

COMMISSION ON WATER RESOURCE MANAGEMENT  
Department of Land and Natural Resources  
Honolulu, Hawaii

January 31, 1990

Chairperson and Members  
Commission on Water Resource Management  
State of Hawaii  
Honolulu, Hawaii

Gentlemen:

Petition for Designating the  
Island of Lanai as a Water Management Area

Introduction

On March 2, 1989, the Commission on Water Resource Management received a written petition to designate the Island of Lanai as a Water Management Area for the purpose of regulating the use of ground-water resources. The petition was submitted by Mr. John D. Gray on behalf of the 168 residents of Lanai. This petition stated that resort development on Lanai in the future would cause water demand to exceed the available water supply.

On May 17, 1989 the Commission approved the continuance of the designation process for Lanai and subsequently held a public hearing on August 29, 1989 to receive oral and written testimony. Mr. Gray requested a contested case hearing, but the Office of the Attorney General has subsequently advised the Commission that the law does not provide for a contested case hearing in the designation process. A contested case could arise later in the permitting stage when individual rights, privileges, or duties are determined.

Pursuant to HRS §174C-46 Commission staff conducted an investigation of Lanai's hydrology, reviewed the public testimony and existing literature, and evaluated comments of other governmental agencies. Proposed Findings of Fact have been prepared which summarize that investigation.

Hawaii's Water Code, HRS §174C-44 establish eight criteria which the Commission must consider in deciding whether to designate a ground water area as a water management area under the Code:

[§174C-44] Ground water criteria for designation. In designating an area for water use regulation, 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 ninety percent of the sustainable yield of the proposed water management area;
- (2) There is an 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 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;

- (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 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.

Notwithstanding an imminent designation of a water management area conditioned on a rise in the rate of ground water withdrawal to a level of ninety per cent of the area's sustainable yield, the Commission, when such level reaches the eight per cent level of the sustainable yield, may invite the participation of water users in the affected area to an informational hearing for the purposes of assessing the ground water situation and devising mitigative measures. [L 1987, c45, pt of § 2]

#### Analysis

Staff has prepared a Findings of Fact to provide an objective assessment of the current and future water resource situation on Lanai. Staff analyzed recent hydrologic studies to determine the reasonableness of and consistency between hydrologic estimations presented, being cognizant of previous public testimony and Maui County comments. The report examines relevant references and adopts a conservative stance in its analysis of the water situation. The report makes no recommendations for Commission action.

The staff's proposed Findings of Fact reach the following ultimate factual determinations:

1) Hydrologic Assessment of High-Level Aquifer

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Sustainable Yield of Aquifer	6 mgd
Future Water Demand (1991)	5 mgd
Future Withdrawal, in % of Sustainable Yield	83 %

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- 2) Non-potable water demands of planned land developments would be partially satisfied through basal aquifer sources and treated wastewater effluent which would provide a total of 1.4 mgd;
- 3) Efforts are underway to upgrade the existing potable water distribution system. Wells should be deepened to help prevent water shortages which have occurred in the past due to droughts and limitations of existing water distribution infrastructure. Alternative sources of non-potable treated wastewater are available, but a basal ground-water source has yet to be discovered;

January 31, 1990

- 4) If planned alternative sources of supply do not materialize and full land development continues then future withdrawals could exceed 90% of the ultimate sustainable yield of the island's high-level aquifer.
- 5) None of the ground-water criteria cited in §174C-44, HRS, has been met to support the designation of the island as a water management area according to the following analysis:

**Criterion 1.**

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

**Discussion**

From the analysis of existing data and methodology used by hydrologists in determining a sustainable yield for the island of Lanai, the estimate of 6 mgd for potable water from high-level dike aquifer is considered reasonable. A sustainable yield for the basal aquifer is unknown although it is anticipated that it can supply useful non-potable water.

Maximum future projected potable water demand for all projects augmented by non-potable sources could reach 5 mgd. This demand is based on conservative estimates and consideration of maximum demands stated from all development related reports.

Given a sustainable yield of 6 mgd for the high-level aquifer and a total projected future demand of 5 mgd, the maximum annual average withdrawal from Lanai's high-level ground water source would be 83%. This condition would not warrant designation although the Commission, pursuant to 174C, HRS, may coordinate an informational meeting for all water users to devise mitigative measures.

Development of well sources is necessary to increase the present potable water supply infrastructure. Once hardware is in place, it should not be ignored that if planned alternative water sources fail to materialize then withdrawals from the high-level aquifer may reach the 90% of its the sustainable yield.

Conclusion: NO DESIGNATION

**Criterion 2.**

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

**Discussion**

There is no evidence of water quality degradation. Neither the Department of Health nor any individual has found or shown actual or threatened water quality degradation on Lanai.

Conclusion: NO DESIGNATION

**Criterion 3.**

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

**Discussion**

Declining groundwater levels have been observed since 1975 in all wells except the Maunalei Tunnels. These reductions have been mainly due to the increase of pineapple irrigation from the introduction of full time drip irrigation.

Future reductions in head levels will affect well configurations rather than the high-level ground water supply. If wells are modified then reduction in water table levels can be tolerated without harming the ground water supply for future needs.

**Conclusion: NO DESIGNATION**

**Criterion 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.

**Discussion**

None of the existing wells have exhibited any evidence that upconing or salt water encroachment will be a problem. Recently drilled exploratory well Nos. 9 and 10 have yielded warm and brackish water from the Palawai basin but there is no reason to believe that, if developed, these wells would endanger other wells or the stability of the entire high-level ground water aquifer.

**Conclusion: NO DESIGNATION**

**Criterion 5.**

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

**Discussion**

There has not been any observable chloride concentration increases in existing wells over the past 50 years. Recently drilled wells 9 & 10 show high chloride contents which are due to geothermal activity isolated within the Palawai caldera.

**Conclusion: NO DESIGNATION**

Criterion 6.

Whether excessive preventable waste is occurring.

Discussion

No comment has been made through petitions or testimony regarding preventable waste and there is no evidence of excessive preventable water waste occurring on Lanai. However, the 180 gpd per capita on Lanai is slightly high compared to normal domestic use elsewhere in the state.

Conclusion: NO DESIGNATION

Criterion 7.

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

Discussion

Since there is a single private purveyor and developer of water on Lanai, actual serious disputes are not now and have not occurred on the island in the sense that there are separate competing water sources drawing from a common aquifer. However, some dispute has arisen based on speculation that future water from the sole purveyor may be allocated to the disadvantage of the residents of Lanai should drought conditions or unforeseen events limit water withdrawals.

Conclusion: NO DESIGNATION

Criterion 8.

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

Discussion

Ground water levels have declined since water development began on Lanai but at a relatively safe rates given the elevations of the water tables and their corresponding responses to region wide pumping. Recent increases in pumpages due to drip irrigation and development construction will lower water levels which will later stabilize at an equilibrium head. It is foreseen that future needs will be met without harm to the high-level aquifer according to the planning efforts of Lanai Company.

Conclusion: NO DESIGNATION

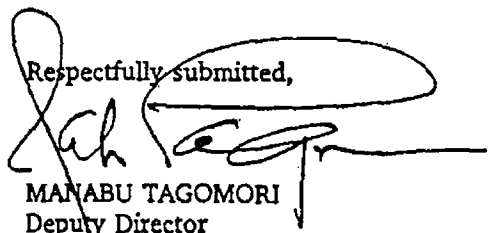
CONCLUSION:


None of the groundwater criteria cited in HRS §174C-44 has been met to support the designation of Lanai as a water management area.

RECOMMENDATIONS:

Given the findings of its investigation and the conclusions reached, the staff recommends that the island of Lanai not be designated as a water management area at this time. In light of present information staff further recommends that the Commission take the following actions to protect Lanai's water resources:

1. Require Lanai Company to immediately commence monthly reporting of water use to the Commission, under the authority of Chapter §174C-83, HRS, which would include pumpage and water level measurements from all wells and shafts;
2. In addition to monthly water use reporting and pursuant to Sec. 174C-44, HRS, require Lanai Company to monitor the hydrologic situation so that when ground-water withdrawals approach the 80-percent-of-sustainable-yield rate, the Company may institute public informational meetings in collaboration with the Commission to discuss mitigative measures;
3. Require Lanai Co. to formulate a water shortage plan that would outline actions to be taken by the Company in the event a water shortage situation occurs. This plan shall be approved by the Commission and shall be used in regulating water use on Lanai if the Commission should exercise its declaratory powers of a water emergency pursuant to Section 174C-62(g) of the State Water Code;
4. Require the holding of annual public informational meetings on the island to review water conditions. The public shall be duly notified of such meetings;
5. Authorize the Chairperson to re-institute water-management-area designation proceedings and, hence, re-evaluations of ground-water conditions on the island when:
  - a. The static water-level of any production well falls below one-half its original elevation above mean sea level, or
  - b. Any source or any alternative source of supply contained in the Company's water development plan does not materialize and full land development continues.

Respectfully submitted,  
  
 MANABU TAGOMORI  
 Deputy Director

Attach.  
  
 APPROVED FOR SUBMITTAL  
 WILLIAM W. PARK, Chairperson