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DEPUTY DIRECTOR

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

COMMISSION ON WATER RESOURCE MANAGEMENT

December 10, 2014  
Honolulu, Hawaii

STAFF SUBMITTAL

U.S. Department of Interior  
National Park Service  
Kaloko-Honokōhau National Historical Park  
Petition for  
Ground Water Management Area Designation  
Keauhou Aquifer System Area, North Kona, Hawaii

**PETITIONER:**

Ms. Tammy Duchesne, Superintendent  
U.S. Department of Interior  
National Park Service  
Kaloko-Honokōhau National Historical Park  
73-4786 Kanalani St., Suite #14  
Kailua-Kona, HI 96740

**SUMMARY OF REQUEST:**

Petitioner National Park Service (“NPS”) requests that the Commission on Water Resource Management (“Commission”) designate the *Keauhou Aquifer System Area* (“KASA”), North Kona, Hawaii as a *Ground Water Management Area* (“GWMA”). NPS points to the uncertainties in sustainable yield, increased future demand that may cause potential harm to near shore biota, and loss of opportunity to practice traditional and customary rights as the principle reasons for designation. (Preliminary Findings of Fact). This submittal incorporates by reference the Preliminary Findings of Fact (*see* CWRM website).

**BACKGROUND:**

The KASA is located in North Kona within the Hualalai Aquifer Sector Area on the west side of the Big Island of Hawaii (see Exhibit 2). In 2008, the Commission's Water Resources Protection Plan ("WRPP") set the sustainable yield for the KASA at 38 million gallons per day ("mgd").

On September 13, 2013, the NPS submitted a written petition to designate the KASA as a GWMA.

On September 21, 2013, the Commission sent letters to the County of Hawaii County Council, the County of Hawaii Mayor, the Department of Water Supply, and the Planning Department to solicit comments on the petition.

On October 3, 2013, the Hawaii County Council Chair and Presiding Officer, J. Yoshimoto requested more time to submit comments on the petition. The letter indicated that the Council will not meet in time to prepare comments for the Commission's October 16, 2013 meeting. The letter also requested a meeting with Commission staff to provide information and guidance on the designation process.

On October 4, 2013, the County of Hawaii Mayor and Department of Water Supply each wrote to the Commission requesting additional time to respond.

On October 19, 2013, the Commission extended the original 60-day deadline from November 20, 2013 to December 31, 2014 to decide whether to continue the process (and schedule a Public Hearing) in order to provide additional time to complete and analyze four (4) ongoing studies in the KASA (see discussion below).

On September 17, 2014, the Commission conducted the first of two site visits to obtain field information on wells, anchialine ponds, and coastal areas from the Natural Energy Laboratory of Hawaii Authority ("NELHA"), Kohanaiki Shores LLC, National Park Service - Kaloko-Honokōhau National Historical Park, and Honokōhau Harbor.

On October 9, 2014, the Commission conducted the second of two site visits to obtain field information on additional wells, the 'Aimakapā Fishpond, and presentations from local experts in hydrology, biology, and the County of Hawaii regarding projected demand and "authorized planned use."

On November 19, 2014, the Commission held a briefing in Honolulu to provide the County additional time to present information on projected water demand and "authorized planned uses" (as defined in the Hawaii Water Code) in the KASA.

On December 4, 2014, the Commission noticed its agenda for the December 10, 2014 meeting in Keauhou to hear public testimony and to deliberate whether to proceed to the next stage of the designation process.

## DESIGNATION PROCESS:

The process to designate a ground water management area is described in the State Water Code, Haw. Rev. Stat. §§174C-41 to -46 and Hawaii Administrative Rules §§ 13-171-3 to -9. The staff has further clarified the process first outlined at the Commission's October 19, 2013 meeting and subsequent public presentations. The Preliminary Findings of Fact ("FOF") precedes any decision to continue to the Public Hearing; the Commission's extension of the original 60-day deadline to December 31, 2014 was made expressly to provide for further investigation.

- The Preliminary FOF may be further modified after the public hearing testimony and any further fact investigation.
- There will be further consultation with the County and the Petitioner prior to the Chairperson's final recommendation to the Commission.
- The 90-day deadline for the Commission's final decision only begins after the Chairperson's final recommendation to the Commission.

The designation process for the KASA proceeded as follows:

1. The Chairperson or a petitioner may initiate the designation process. Haw. Rev. Stat. §174C-41(b). NPS initiated this process when NPS filed a written petition.
2. After receiving the Petition, the Commission consulted with the affected county council, the mayor, and the county water board. Haw. Rev. Stat §174C-41(b). On September 21, 2013, the Commission sent the petition and supporting documents to the Hawaii County's Mayor's office, the Hawaii Department of Water Supply, the Hawaii County Council, and the Hawaii County Planning Department requesting comments on the petition as soon as possible.
3. Within 60 days after receipt of the petition, the Chairperson must either 1) make a recommendation to the Commission for or against the continuance of the process for designation, or 2) recommend that the time for such recommendation be extended as may be reasonably necessary to conduct investigations and determine whether there is factual data to warrant the proposed designation. Haw. Rev. Stat §174C-41(b). The 60-day deadline was November 20, 2013. The Chairperson made his recommendation whether to continue the process at the next regularly scheduled monthly Commission meeting (i.e., October 16, 2013) or to extend the process for further investigations and consultations with other agencies.
4. On October 19, 2013, the Commission extended the investigation, study, and consultation phase of the designation process to December 31, 2014 to allow further investigations and ongoing studies to be completed. The ongoing studies included:
  - a. Evapo-transpiration Study (Thomas Giambelluca). This study provides a new and sophisticated method to calculate how much water evaporates back into the atmosphere

from different kinds of vegetation and environments. It is an essential factor in estimating the overall water budget. The study was completed February 2014.

- b. U.S. Geological Survey (“USGS”) Ground-Water Recharge Update. This study would use data from other reports (i.e. Giambelluca, et. al. Rainfall Atlas (2011) and Evapotranspiration (2014) to recalculate recharge. The study was initially proposed to be due September 30, 2014. However, the USGS suspended this project. It was not completed.
- c. Isotope Study (USGS). This study analyzes the relationship between the high level water and the basal ground water in the Keauhou System. The interaction (if any) between these two water sources is essential to understanding the water supply in this region. This study was published on October 15, 2014.
- d. Three-D Ground water modeling (chlorides). The U.S. Geological Survey plans to take the Isotope study, the Evapo-transpiration study, the Recharge study, and other ongoing work to refine the ground water model for the Keauhou System. The modeling will not be done until December 2015.

It was assumed that after these studies were completed, the Commission staff would evaluate and integrate the information into a larger analysis before an informed recommendation could be made.

5. The Preliminary Findings of Fact (“FOF”) provide the Commission with the information gathered to date. The Commission has three (3) basic options:
  - a. Deny the petition.
  - b. Continue the designation process and schedule a Public Hearing in early 2015 in accordance with the requirements of the Water Code.
  - c. Extend the “scientific investigation and study” period to obtain further information because the present fact record is not sufficient in a number of areas, important issues remain unresolved, and there does not yet appear to be a clear pathway on which to proceed.
6. If the Commission continues the designation process, then the Commission will take further actions. Haw. Rev. Stat §174C-46.
  - a. A public hearing will be scheduled for the Keauhou area on the Big Island. Public notice of the hearing will be published once a week for three successive weeks. The last public notice shall not be less than ten days nor more than thirty days before the date set for the hearing. HAR §13-171-5.
  - b. Conduct any additional necessary investigations.
  - c. The Commission staff will prepare a revised Findings of Fact with further county and petitioner consultation for the Commission to consider.
  - d. The Commission must make its final decision whether to designate within 90 days after the Chairperson presents the Final FOF and recommendation to the Commission.

While there are various time requirements in the Water Code to ensure the Commission considers the petition in a timely manner, the information gathering and consultation process are far more difficult and time consuming than may reasonably be done in the periods allowed. Therefore, the Commission may need to extend various stages of the process as circumstances dictate.

#### **NPS PETITION: SUMMARY AND ANALYSIS:**

The NPS Petition is included in the Preliminary FOF. NPS argues that five (5) of the eight (8) criteria for designation of a ground water management area apply in this case. NPS's petition addresses four major concerns:

1. KASA sustainable yield (38 mgd) issues:
  - a. Potential harm to the coastal biota and potential for limiting the practice of traditional and customary rights caused by the reduction of shoreline discharge from pumping is not explicitly considered for protection is setting sustainable yield,
  - b. Projected water demands will exceed sustainable yield, and
  - c. Rising sea-level and declining rainfall will reduce sustainable yield.
2. Saltwater encroachment in the Kahaluu area.
3. Waste is occurring as Kona water use is "2.5 higher than other areas of the county."
4. Serious disputes regarding:
  - a. Effects of cumulative future pumping on NPS resources.
  - b. Different conceptual models of the hydrogeologic structure of the KASA.

The Petition also makes legal arguments that imply the Commission's statutory discretion in this matter is limited and that past rulings by the Hawaii Supreme Court compel designation.

The summary analysis of the petition that follows is discussed in more detail in the Preliminary FOF.

#### **Sustainable Yield**

The Commission's 2008 Water Resource Protection Plan set the sustainable yield for the KASA at 38 million gallons per day (mgd). This is one-fourth of the most recent and best total average KASA recharge estimate of 152 mgd. Thus, if actual pumpage reaches 38 mgd, 114 mgd will still discharge naturally from the aquifer into the coastal areas of the KASA. Further, the U.S. Geological Survey climate change class II scenario increases the estimated recharge to 183 mgd by the late 21<sup>st</sup> century. This would raise the upper range of sustainable yield to 80 mgd.

### **Potential Harm to Coastal Biota and Limiting Practice of Traditional and Customary Rights**

Only a fraction of the high-level water flows to the basal brackish lens. Pumping high-level water will have little-to-no effect on the brackish lens as a water resource or as a habitat for the various life forms for which the park has shown concern - opaeula, orange-backed damsel flies, fish, birds, or, with respect to the ocean- coral.

The native biology of the park is euryhaline (i.e. adapted to a wide range of salinity). The only organism of concern in the petition that is sensitive to salinity increases is the orange-backed damsel fly. However, the brackish ponds of the park are not the native habitat for the orange-backed damsel fly. The species is not unique to the park. It is not strongly related to traditional and customary practices. In fact, the orange-backed damsel fly prefers fresher water and is found in fresh to slightly brackish water bodies in many other parts of the state.

Invasive species and organic detritus in the anchialine ponds are the major factors that threaten the native species.

If the native species are not under threat from salinity concerns, then traditional and customary practices should not be affected. Although traditional and customary practices are allowed in most of the park, the Aimakapa Fishpond is closed to the public.

### **Projected Water Demand**

Current pumping from the KASA is between 12 and 15 mgd (based on a 12-month moving average from reported pumping). This information has been verified from all 129 known production and monitor wells in the KASA.

The County estimates that:

- 1) The water needs for the projected 2030 population will require 20 mgd from the KASA based on current reported pumpage, population estimates, and current HDWS commitments.
- 2) Full build-out of the present County zoning could require 38 mgd;
- 3) Full build out of the County General Plan could require 175 mgd.

The Preliminary Findings of Fact estimate that projected uses could increase to 28 mgd by 2030.

### **Rising Sea Level and Declining Rainfall Effects on Sustainable Yield**

Freshwater floats on sea water and rises as sea level rises. The current average recharge for the drier past 30 years (152 mgd) is greater than the sustainable yield (38 mgd) and provides a buffer to climate change. The U.S. Geological Survey climate change class II scenario increases the estimated recharge to 183 mgd in the late 21st century.

### **Documented Saltwater Encroachment in the Kahaluu Area**

Saltwater encroachment is a problem in the basal Kahaluu Shaft area. This well is no longer able to produce potable water in the quantity it was originally designed to provide. HDWS is moving pumpage from this basal well to high-level wells, which are not as susceptible to saltwater encroachment.

### **Excessive Waste**

According to the HDWS, average residential accounts use in the KASA is 410 gallons per day (“gpd”). The Rules and Regulations of the Department of Water Supply, County of Hawaii (effective October 21, 2004 (as revised)) use 400 gpd/unit for single family units. The highest 12-month moving average on record for the HDWS is 11.5 mgd with a customer (capita) base of 28,725. This translates into 400 gpd/capita. However, the total pumpage includes large users such as NELHA and other commercial accounts. In the dry area of KASA, the estimated actual average use of 400 gpd/customer including large accounts and commercial uses is not unreasonable or excessive.

However, waste may be occurring in the high-level wells, many of which were drilled before the Hawaii Well Construction Standards. These standards prohibit cross connections between aquifers. Like the Commission’s Keopu Deep Monitor Well (8-3858-001), the most important action is to rehabilitate and fix the cross connection between the deep confined freshwater aquifer and upper saltwater and basal portions. Further, reassessment of high-level well construction is an important issue to ensure optimal development and the prevention of waste at the infrastructure level.

### **Serious Disputes**

NPS states it has serious disagreements with the Kona Community about water sources and impacts, especially to the near-shore biota and traditional and customary practices at the park.

### **Legal Arguments**

Legal arguments will be addressed separately.

### **GROUND WATER MANAGEMENT AREA DESIGNATION: EIGHT (8) CRITERIA:**

The Water Code, Haw. Rev. Stat. §174C-44 Ground Water Management Area Designation states:

In designating an area for water use regulation, the Commission shall consider the following:

- (1) Whether an increase in water use or authorized planned use may cause the maximum rate of withdrawal from the ground water source to reach ninety

- percent of the sustainable yield of the proposed ground water management area;
- (2) There is actual or threatened water quality degradation as determined by the Department of Health;
  - (3) Whether regulation is necessary to preserve the diminishing ground water supply for future needs, as evidenced by excessively declining ground water levels;
  - (4) Whether the rates, times, spatial patterns, or depths of existing withdrawals of ground water are endangering the stability or optimum development of the ground water body due to upcoming or encroachment of salt water;
  - (5) Whether the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses;
  - (6) Whether excessive preventable waste of ground water is occurring;
  - (7) Serious disputes respecting the use of ground water resources are occurring; or
  - (8) Whether water development projects that have received any federal, state, or county approval may result, in the opinion of the Commission, in one of the above conditions.

**COMMENTS BY THE HAWAII COUNTY MAYOR'S OFFICE, COUNTY COUNCIL,  
AND DEPARTMENT OF WATER SUPPLY:**

There have been a number of recent submissions: 1) In August 2014, Senator Brian Schatz wrote the County and NPS in an effort to mediate the differences [this was only recently brought to the attention of the Commission staff by a third party]; 2) On November 28, 2014, the Hawaii Department of Water Supply submitted a new list of projected water uses (which the Commission staff has not had time to analyze); 3) On December 3, 2014, the Hawaii Department of Water Supply submitted a request for a contested case hearing.

**ADDITIONAL COMMENTS:**

Since the Commission's October 16, 2013 decision to extend the investigation, the petitioner, government agencies, and the public have submitted additional written comments. These are listed in the Preliminary FOF.

**RECOMMENDATION:**

1. Given the complex, but still incomplete information and record in this matter, the importance of the issues, and the Commission's legal and fiduciary duties, it would be inappropriate to dismiss the Petition at this point.
2. The Commission could decide to go forward with the designation process and direct staff to schedule a Public Hearing in early 2015 in accordance with the requirements of the Hawaii Water Code.

However, this action presumes there is sufficient clarity on critical factual issues like the high level / basal water lens interaction, the projected future water demand and “authorized planned use” under different land use scenarios, and the sequence, timing, and manner in which infrastructure will be developed, among others. But these issues are still unresolved.

3. Therefore, in light of the record and proceedings to date, and the Preliminary Findings of Fact, the Commission should consider extending the investigation and study period:
  - a. To allow important and ongoing hydrologic studies of the area to be completed,
  - b. To provide additional time for full consultation with affected parties regarding the planning and sequencing of high-level water infrastructure issues discussed in the Preliminary Findings of Fact,
  - c. To allow further time for NPS and the County to explore alternative paths of action as suggested by United States Senator Schatz, and
  - d. To further investigate the multiple and unresolved projections of future water demand in the area and “authorized planned uses” as defined in the Hawaii Water Code.

Respectfully submitted,



WILLIAM M. TAM  
Deputy Director

APPROVED FOR SUBMITTAL:



WILLIAM J. AILA, JR.  
Chairperson

Exhibit(s):  
Preliminary Findings of Fact (FOF)