stations 2. Five new gaging stations added to agreement (4 stream, 1 ditch): Waiahi on Kaua'i; Honomanū, Kahoma, Wailuku, Kau'aula on Maui; Kauaula Ditch (Maui)
2020	39	9	17	\$859,139	1. Waiāhole Trust Fund to provide \$91,564 for Waiāhole stations 2. Seven new stream gaging stations added to the agreement: Waimea River, North Fork Wailua River, and Huleia Stream on Kaua'i; Kamananui Stream on O'ahu; Waikolu Stream and East Fork Kawela Stream on Moloka'i; Naili'ilaha'ele Stream on Maui.
2021	39	9	15	\$696,864	1. Honolulu BWS assumes responsibility for providing cooperative funds for four streamflow gaging stations and two rainfall stations on Oahu. 2. CWRM will assume responsibility for providing cooperative funds for one station previously funded by HiEMA on Wainiha Stream, Kauai (USGS 16108000) 3. The reconnaissance costs for three new stations are provided in FY2021
2022	42	9	18	\$775,932	1. Installation costs for Ukumehame, Maui, Kaupuni, Oahu, and Wailuku, Hawaii whose permitting costs were paid for in FY2021 2. Permitting costs for three new stream gaging stations added to the Agreement: Waihanau Stream, Molokai; Waikapū Stream, Maui; Manowai'ōpae Stream, Hawaii

EXHIBIT 1

PROPOSED SCOPE OF SERVICES

1. This Joint Funding Agreement (“Agreement”) is a continuation of the joint funding agreement for the collection of hydrological data in the State of Hawai‘i between the U.S. Geological Survey, United States Department of the Interior and the Commission on Water Resource Management, Department of Land and Natural Resources, State of Hawai‘i (“Commission”).
2. The scope of services involves the collection and computation of data on water resources collected in multiple locations throughout the State of Hawai‘i.
3. U.S. Geological Survey shall collect data at an agreed upon list of surface water stations, ground water monitoring stations, and rainfall stations, as set forth in Exhibit 3 which is attached hereto and incorporated by reference.
4. U.S. Geological Survey shall provide data summary reports and review of historical data sets.
5. U.S. Geological Survey shall host the maps, data, and reports resulting from this program in a publicly-accessible website, and shall provide the Commission staff direct and easy access to acquire, download, or transfer the data and report from a USGS server. The parties shall use good faith efforts to resolve any disagreements in the scope and validation of data acquisition and the contents of the report.
6. U.S. Geological Survey shall provide a readable statement of cooperative relations and visually identifiable symbol of the Commission as a cooperator in print, digital, and online publications of the data and reports of the monitoring stations that are included in the current cooperative program, and as well as the stations that were historically supported and funded by the Commission.
7. At least quarterly and upon request by the Commission on Water Resource Management, the U.S. Geological Survey will update the Commission on the progress of its work on this Joint Funding Agreement.
8. The Commission on Water Resource Management shall assist the U.S. Geological Survey in its work under the Joint Funding Agreement to the extent feasible and practicable under existing resources of the Commission.

MONITORING STATIONS TO BE FUNDED IN THE FFY 2022 AGREEMENT

Monitoring stations to be operated or installed as part of the cooperative water-resources monitoring program between the State of Hawaii Department of Land Natural Resources Commission on Water Resource Management and the U.S. Geological Survey during the period October 1, 2021 and September 30, 2022.
[GW, Groundwater; CTD, Conductivity, temperature and depth]

Station Number	Station Name	Record type	Real-time data	USGS	CWRM	*Total	Footnotes
16016000	Waimea River abv Kekaha-Waiahulu Intake, Kauai, HI	Discharge	Yes	\$0	\$27,140	\$27,140	1,2,3
16031000	Waimea River near Waimea, Kauai, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
16049000	Hanapepe Riv blw Manuahi Str nr Eleele, Kauai, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16052400	RB Lawai Stream 300ft US of fork, Kauai, HI	Discharge	Yes	\$0	\$23,800	\$23,800	1
16055000	Huleia Str nr Lihue, Kauai, HI	Discharge	Yes	\$0	\$0	\$0	*Replaced with RB Lawai Stream
16057900	Waiahi Str US Upper Powerhouse, Kauai, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16060000	SF Wailua River nr Lihue, Kauai, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16060950	NF Wailua River abv N Wailua Ditch Intake, Kauai, HI	Discharge	Yes	\$0	\$23,800	\$23,800	1
16068000	EB of NF Wailua River nr Lihue, Kauai, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16071500	Left Branch Opaekaa Str nr Kapaa, Kauai, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
16097500	Halaulani Str at alt 400 ft nr Kilauea, Kauai, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
16103000	Hanalei River nr Hanalei, Kauai, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16108000	Wainiha River nr Hanalei, Kauai, HI	Discharge	Yes	\$10,799	\$17,341	\$28,140	2
16211300	Makaleha Stream nr Waialua, Oahu, HI	Discharge	Yes	\$0	\$0	\$0	deferred
16211800	Kaupuni Str at alt 374 ft nr Waianae, Oahu, HI	Discharge	Yes	\$0	\$39,900	\$39,900	5
16294100	Waiahole Stream above Kamehameha Hwy, Oahu, HI	Discharge	Yes	\$0	\$23,800	\$23,800	
16294900	Waikane Str at alt 75 ft at Waikane, Oahu, HI	Discharge	Yes	\$0	\$23,800	\$23,800	
16296500	Kahana Str at alt 30 ft nr Kahana, Oahu, HI	Discharge	Yes	\$0	\$23,800	\$23,800	
16301050	Punaluu Str abv Punaluu Ditch Intake, Oahu, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16325000	Kamananui Str at Pupukea Mil Rd, Oahu, HI	Discharge	Yes	\$0	\$12,300	\$12,300	6
16345000	Opaeula Str nr Wahiawa, Oahu, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16408000	Waikolu Str blw Pipe Cross Nr Kalaupapa, Molokai, HI	Discharge	Yes	\$0	\$19,040	\$19,040	1,2,4
16409000	Waihanau Stream nr Kalaupapa, Molokai, HI	Discharge	No	\$0	\$15,500	\$15,500	7,8
16415000	EF Kawela Gulch nr Kamalo, Molokai, HI	Discharge	No	\$0	\$18,700	\$18,700	1,8
16508000	Hanawi Stream near Nahiku, Maui, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16518000	West Wailuauiki Stream near Keanae, Maui, HI	Discharge	Yes	\$0	\$6,785	\$6,785	4,9
16527000	Honomanu Stream near Keanae, Maui, HI	Discharge	Yes	\$0	\$0	\$0	deferred
16527500	Honomanu Stream near Hana Hwy, Maui, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
16570000	Nailiihalee Stream near Huelo, Maui, HI	Discharge	Yes	\$0	\$23,800	\$23,800	1
16587000	Honopou Stream near Huelo, Maui, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16604500	Wailuku River at Kepaniwai Park, Maui, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
16605500	Wailuku River at Iao Valley Rd	Discharge	Yes	\$0	\$0	\$0	10
16614000	Waihee Rv abv Waihee Dtch intk nr Waihee, Maui, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
16620000	Honokohau Stream near Honokohau, Maui, HI	Discharge	Yes	\$9,298	\$17,842	\$27,140	2
16638500	Kahoma Stream at Lahaina, Maui, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
16641000	Kauaula Stream abv Ditch Diversion nr Lahaina, Maui, HI	Discharge	Yes	\$0	\$23,800	\$23,800	
16643100	Kauaula Stream blw Ditch Diversion nr Lahaina, Maui, HI	Discharge	Yes	\$0	\$18,700	\$18,700	
16647000	Ukumehame Gulch nr Olowalu, Maui, HI	Discharge	Yes	\$0	\$39,850	\$39,850	4,5
16647900	Waikapu Str 120ft US S Waikapu Dt intake, Maui, HI	Discharge	Yes	\$5,379	\$10,500	\$15,879	4,5,10
16701800	Wailuku River nr Kaumana	Discharge	Yes	\$0	\$43,900	\$43,900	5,11

Staff Submittal
USGS Joint Funding Agreement

August 17, 2021

Attachment 1
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Monitoring stations to be operated or installed as part of the cooperative water-resources monitoring program between the State of Hawaii Department of Land Natural Resources Commission on Water Resource Management and the U.S. Geological Survey during the period October 1, 2021 and September 30, 2022.
[GW, Groundwater; CTD, Conductivity, temperature and depth]

Station Number	Station Name	Record type	Real-time data	USGS	CWRM	*Total	Footnotes
16704000	Wailuku River at Piihonua, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16717000	Honolii Stream nr Papaikou, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
16717815	Manowaiopae Stream nr Spencer Rd, HI	Discharge	No	\$0	\$8,500	\$8,500	7,8,12
16720000	Kawainui Stream nr Kamuela, HI	Discharge	Yes	\$8,154	\$15,646	\$23,800	
16725000	Alakahi Stream near Kamuela, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
16764000	Hilea Gulch Tributary near Honuapo, HI	Discharge	Yes	\$0	\$0	\$0	deferred
16770500	Paaau Gulch at Pahala, HI	Discharge	Yes	\$5,379	\$10,321	\$15,700	4
215607159344301	2-5634-01 Hanapepe Ridge, Kauai, HI	GW Quarterly	No	\$825	\$2,455	\$3,280	13
212238157561101	3-2256-10 Aiea US Navy (187-B), Oahu, HI	GW Continuous	No	\$3,336	\$3,674	\$7,010	
211832157515501	3-1851-19 Halekauwila Street, Pipe A, Oahu, HI	GW Quarterly	No	\$904	\$4,616	\$5,520	14
211832157515502	3-1851-19 Halekauwila Street, Pipe B, Oahu, HI	GW Quarterly	No	\$904	\$4,616	\$5,520	14
212154158015201	3-2101-03 Honouliuli, Oahu, HI	GW Quarterly	No	\$1,794	\$1,486	\$3,280	13
205405156305401	6-5430-05 Waiehu Deep Monitor Well, Maui, HI	GW Continuous	Yes	\$1,871	\$5,139	\$7,010	
210825157004301	4-0800-01 Kualapuu Deep Monitor Well, Molokai, HI	GW CTD Profiles	No	\$2,209	\$5,741	\$7,950	
210402156495801	4-0449-01 Ualapue Shaft, Molokai, HI	GW Quarterly	No	\$833	\$2,447	\$3,280	13
210920156454301	Halawa Rain Gage nr Halawa, Molokai, HI	Rainfall	Yes	\$0	\$8,000	\$8,000	15
220122159275401	Waiahi Rain Gage nr Upper Powerhouse, Kauai, HI	Rainfall	Yes	\$0	\$8,000	\$8,000	15
220356159281401	1051.0 N Wailua Ditch Rain Gage nr Lihue, Kauai, HI	Rainfall	Yes	\$3,540	\$9,760	\$13,300	2
220427159300201	1047.0 Mt. Waialeale Rain Gage nr Lihue, Kauai, HI	Rainfall	Yes	\$3,540	\$9,760	\$13,300	2
220523159341201	1042.0 Waialae Rain Gage nr Waimea, Kauai, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	16
220713159361201	1083.0 Mohihi Crsg Rain Gage nr Waimea, Kauai, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
220739159373001	1082.0 Waiakoali Rain Gage nr Waimea, Kauai, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
220927159355001	1084.0 Kilohana Rain Gage nr Hanalei, Kauai, HI	Rainfall	Yes	\$3,540	\$9,760	\$13,300	2
212855157504501	837.0 Waiahole RG at Kamehameha Hwy., Oahu, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
213237157530701	886.4 Kahana Rain Gage at alt. 95 ft., Oahu, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
213608158011101	897.9 Pupukea Rd Rain Gage at alt 1,160 ft, Oahu, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
213732158010201	897.11 Kamananui Rain Gage at alt. 720 ft, Oahu, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
203721156151601	255.0 Kepuni Gulch Rain Gage, Maui, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
204916156083701	348.5 West Wailuaiki Rain Gage nr Keanae, Maui, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
205735156351301	Honokohau Rain Gage nr Honokohau, Maui, HI	Rainfall	Yes	\$0	\$8,000	\$8,000	15
194117155174801	83.0 Quarry Rain Gage at Saddle Rd, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
194945155534402	92.5 Kiholo Rain Gage, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
200518155405801	185.7 Kawainui Rain Gage near Kamuela, HI	Rainfall	Yes	\$2,651	\$7,309	\$9,960	
To be determined	Pepeopae Rain Gage, Molokai, HI	Rainfall	Yes	\$0	\$0	\$0	deferred
TBD	Hilea Gulch Rain Gage	Rainfall	Yes	\$0	\$0	\$0	deferred
Subtotal				\$ 224,068	\$909,076	\$1,133,144	
<i>Credit for funds contibuted in FY20 and F21 for work not completed</i>						(\$133,144)	(\$133,144)
Total				\$224,068	\$775,932	\$1,000,000	

Footnotes

1. Credited for funds contributed in FY20 and 21 for work not completed

Staff Submittal
 USGS Joint Funding Agreement

August 17, 2021

Attachment 1
 Page 3 of 3

Monitoring stations to be operated or installed as part of the cooperative water-resources monitoring program between the State of Hawaii Department of Land Natural Resources Commission on Water Resource Management and the U.S. Geological Survey during the period October 1, 2021 and September 30, 2022.
 [GW, Groundwater; CTD, Conductivity, temperature and depth]

Station Number	Station Name	Record type	Real-time data	USGS	CWRM	*Total	Footnotes
2.	Helicopter use surcharge included						
3.	Reduced charge for funds contributed towards operation and maintenance or installation in FY21 that was not completed						
4.	State of Hawaii Department of Transportation contributes additional funding for peak-flow record						
5.	Permitting and reconnaissance costs were charged in Federal fiscal year 2021. Installation and partial-year operation and maintenance costs in Federal fiscal year 2022.						
6.	Office of Hawaiian Affairs contributes additional funding for real-time stage record						
7.	Permitting and reconnaissance costs in Federal fiscal year 2022. Installation and partial-year operation and maintenance costs to be charged in Federal fiscal year 2023						
8.	Non real-time low flow data collection only in FY22						
9.	USGS Groundwater and Streamflow Information Program contributes additional funding.						
10.	Mahi Pono contributes additional funding						
11.	Replacement for Waiakea Stream nr Mountain View						
12.	U.S. Forest Service contributes additional funding						
13.	Quarterly water-level measurements.						
14.	Quarterly water-level measurements and chloride samples.						
15.	Includes installation/equipment costs in FY22 and full year operation and maintenance, discount for co-located streamgage and shared data collection platform						
16.	USGS Groundwater and Streamflow Information Program contributes additional funding for helicopter surcharge related to co-located streamgage.						
* Total does not include contributions from other sources							