



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
P.O. BOX 402  
HONOLULU, HAWAII 96809

December 4, 2009

Lanai Water Advisory Committee  
P.O. Box 630400  
Lanai City, HI 96763-0400

Attention: Mr. Reynold Gima, Chair

Dear Mr. Gima and Members:

Request for Community Meeting Update on Designation

Thank you for your request letter dated September 8, 2009. We have reviewed the record of Commission on Water Resource Management (Commission) decisions, the previous findings of fact on the criteria for designation, and current data, plans, and studies, and do not see a justification for reopening the designation proceedings at this time. We recognize that the community may have ongoing concerns, as does the Commission, and that you would appreciate the opportunity to refresh the dialog. Please accept this letter as a preliminary statement of our position to keep these issues alive. However, due to our current budget crisis, we cannot justify travel for this meeting.

It is our understanding that the Lanai Water Advisory Committee (LWAC) desired more Commission oversight in lieu of a completed Water Use and Development Plan (WUDP). The Commission did conduct annual meetings for a while, and has regularly participated in the Working Group and Advisory Committee (see history below). Once the Plan passes by ordinance, approved Commission conditions will no longer apply. Even so, if new information or the WUDP change the current findings, we are prepared to reopen designation proceedings if warranted.

The original (1990) approved recommendation not to designate Lanai as a water management area carried five points:

- ✓ 1) To require monthly reporting; this has been met.
- ✓ 2) To require Lanai Company monitoring of hydrologic conditions so that when ground water withdrawals reach 80% of sustainable yield, the Company can expeditiously institute public informational meetings to discuss mitigation; the Periodic Water Report allows monitoring of ground water conditions toward 80% withdrawals.

- ✓ 3) To require a water shortage plan; this was met by a transmittal for the April 16, 1997 Commission meeting (attached to submittal as Exhibit 2).
- 4) The Commission to hold annual informational meetings; this was modified in 1997 to hold meetings until the formation of a permanent advisory group to monitor implementation of the Lanai Working Group Report, and modified again in January 2001 to participate in the Lanai Water Advisory Committee (in lieu of holding meetings) while reserving the right to return to annual meetings if it seemed necessary. The Commission had also required quarterly reports on watershed management activities, and requested that the Land Use Commission (LUC) provide regular updates of Lanai-related issues. Watershed issue reports were transmitted for a about a year, but are no longer being transmitted. The LUC does not provide regular updates, although staff of both Commissions have consulted on them. Castle & Cooke Resorts was to make appropriate changes in the water report form and periodically verify reporting methods, which continue.
- 5) To reinstitute designation proceedings if and when the static water level of any production well falls below one-half its original elevation or if any non-potable alternative source in the Company's water development plan fails to materialize and land development continues as scheduled. Water levels have not declined to half their initial points. The WUDP is addressing the status of alternative non-potable sources and the progress of land development.

**Eight Ground Water Designation Criteria.** The Commission shall consider the following:

1. *Whether an increase in water use or authorized use may cause the maximum rate of withdrawal from the ground water source to reach 90% of the sustainable yield of the proposed water management area.*

The sustainable yield estimate for the island of Lanai is 6 mgd for the high-level dike aquifers - 3 for the Windward System and 3 for the Leeward System. All wells but Well 6 are in the Leeward System; only Well 6 in the Windward System. The July 31, 2009 12-MAV pumpage from the Leeward System was just under 1.5 mgd. Potential total pumpage at build-out, for all sources, including system losses, if conservation and alternate sources are implemented, is estimated at 4.3 mgd. There is a concern to appropriately spread this pumpage between the two aquifer systems. In addition, because these are high-level aquifers, it is also relevant to optimally locate wells in their respective compartments, as each has its own capacity and flow parameters, measured chiefly by water levels as well as by chlorides and temperature.

Sustainable yields in high-level aquifers are based on the overall water balance, and safe well capacity for each well is measured by water levels against known pumpage. The Commission's ground water modeling effort in 1994 compared predictive water levels in a set of unique scenarios to long-term average historical pumpages in each of the operational wells. In reproducing observed steady-state ground water behavior with reasonable flow parameters, it is possible to set operational pumping in a context of real-world drawdown conditions. To this end, the 1996 Lanai Water Resources Management Plan proposed, and the Working Group adopted,

well operating guidelines with "action" and "lowest allowable" water levels for each well, to regulate pumpage. From this standpoint, the water levels in all three brackish irrigation wells – Wells 1, 9, and 14 – are approaching "action" levels. We will look to the WUDP for guidance on what would be the appropriate action.

2. *There is an actual or threatened water quality degradation as determined by the Department of Health.*

While the brackish Palawai Basin wells have shown variability in chlorides and a small decline in the Well 1 water level, it continues to be monitored but is not causing immediate alarm. Potable wells of the high-level aquifer compartments are not showing any negative long-term trends.

3. *Whether regulation is necessary to preserve the diminishing ground water supply for future needs, as evidenced by excessively declining water levels.*

There is a very gradual downward trend in water levels in the brackish wells and in one or two potable wells, but these do not precipitate serious concern. Well 1 had a dip in water level in late 2008, but the cause has not been identified. The overall trend remains a very gradual decline, which would not be considered excessive (see attached graph). In 1990 declines were noted, attributed to increases in pumpage for pineapple in conjunction with a drought period. At that time, it was noted that declining water levels over the short term might be compensated for by resetting the pump intake levels, until climate conditions returned to normal. Potable Well 3 recently had its pump reset lower, and during a hiatus the water level recovered a little, now resuming its very gradual decline. All are above the action levels, excepting that, as noted, the three brackish wells are slowly approaching their action levels.

4. *Whether 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 upconing or encroachment of salt water.*

Upconing in high-level wells would be reflected by declining water levels, which as noted above is not evident. Brackish wells in Palawai Basin may be subject to periodic changes in chloride readings due to the thermal dynamics below the basin. We have not noted dramatic changes over a long period to suggest problems in these wells.

5. *Whether the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses.*

These are brackish wells, currently averaging about 325 mg/L, 450 mg/L, and 775 mg/L for Wells 1, 9, and 14, respectively. This range may be useful for a variety of uses, although lower chlorides are better, and Well 1 has borne the lion's share of pumpage in recent years. Nonetheless, chloride levels have remained stable in all of these wells over the past two years of record.

6. *Whether excessive preventable waste is occurring.*

We recognize high levels of system loss in the various delivery systems on Lanai, as noted in the October 19, 2009 Draft Lanai Water Use and Development Plan (LWUDP). The level of pumpage required to compensate for system loss has shown some gradual decline in water levels, which may be due to drought, but this does not yet pose a threat to the resource. The long-term conversion of an extensive and antiquated irrigation system to a more targeted system serving modern potable needs, reducing system loss, is taking time but is proceeding. There need to be continuing efforts to identify and stop leaks, eliminate obsolete branches of working service systems, and to upgrade system components to improve the system efficiency. This, together with water conservation practices, is a chief source of new supply to meet projected demand requirements. The Commission's ground water model showed that maintenance of the watershed to promote fog drip is probably the greatest concern. Jim Juvik's recently updated fog-drip study re-emphasizes this.

7. *Serious disputes respecting the use of ground water resources are occurring.*

A major result of designating a ground water management area would be that end uses be approved as reasonable and beneficial. There have been long-standing disputes as to whether some of the amounts being used are extravagant, wasteful, damaging to the aquifer, or sustainable by a watershed in decline. The Commission is aware that Lanai Water Company is proceeding with the Public Utility Commission (PUC) to approve use rate charges to discourage extravagant use, and the company is continually upgrading its aging system to reduce actual and potential leakage, along with its modernizing purposes. The company has invested heavily in fencing to exclude feral ungulates from the primary ground water recharge area, and in replanting cloud-capture trees. Because water levels and chlorides have not shown an immediate threat to existing water resources, and because of community and Company efforts to address these issues, the Commission has declined to designate the island's aquifers as water management areas. However, it has recommended concerted efforts to prepare a Water Use and Development Plan (WUDP) to address the infrastructure and consumption issues, participating in the community committee planning efforts. It has required regular reporting of pumpage, chlorides, and water levels, resulting in perhaps the best reporting of these parameters statewide, and was conducting annual community update meetings pending the adoption of a WUDP. The commission has stated it would institute public informational meetings to discuss mitigation measures if the total withdrawals reach 80% of the estimated sustainable yield. In the Leeward Aquifer System, this would be 2.4 mgd.

8. *Whether water development projects that have received any federal, state, or county approval may result in one of the above conditions.*

The current infrastructure of Lanai Water Company cannot supply the anticipated full build-out of the project district plans. Under current regulations, although end-of pipe water use permits are not currently required, pumpage from individual wells can be regulated to avoid localized



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overpumpage and deterioration of water quality. This would effectively prevent end users from overconsuming available water supplies. Accommodating full build out would require reduction of system loss, improved conservation measures, construction of new wells or expanded alternative sources, such as wastewater reuse, to augment the existing delivery system.

Conclusion:

There continue to be issues of concern to the Commission, and a desire to adopt plans to address them before pumpage reaches levels that threaten available resources. As of now, we do not see the urgency of resuming annual meetings nor reopening designation proceedings. The impending WUDP is a critical element in this equation, and the Commission reserves the right to reevaluate these provisions in the positions stated in this letter.

If you have any questions, please contact me at (808) 587-0214, or toll free from Maui at 984-2400, extension 70214.

Sincerely,



KEN C. KAWAHARA, P.E.  
Deputy Director

Cfss