DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

BRUCE S. ANDERSON, PH.D.
KAMANA BEAMER, PH.D.
NEIL J. HANNAHS
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL
DEPUTY DIRECTOR

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 29, 2019
Wailuku, 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) 2020

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 Hawaii'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:

TRIAL EXHIBIT AB-72 001

> ...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 ground water data collection sites were eliminated in 1998. Ground water 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 installs and maintains these stations, staff time dedicated to this type of work takes away from the Branch's other duties, including the development of interim instream flow standards. In some cases, there is substantial staff effort (e.g., cost and time) to maintain a stream gaging station and the added cost to the Agreement for the station makes fiscal sense. USGS also maintains high quality assurance and quality control standards which can be challenging for the Commission to replicate with limited staffing. The overall increase in data needs and the cost/time savings of using USGS to monitor particular locations, has led to an increase in the number of CWRM-funded USGS stream gaging stations in the last few years (Figure 1).

Currently, Commission staff monitors 35 observation wells and maintains 33 stream gaging stations, while each county's water supply department also monitors dozens of observation wells and reports to the Commission (Table 1).

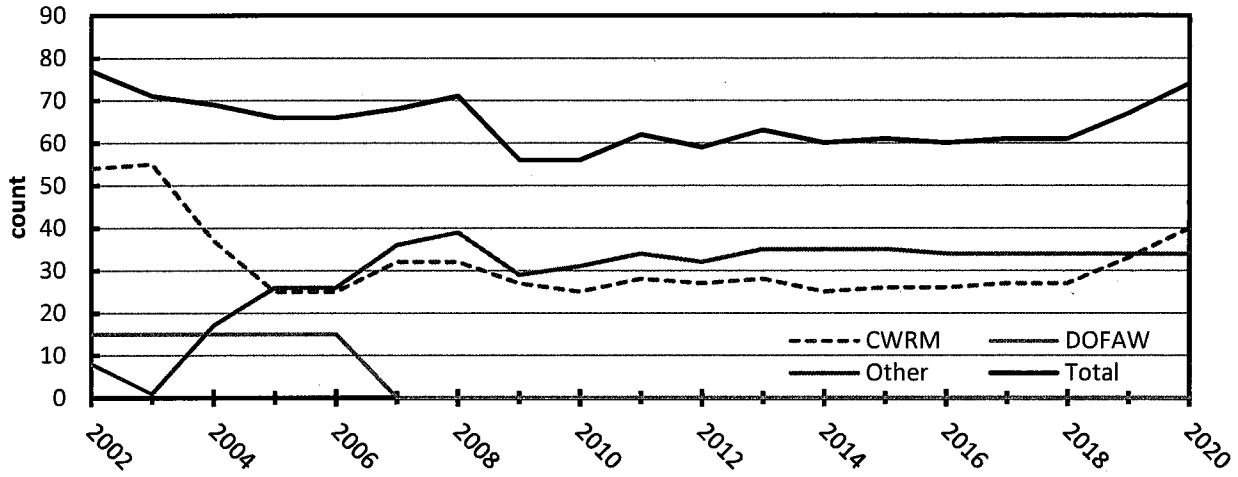

Figure 1. Number of USGS continuous stream gaging stations by cooperative funding source over time. [CWRM = Commission on Water Resource Management; DOFAW = Division of Forestry and Wildlife; Other includes State of Hawaii Department of Civil Defense or Transportation, county departments of water supply or departments of environmental services, Office of Hawaiian Affairs, Kamehameha Schools Bishop Estate, or National Parks Service]

Table 1. Summary of current (FY2020) 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	0*	75	5
CWRM total	0	35	29	7	7
CWRM-USGS co-funded	17	9	0	38	0
Other cooperators	4	26	0	37	5

*does not include temporary gages used in hydrological studies

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

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	FFY2016	FFY2017	FFY2018	FFY2019	FFY2020
Total Joint Funding Requirement	$749,069	$756,284	$737,700	$870,842	$1,107,850
Expected (full-year) CWRM cost-share not to exceed	$486,933	$494,148	$495,520	$624,317	$859,139
Percentage CWRM cost-share	65%	65%	67%	72%	78%
Waiāhole Ditch Trust Fund	$41,650	$45,264	$49,080	$67,200	$91,564
Ground water well continuous monitoring (per site)	$7,015	$7,173	$6,500	$6,620	$6,740
Rainfall continuous monitoring (per site)	$9,420	$9,581	$9,200	$9,400	$9,570
Streamflow continuous monitoring (per site)	$20,143	$20,552	$22,000	$22,400	$22,800

CURRENT AGREEMENT

Rainfall Monitoring

The defacto State Climate Office was originally located in the Division of Water and Land Development (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. The general nature of the FFY 2020 Agreement and relationship of the parties remains the same as FFY 2019 for rainfall data collection. 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.

The general nature of the FFY 2020 Agreement and relationship of the parties remains the same as FFY 2019 for ground water 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, a number of additional stream gaging stations will be added to the Agreement in FFY 2020 (Table 3). The Commission installation cost for these stations varies depending on location, previous survey work, cost-share opportunities, and the timeframe for installation. Some stations will be co-located as part of the network of crest-gage stations funded by the Department of Transportation (DOT) and therefore DOT is covering some of the installation or operation and maintenance costs for these stations. The future operation and maintenance costs for these stations will revert to the same as other station costs (FFY 2020 cost is $22,800 per station). In FY2020, the Commission received an increase of $240,000 in general funds to cover the costs of additional stream gaging needs related to the establishment or monitoring of interim IFS, especially in streams impacted by potential water leases.

These stations are added to the Agreement primarily because the SPAM branch has found it time- or cost-prohibitive to maintain a gaging station at the particular location due to channel size (e.g., very wide), roughness (e.g., many boulders), frequent section control shifts due to changes in upstream/downstream channel conditions (e.g., large amounts of debris), or location (e.g., too remote). Unlike ground water monitoring, stream conditions can change drastically over time, especially following flood events. Thus the relationship between surface water elevation (stage) and downstream flow may shift. Only with high quality channel surveys, many accurate, repeated measurements, sound equipment maintenance, and diligent quality control can these shifts be tracked over time.

Description of New Streamflow Monitoring Stations

One new station will be located in the Waimea River, above the Waiahulu Intake of the Kekaha Irrigation System. As part of the Waimea Watershed Agreement approved by the Commission in 2017, in Phase Two there will be variable interim IFS values below the Kōke'e Irrigation System. These restored flows will provide wetted habitat in the Po'omau Stream and Waimea River, but due to unknown surface water-ground water interactions, the rate of flow contributing to water available at the Waiahulu Intake is unknown. Additional gaging is needed to monitor the consequences of these interim IFS values for downstream water availability and the implementation of interim IFS values at other locations.

Two stations are being added in Southeast Kaua'i: one in Huleia and one on the North Fork of Wailua above the North Wailua Ditch (i.e., Wai'ale'ale Tributary). The first station will support monitoring of a future interim IFS in a region of Kaua'i with a current lack of continuous hydrological data, although the station was active from 1912 to 1970. The second station will support the monitoring of climate change impacts on surface water resources, support estimates of water availability for a potential future water lease, and to help manage downstream interim IFS values.

One station will be added on O'ahu (Kamananui Stream) which is co-funded by the Office of Hawaiian Affairs. This station will measure natural flow to support climate change monitoring on the North Shore.

One station will be added in East Maui (Na'ili'iliha'ele Stream) to monitor natural flow. This station will improve the monitoring of climate change impacts on surface flow as well as estimates of water availability for future interim IFS values and a potential East Maui water lease for streams not covered by the USGS study published in 2005. This station was previously active from 1911 to 1975.

One station will be added on Moloka'i (East Fork Kawela Stream) for developing interim IFS values in the recent petition to amend the interim IFS filed by Earthjustice on behalf of Moloka'i No Ka Heke. This station was previously active from 1946 to 1971.

One station will be re-established on Moloka'i (Waikolu Stream) following a lapse of funding. This station was active from 1919 to 1996 and will serve as a monitoring station for a future interim IFS in the recent petition to amend the interim IFS filed by Earthjustice on behalf of Moloka'i No Ka Heke.

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 §11-200-8(a)(5) and the Exemption List for the Department of Land and Natural Resources approved by the Environmental Council on June 5, 2015 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". The exemption notification is attached as Exhibit 4.

Table 3. US Geological Survey (USGS) station number, island, name, FY2020 (CIP) cost for new stations added to the FFY 2020 Commission-USGS statewide hydrologic data collection cooperative agreement; estimated O&M costs (FFY 2021) are provided. [DOT = Department of Transportation; OHA = Office of Hawaiian Affairs]

Station number	Island	Station name	CWRM cost	DOT cost	USGS cost	Total FFY 2020 cost	Purpose
16016500	Kaua'i	Waimea River abv Waiahulu Intake	$42,000	$0	$0	$42,000	Implementation of the Waimea Watershed Agreement; water lease area
16055000	Kaua'i	Huleia Str nr Lihue	$35,000	$0	$0	$35,000	IIFS monitoring
16060950	Kaua'i	NF Wailua River abv N Wailua Ditch Intake	$42,000	$0	$0	$42,000	critical climate monitoring station; water lease area;
16325000	O'ahu	Kamananui Str at Pupukea Mill Rd	$8,003	$0	$3,697	$22,800	critical climate monitoring station; OHA co-funds station
16408000	Moloka'i	Waikolu Str blw Pipe Cross nr Kalaupapa	$35,000	$7,000	$0	$42,000	IIFS monitoring
16415000	Moloka'i	EF Kawela Gulch nr Kamalo	$35,000	$0	$0	$35,000	IIFS index station; critical climate monitoring station
16570000	Maui	Nailiilihaele Stream near Huelo	$35,000	$0	$0	$35,000	critical climate monitoring station; water lease area

Exhibit 1 provides a summary of changes to the program, including the operational cost, since FFY 2009.

Exhibit 2 outlines the proposed scope of services. The Agreement covers FFY 2020 (October 1, 2019 to September 30, 2020).

Exhibit 3 lists the stations to be funded in the FFY 2020 Agreement. The total cost of the Agreement will not exceed $1,107,850. The Commission's share will not exceed $859,139.

Under the FFY 2020 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 2020 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: 2009 to 2020
2. Proposed Scope of Services
3. Monitoring Stations to be funded in the FFY 2020 Agreement
4. Chapter 343 HRS Exemption Notification

APPROVED FOR SUBMITTAL:

SUZANNE D. CASE
Chairperson

SUMMARY OF CHANGES TO THE COOPERATIVE PROGRAM: 2009 to 2020

Federal Fiscal Year	Streamflow station	Groundwater stations	Rainfall stations	CWRM contribution	Changes and Comments
2009	27	26	18	$504,000	1. Watershed Management Grant Program support was reduced to $48,896 2. Waiāhole Trust Fund provided $48,000 for Waiāhole stations
2010	25	17	14	$405,500	1. Quarterly implementation of the agreement 2. Watershed Management Grant Program withdraws support 3. Waiāhole Trust Fund provided $50,500 for Waiāhole stations
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 Waiahole 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 Waiahole stations
2015	26	14	16	$444,700	1. Mt. Waiʻaleʻale 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 Kauaʻi; Honomanū, Kahoma, Wailuku, Kauʻaula on Maui; Kauaula Ditch (Maui)
2020	39	9	17	$859,139	1. Waiāhole Trust Fund to provide $68,400 for Waiāhole stations 2. Seven new stream gaging stations added to the agreement: Waimea River, North Fork Wailua River, and Huleia Stream on Kauaʻi; Kamananui Stream on Oʻahu; Waikolu Stream and East Fork Kawela Stream on Molokaʻi; Nailiʻilihaʻele Stream on Maui

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.

EXHIBIT 2

MONITORING STATIONS TO BE FUNDED IN THE FFY 2020 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, 2019 and September 30, 2020.
[GW, Groundwater; CTD, Conductivity, temerature and depth]

Station Number	Station Name	Record type	Real-time data	USGS	CWRM	Total*	Footnotes
16016500	Waimea River abv Waiahulu Intake, Waimea, Kauai, HI	Discharge	Yes	$0	$42,000	$42,000	*1,2*
16031000	Waimea River near Waimea, Kauai, HI	Discharge	Yes	$4,740	$10,260	$15,000	*3*
16049000	Hanapepe Riv blw Manuahi Str nr Eleele, Kauai, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16055000	Hulela Str nr Lihue, Kauai, HI	Discharge	Yes	$0	$35,000	$35,000	*1*
16057900	Waiahi Str US Upper Powerhouse, Kauai, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16060000	SF Wailua River nr Lihue, Kauai, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16060950	NF Wailua River abv N Wailua Ditch Intake, Kauai, HI	Discharge	Yes	$0	$42,000	$42,000	*1,2*
16068000	EB of NF Wailua River nr Lihue, Kauai, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16071500	Left Branch Opaekaa Str nr Kapaa, Kauai, HI	Discharge	Yes	$4,740	$10,260	$15,000	*3*
16097500	Halaulani Str at alt 400 ft nr Kilauea, Kauai, HI	Discharge	Yes	$4,740	$10,260	$15,000	*3*
16103000	Hanalei River nr Hanalei, Kauai, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16208000	SF Kaukonahua Str at E pump, nr Wahiawa, Oahu, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16227500	Moanalua Stream nr Kaneohe, Oahu, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16229000	Kalihi Str nr Honolulu, Oahu, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16240500	Waiakeakua Str at Honolulu, Oahu, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16294100	Waiahole Stream above Kamehameha Hwy, Oahu, HI	Discharge	Yes	$0	$22,800	$22,800	
16294900	Waikane Str at alt 75 ft at Waikane, Oahu, HI	Discharge	Yes	$0	$22,800	$22,800	
16296500	Kahana Str at alt 30 ft nr Kahana, Oahu, HI	Discharge	Yes	$0	$22,800	$22,800	
16301050	Punaluu Str abv Punaluu Ditch Intake, Oahu, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16325000	Kamananui Str at Pupukea Mil Rd, Oahu, HI	Discharge	Yes	$3,697	$8,003	$11,700	*4*
16345000	Opaeula Str nr Wahiawa, Oahu, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16408000	Waikolu Str blw Pipe Cross Nr Kalaupapa, Molokai, HI	Discharge	Yes	$0	$35,000	$35,000	*1,2,3*
16415000	EF Kawela Gulch nr Kamalo, Molokai, HI	Discharge	Yes	$0	$42,000	$42,000	*1,2*
16508000	Hanawi Stream near Nahiku, Maui, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16518000	West Wailuaiki Stream near Keanae, Maui, HI	Discharge	Yes	$0	$6,500	$6,500	*3,5*
16527500	Honomanu Stream near Hana Hwy, Maui, HI	Discharge	Yes	$7,669	$7,331	$15,000	*3*
16570000	Nailiilihaele Stream near Huelo, Maui, HI	Discharge	Yes	$0	$35,000	$35,000	*1*
16587000	Honopou Stream near Huelo, Maui, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16604500	Wailuku River at Kepaniwai Park, Maui, HI	Discharge	Yes	$4,740	$10,260	$15,000	*3*
16605500	Wailuku River at Iao Valley Road, Maui, HI	Discharge	Yes	$7,669	$7,331	$15,000	*3*
16614000	Waihee Rv abv Waihee Dtch intk nr Waihee, Maui, HI	Discharge	Yes	$4,740	$10,260	$15,000	*3*
16620000	Honokohau Stream near Honokohau, Maui, HI	Discharge	Yes	$8,216	$17,784	$26,000	*2*
16638500	Kahoma Stream at Lahaina, Maui, HI	Discharge	Yes	$7,669	$7,331	$15,000	*3*
16641000	Kauaula Stream abv Ditch Diversion nr Lahaina, Maui, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16643100	Kauaula Stream blw Ditch Diversion nr Lahaina, Maui, HI	Discharge	Yes	$0	$18,000	$18,000	
16704000	Wailuku River at Piihonua, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16717000	Honolii Stream nr Papaikou, HI	Discharge	Yes	$4,740	$10,260	$15,000	*3*
16720000	Kawainui Stream nr Kamuela, HI	Discharge	Yes	$7,205	$15,595	$22,800	
16725000	Alakahi Stream near Kamuela, HI	Discharge	Yes	$4,740	$10,260	$15,000	*3*
16770500	Paauau Gulch at Pahala, HI	Discharge	Yes	$4,740	$10,260	$15,000	*3*

EXHIBIT 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, 2019 and September 30, 2020.
[GW, Groundwater; CTD, Conductivity, temerature and depth]

Station Number	Station Name	Record type	Real-time data	USGS	CWRM	Total*	Footnotes
215607159344301	2-5634-01 Hanapepe Ridge, Kauai, HI	GW Quarterly	No	$808	$2,312	$3,120	6
212238157561101	3-2256-10 Aiea US Navy (187-B), Oahu, HI	GW Continuous	No	$3,303	$3,437	$6,740	
211832157515501	3-1851-19 Halekauwila Street, Pipe A, Oahu, HI	GW Quarterly	No	$884	$4,356	$5,240	7
211832157515502	3-1851-19 Halekauwila Street, Pipe B, Oahu, HI	GW Quarterly	No	$884	$4,356	$5,240	7
212154158015201	3-2101-03 Honouliuli, Oahu, HI	GW Quarterly	No	$1,757	$1,363	$3,120	6
205405156305401	6-5430-05 Waiehu Deep Monitor Well, Maui, HI	GW Continuous	Yes	$1,852	$4,888	$6,740	
210825157004301	4-0800-01 Kualapuu Deep Monitor Well, Molokai, HI	GW CTD Profiles	No	$2,186	$5,454	$7,640	8
210402156495801	4-0449-01 Ualapue Shaft, Molokai, HI	GW Quarterly	No	$816	$2,304	$3,120	6
220356159281401	1051.0 N Wailua Ditch Rain Gage nr Lihue, Kauai,HI	Rainfall	Yes	$3,500	$9,270	$12,770	
220427159300201	1047.0 Mt. Waialeale Rain Gage nr Lihue, Kauai, HI	Rainfall	Yes	$3,500	$9,270	$12,770	2
220523159341201	1042.0 Waialae Rain Gage nr Waimea, Kauai, HI	Rainfall	Yes	$2,623	$6,947	$9,570	9
220713159361201	1083.0 Mohihi Crsg Rain Gage nr Waimea, Kauai, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
220739159373001	1082.0 Waiakoali Rain Gage nr Waimea, Kauai, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
220927159355001	1084.0 Kilohana Rain Gage nr Hanalei, Kauai, HI	Rainfall	Yes	$3,500	$9,270	$12,770	2
212359157502601	772.3 Moanalua RG No. 1 at alt 1,000 ft, Oahu, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
212855157504501	837.0 Waiahole RG at Kamehameha Hwy., Oahu, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
213215157552800	883.12 Poamoho Rain Gage No 1, nr Wahiawa, Oahu,HI	Rainfall	Yes	$3,500	$9,270	$12,770	2
213237157530701	886.4 Kahana Rain Gage at alt. 95 ft., Oahu, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
213608158011101	897.9 Pupukea Rd Rain Gage at alt 1,160 ft,Oahu,HI	Rainfall	Yes	$2,623	$6,947	$9,570	
213732158010201	897.11 Kamananui Rain Gage at alt. 720 ft, Oahu,HI	Rainfall	Yes	$2,623	$6,947	$9,570	
203721156151601	255.0 Kepuni Gulch Rain Gage, Maui, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
204916156083701	348.5 West Wailuaiki Rain Gage nr Keanae, Maui, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
194117155174801	83.0 Quarry Rain Gage at Saddle Rd, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
194945155534402	92.5 Kiholo Rain Gage, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
200518155405801	185.7 Kawainui Rain Gage near Kamuela, HI	Rainfall	Yes	$2,623	$6,947	$9,570	
			Total	**$248,711**	**$859,139**	**$1,107,850**	

Footnotes

1. Installation in Federal fiscal year 2020. Operation and maintenance to begin in Federal fiscal year 2021.
2. Helicopter use surcharge included.
3. State of Hawaii Department of Transportation contributes additional funding for peak-flow record.
4. Office of Hawaiian Affairs contributes additional funding for real-time stage record.
5. USGS Groundwater and Streamflow Information Program contributes additional funding.
6. Quarterly water-level measurements.
7. Quarterly water-level measurements and chloride samples.
8. Semi-annual CTD profiles.
9. 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.

EXHIBIT 3

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 CWRM USGS Cooperative Agreement
Project / Reference No.:	Not Applicable
Project Location:	State-wide
Project Description:	Statewide monitoring of streamflow, groundwater, and rainfall
Chap. 343 Trigger(s):	Use of State funds
Exemption Class No.:	In accordance with Hawaii Administrative Rule Section 11-200-8(a)(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:	USGS Pacific Islands Water Science Center DLNR Engineering Division
Determination:	The Commission on Water Resource Management declares that this project will likely 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.

EXHIBIT 4

Civil No. 19-1-0019-01 (JPC)

Defendant A&B/EMI's Exhibit AB-72

FOR IDENTIFICATION _____

RECEIVED IN EVIDENCE _____

CLERK _____