STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
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STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

August 15, 2007
Honolulu, Oahu

Hilton Hotels Corporation/State of Hawaii
APPLICATION FOR A WATER USE PERMIT
Hilton Village Lagoon Saltwater Wells 1 to 7 (Well Nos. 1750-15 to 21), TMK 2-3-37:21, WUP No. 760
New (Lagoon Water Quality and Circulation Improvement) Use for 21.600 mgd of Salt Water
Nuuanu Ground Water Management Area, Oahu

APPLICANT:

Hilton Hotels Corporation
2005 Kalia Road
Honolulu, HI 96815

LANDOWNER:

State of Hawaii
1151 Punchbowl St.
Honolulu, HI 96813

SUMMARY OF REQUEST:

The applicant requests that the Commission approve a water use permit for an allocation of 21.600 million gallons per day (mgd) of salt water from seven new saltwater wells to improve the circulation and water quality in the Hilton Hawaiian Village's Duke Kahanamoku Lagoon.

LOCATION MAP: See Exhibit 1

BACKGROUND:

On February 23, 2005, the Commission issued an exploratory well construction permit for the Hilton Hawaiian Village 1 to 7 Saltwater Wells (Well Nos. 1750-15 to 21). The Hawaii Well Construction and Pump Installation Standards (HWCPIS) define a saltwater well as a well that produces water with chloride content greater than 17,000 mg/L. HWCPIS requirements for saltwater wells include installation of a solid casing and grouting through the entire fresh- and brackish-water portion of overlying aquifers to ensure that there will be no impact resulting from the saltwater withdrawal.

On June 4, 2007, a completed water use permit application was received from Hilton Hotels Corporation (HHC), in conjunction with landowner State of Hawaii, by the Commission on Water Resource Management (Commission). The applicant is proposing to use 21.600 million gallons per day (mgd) of salt water from seven new saltwater wells to improve the circulation and water quality in the Hilton Hawaiian Village's Duke Kahanamoku Lagoon. The salt water developed in the wells will be routed to a new sump located on the west side of the lagoon and then into the lagoon itself. All seven wells will be linked by a common pipe manifold to this sump. As the sump pumps draw the sump's water level down, water will flow by gravity via the pipe manifold from the wells to the sump. After circulating, water from the lagoon will be discharged via pipeline into the Ala Wai Harbor.

On June 16, 2005, Well Completion Reports Part 1 (WCR) were filed for the seven saltwater wells. The WCRs showed that the wells are developing pure salt water from a caprock formation.

On November 25, 2005, an incomplete Pump Installation Permit Application was received for the seven saltwater sources. The application requires the signature of a licensed contractor before it is accepted as complete. Once a licensed contractor signs the application, and if the Commission approves a water use permit for these wells, the Pump Installation Permit Application will be approved administratively.

Additional information regarding the source, use, notification, objections, and field investigation(s) is provided in Attachment A.

ANALYSIS/ISSUES:

Section 174C-49(a) of the State Water Code establishes seven (7) criteria that must be met to obtain a water use permit. An analysis of the proposed permit in relation to these criteria follows:

(1) Water availability

This application is for use of salt water from seven new saltwater wells that have been drilled within the boundaries of the Nuuanu Aquifer System Area; however, the wells actually develop pure salt water (17,000 mg/L) from a caprock formation overlying the Nuuanu Aquifer System Area. In general, saltwater wells are required to be constructed such that the solid casing and grout will extend through the entire fresh and brackish water portion of the basal lens to prevent any fresher portion of the ground water (<17,000 mg/L) from entering the well. In this case, water availability is not an issue as these saltwater wells, which are about 1,000 feet from the shoreline, will develop pure salt water from the overlying caprock formation. However, because the wells fall within the boundaries of a water management area, the use must be permitted and withdrawals, chlorides, and end uses should be monitored to ensure that only salt water is pumped. Normally staff would waive standard condition 10 for the metering of salt water sources in accordance with the Hawaii Well Construction and Pump Installation Standards, but the applicant intends to do this anyway.

(2) Reasonable-beneficial

Section 174C-3 HRS defines "reasonable-beneficial use" is

"*...the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose, and in a manner which is both reasonable and consistent with the state and county land use plans and the public interest*".

I. Purpose of Use

According to the Final Environmental Assessment, the lagoon's current uses are scenic and recreational, although recreational uses are limited by poor water quality and undesirable conditions within the lagoon and on the adjacent beach. The applicant is requesting the use of salt water to improve the circulation and water quality in the lagoon to enhance its potential as a scenic and recreational resource (swimmable and fishable). The Declaration of Policy section, §174C-2(c) HRS, states that adequate provision shall be made for scenic beauty and public recreation, objectives that are declared to be in the public interest.

A Special Management Area Use Permit (SMP) approval by the City Department of Planning and Permitting (DPP) for construction of the new Waikikian Tower and associated facilities and landscaping requires Hilton Hawaii Village (HHV) to attain and maintain the water quality of the lagoon to a level that provides safe and sanitary conditions for recreation.

However, SMP Condition C.1.c. recognized that restoration could prove to be unfeasible and provided that if HHC determined this to be the case, it prepare a detailed plan to DPP for filling the lagoon and widening the beach. Because HHC determined that a restoration plan is physically and economically feasible, it is not pursuing this filling and widening alternative.

II. Quantity Justification

The applicant is requesting a total of 21.600 mgd of salt water to improve the lagoon circulation and water quality. The proposed design calls for increasing the volume of water passed through the lagoon to 15,000 gpm (or 21.600 mgd), a two-fold increase over the 7,500 gpm design rate of the original lagoon and nearly a three-fold increase over the rate at which the aged discharge pump that is currently in place is operating. The 15,000 gpm number is in line with previous recommendations. Lower rates are possible, but would not meet the design goal of achieving an average turnover of at least four times per day. Increasing the supply rate to more than 15,000 gpm was considered, but would be more costly to construct and operate, would begin to require placement of supply wells in less accessible locations, and would not provide any known benefits.

III. Efficiency of Use

Economics (cost of operating the pump) is a major incentive for efficient saltwater use. The lagoon water system will be connected to HHV's energy management system. If there is a pressure drop due to a line breach, the energy management system will send an automatic notice so that remedial actions can be taken immediately. The design rate of the proposed system is discussed in the previous section.

IV. Analysis of Practical Alternatives

There are no practical alternatives to the proposed use of salt water. There is a need for a very large quantity of salt water to improve the circulation and water quality of the saltwater lagoon.

Based on the above analysis, staff finds that the proposed use is reasonable and beneficial.

(3) Interference with other existing legal uses

There are 11 other wells within 1 mile of the seven saltwater wells (Exhibit 2). Of these, only 2 wells are being used for production purposes: Well No. 1750-09 withdraws brackish caprock water for the Pagoda Hotel's koi ponds, and Well No. 1750-12 withdraws salt water for cooling purposes at Yacht Harbor Towers. Both of these wells are located further inland, and the proposed saltwater withdrawals at HHV's wells should not impact these upgradient sources. Other wells within the 1-mile radius include 4 disposal/injection wells, 4 unused wells, and 1 abandoned/sealed well.

(4) Public interest

Public interest is defined under §174C-2 - Declaration of policy, as follows:

"*(c) The state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest.*"

The proposed use is to enhance scenic beauty and public recreation, which are objectives declared to be in the public interest.

Office of Hawaiian Affairs (OHA) submitted written comments expressing concerns about the impact of the discharged waters on the nearshore environment, the sediments on the lagoon bottom, and the water quality of the lagoon itself (Exhibit 3). OHA is concerned because many Native Hawaiians engage in traditional and customary practices, including constitutionally protected gathering rights, in the waters around the project area. OHA requests assurances that the discharged water will be treated, including the stormwater runoff that will be rerouted away from the lagoon. OHA is also concerned about how the sediments at the lagoon bottom will be treated and that they not be discharged into the nearshore environment. Lastly, OHA expresses disappointment that HHC's duty to maintain the water quality was not faithfully upheld and requests assurances that the quality of the lagoon water and the water discharged from the lagoon be maintained and treated prior to discharge.

Exhibit 4 contains the applicant's response to OHA's review comments. Regarding the concern about potential impacts to the nearshore environment, the applicant states that discharge to the Ala Wai Harbor has been ongoing since 1956, when the lagoon was first constructed, and it does not appear to have had an adverse effect on the harbor's ecology. In fact, the discharge promotes turnover within that arm of the harbor, which has previously experienced low turnover rates. The new system is expected to improve water quality within the lagoon and should reduce the suspended sediment levels and turbidity in the harbor. Regarding the sediments at the lagoon bottom, these will be sealed with a geotextile liner. Clean rock and gravel, a second liner, and calcareous sand will then be placed on top. This will avoid any release of bottom sediment into the nearshore environment or anywhere else. HHC is investing $18.5 million dollars into the lagoon restoration project and will implement an enhanced lagoon maintenance program in accordance with their DOH permit approvals.

DOH's Clean Water Branch has reviewed this application and forwarded a list of their permit approvals for this project (Exhibit 5).

The Board of Water Supply (BWS) did not object to this application, but notes that the chemistry and temperature of the well water differs significantly from the receiving waters and recommends that potential environmental impacts be addressed. BWS also commented that the high rate of pumping may result in undesirable subsidence of nearby buildings and structures due to dewatering.

Regarding the temperature and chemistry differences, the applicant has responded that this issue is discussed in Section 3.5 of the Final Environmental Assessment, which presents a detailed analysis, including computer modeling, of the effect that construction and operation of the restored lagoon system will have on water quality within the lagoon, in the portions of the Ala Wai Harbor to which water will be discharged, and on the nearshore waters adjacent to the harbor. The analysis concludes that the proposed changes will have a generally positive effect on water quality within the harbor.

The possibility of subsidence was also considered and studied. A test borehole, located close to the Hilton Towers, was constructed. A pumping test was conducted at the test borehole using two packers, one at 40 feet (the first hard coral layer) and the second at 95 feet (another hard

coral layer). Water level recorders were installed below the lower packer at 95 feet and above the upper packer at 40 feet (nothing in between the two packers). There was no drawdown response above the upper packer as a result of pumping from below the lower packer. The compressible layer of concern is to a depth of about 30 feet. All Hilton towers are on piles driven into hard coral layers at depth. None of the structures use the compressible layer for structural support. Through the study, it was also discovered that the operation of the Hilton's lagoon discharge pump kept the lagoon level between one and 1.5 feet below sea level. As a result, this drained shallow groundwater from the upper sands and silt to a level about a foot below sea level with no harmful impact on structures. Annular space grouting of the completed wells are not identical - depths were governed by the material encountered during drilling. The subject wells were constructed such that the bottom of the grout and start of open hole are in hard layers, similar to the packer selections on the test borehole. Thus, it does not appear that subsidence will be a problem.

Division of Aquatic Resources (DAR) concern with minimizing the alien aquatic organisms prompted a recommendation to HHV that an Aquatic Alien Species Management Plan (Plan) for the lagoon be developed. DAR reports that HHV complied with the recommendation and the final Plan was received and accepted by DAR in January 2007. DAR also commented that HHV has demonstrated concern for Hawaii's environment and a willingness to participate as a responsible partner to protect Hawaii's aquatic resources.

Staff finds that this propose use is consistent with the public interest.

(5) State & county general plans and land use designations

The proposed use is in the State Urban District. Pursuant to section 205-2(b) HRS, activities or uses within the Urban District are the jurisdiction of the respective counties as provided by their ordinances or regulations.

The current zoning for TMK 2-3-37:21 is Public. DPP has commented that the parcel is located within the Special Management Area and that an SMP was granted for the restoration of the lagoon and the construction of ground water wells.

Therefore, the proposed use is consistent with the state and county general plans and land use designations.

(6) County land use plans and policies

DPP has commented that the addition of landside improvements along the lagoon shore to encourage recreational use and integrate the lagoon area with the surrounding recreational area of Waikiki is consistent with the following guidelines of Section 3.1.3.6 Parks and Recreation Open Spaces of the Primary Urban Center Development Plan:

- Recognizing that it is difficult to acquire additional park land in the PUC, develop innovative approaches to make optimum use of existing parks and recreation resources, such as:

  - Building partnerships between City, State and private, nonprofit organizations for joint use of facilities and complementary recreation programs.

Therefore, the proposed use is consistent with the county land use plans and policies.

(7) Interference with Hawaiian home lands rights

All permits are subject to the prior rights of Hawaiian home lands. The Department of Hawaiian Home Lands (DHHL) has reviewed this application and has stated that they have no concerns or objections to this application. It should be noted that standard water use permit conditions 3.g., 6., and 9.f. notify all water use permittees that their permits are subject to and cannot interfere with Hawaiian home land rights.

Therefore, this application will not interfere with Hawaiian home lands rights.

Other issues

Normal agency review includes:

1) the State's Department of Land and Natural Resources (DLNR) and its State Parks, Aquatic Resources, Historic Preservation, and Land Divisions; the Department of Health (DOH) and its Clean Water, Safe Drinking Water, and Wastewater Branches; the Department of Hawaiian Home Lands (DDHL); Land Use Commission (LUC); and the Office of Hawaiian Affairs (OHA).
2) the Mayor's Office, the County Department of Planning and Permitting, and Honolulu Board of Water Supply.

All relevant comments were discussed in the sections above. No other substantive comments were received, and no objections were raised through this review.

RECOMMENDATION:

Due to the applicant's ability to demonstrate consistency with the criteria to obtain a water use permit, staff recommends that the Commission approve the issuance of Water Use Permit No. 760 to Hilton Hotels Corporation/State of Hawaii for the reasonable and beneficial use of 21.600 million gallons per day of salt water for the Hilton Village Lagoon Saltwater Wells 1 to 7 (Well Nos. 1750-15 to 21) for the improvement of the circulation and water quality in the Duke Kahanamoku Lagoon, subject to the standard water use permit conditions listed in Attachment B and the following special conditions:

1. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

2. Standard Condition 16, requiring the submittal of a water shortage plan, is waived.

Respectfully submitted,

KEN C. KAWAHARA, P.E.
Deputy Director

Attachment(s): A (Water Use Permit Detailed Information)
B (Water Use Permit Standard Conditions)

Exhibit(s): 1 (Location Map)
2 (Other Nearby Wells)
3 (July 5, 2007 Review Comments from OHA)
4 (July 17, 2007 Response to OHA Review Comments)
5 (July 26, 2007 Review Comments from DOH, CWB)

APPROVED FOR SUBMITTAL:

for LAURA H. THIELEN
Interim Chairperson