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PROPOSED REGULATIONS FOR THE CONTROL OF GROUNDWATER USE IN DESIGNATED AREAS OF THE STATE

Statement to be added to the record of the
Department of Land and Natural Resources
Public Hearing, 24 April 1978

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A preliminary draft of our comments on the proposed DLNR Regulations on the Control of Groundwater Use in the State was prepared some time ago as a basis for a statement on the proposed regulations by the State Water Commission, of which we are both members. We hoped to be able to take the Commission's statement into account in preparing a final Environmental Statement. However, the final version of the Commission's statement was not available to us on the date of the public hearing on the regulations.

The statement takes into account the addendum to the proposed regulations that was distributed 22 August 1978.

The statement does not reflect an institutional position of the University of Hawaii. In it we do not distinguish between the Board and the Department of Land and Natural Resources, abbreviating them in common as the DLNR.

General comments

Statutory limitations

The primary basis for the regulations is Chapter 177 of Hawaii Revised Statutes, (Act 122, 1961). The regulations also refer to HRS 178 (Act 39, 1965, as subsequently amended) and to HRS 71 (Act 222, 1927, as subsequently amended). These laws, enacted some time ago, suffer from certain defects that should have been apparent even at the time of their passage and subsequent amendment and that are more apparent now.

Most of the deficiencies we find in the proposed regulations represent deficiencies in the laws. One of the deficiencies, however, represents a failure to recognize that one of the statutes to which reference is made in the regulations has been repealed, and another represents an unwarranted extension beyond the statutory base. We recognize

that the regulations cannot be at variance with the statutory provisions. It would seem, however, that the regulations could be somewhat more precise than the statutes.

We recommend that the proposed regulations be revised before adoption to reduce the deficiencies to whatever extent is possible without amendment of the laws, and that the DLNR seek to have the laws amended to remove the remaining deficiencies and subsequently amend the regulations accordingly.

Appropriateness of DLNR regulation

The groundwater control law and the regulations are based on the valid concept that the groundwater resources are limited, and the public welfare requires regulations of uses among competing developers if their combined drafts, unregulated, would result in deterioration of the resources.

Under present statutory provisions the DLNR will be both the regulatory agency and one among the parties regulated. To the extent that the DLNR is the sole developer and potential developer of a particular groundwater resource whose use is in need of regulation, these provisions are satisfactory. However, to the extent that the DLNR is but one of the competing developers of a particular resource whose use is in need of regulation, it would be preferable for some other governmental institution, not competing in the use of the resource, to have the power of regulation.

Among existing governmental institutions, the DLNR has the most general public concern with water resources. Hence until other institutional arrangements can be made by law, regulations of the general sort proposed will be appropriately adopted by the DLNR.

Detailed Comments

Our detailed comments refer to indicated sections of the regulations and, where, pertinent, the sections of Hawaii Revised Statutes (HRS) on which they are based.

1.4 Legal conflicts

Section 1.4 indicates that, in case there is conflict between these regulations and HRS 71-1 to 71-4, these regulations will prevail. There can be no such conflict because HRS 71 was repealed by Act 29 of the 1975 Legislature.

It also indicates that HRS 177 and these regulations will prevail, in case of conflict, over HRS 178. This indication is supported by HRS 177-35.

1.5 Definitions

As in HRS 177-2 (1), "beneficial use" is defined in such a manner that it may be interpreted as excluding use without diversion, such as use of discharge through natural stream courses for the preservation of a rare and endangered species or for esthetic purposes. The definition should be enlarged.

As in HRS 177-2 (3) the term "designated groundwater area" is defined and used in a sense that is in one way more general than is warranted and in another way is more restricted than the term implies.

In a certain area there may be two relatively independent groundwater aquifers separated by horizontal or near-horizontal aquicludes, one in need of regulation, the other not.

Aquifers are subject to various kinds of designation, for example by kind as artesian, basal, high level, etc., or individually as Pearl Harbor, Honolulu Area II, etc. What is intended is designation for special regulation (see comments on Sec. 7).

A term such as "aquifer subject to regulation," aquifer of concern, or simply "regulated aquifer" would be preferable to the term "designated groundwater area."

As in HRS 177, "ground water" is defined in such a way as to include vadose water. A standard definition of groundwater should be substituted.

As in HRS 177-2 (11), shortage is defined (in the addendum) as an insufficiency in quantity or quality of water. There is never a sufficient quantity of water in an aquifer to satisfy the demand indefinitely, and in some aquifers the quantity in storage would be exhausted quickly if there were not recharge. The insufficiency of concern is an insufficiency of flow, not quantity,.

1.6 Principles

HRS 177-3 states that nothing in HRS 177 shall be construed as an admission of private prescriptive groundwater rights. The regulation goes much further in stating that there are no prescriptive groundwater rights. The DLNR has no authority for this extension; indeed HRS 177-34 (2) recognizes that groundwater rights may exist; and the possibility of development of prescriptive rights is an issue now being addressed by the courts.

It is unnecessary to declare the non-existence of groundwater rights of any kind in order to promulgate groundwater regulations pertaining to aquifers in which there is insufficient sustainable yield to satisfy all of the groundwater rights.

3.1 Purpose

"Is" in line 2 should be "are".

3.3 Initiation by Interested Persons

"That" in line 7 should be "as".

3.6 Criteria

a. An excessive decline in groundwater levels is an expressed criterion for "designation". What is intended is an excessive decline in head (or more precisely in storage).

The water in a basal fresh groundwater, for example, extends from somewhat above sea level to far below sea level. The term "head" (or "storage") should be substituted for "level" and the decline should be qualified as persistent as well as excessive.

b. A rate of withdrawal (or use) in excess of the rate of recharge is an expressed criterion for "designation". The rate of withdrawal of groundwater may exceed the rate of recharge in the short term without deleterious effect. What is critical is not a short-term exceedence of the recharge but a long-term exceedence of the sustainable yield, which in the case of many aquifers is substantially less than the recharge.

c. Endangerment of the stability of groundwater is an expressed criterion for "designation". It is not the threat of instability of a groundwater body that is critical. Even natural conditions are not static; non-equilibria occur under dynamic conditions whether naturally or artificially produced. It is the threat to optimum development or continuance of optimum development that is critical.

e. See comments on a, b, and c above.

The language of 3.6a through e. is taken from 177-5 (5). In the long run the statute should be amended. However, language to be adopted in the regulation should be as appropriate from both technical and policy standpoints as the statute will allow.

It should be noted that the situation with respect to a particular aquifer or groups of aquifers may be of public concern before there is an actual water shortage (or shortage of water of adequate quality). The situation will become a matter of concern when changes in the draft (or pattern of draft) that may be necessary to avoid actual shortages in the future become costly. The DLNR should be able to exercise its regulatory powers before the sustainable yield of an aquifer is actually exceeded.

f. The power to require cessation of wastage of groundwater is provided not only in HRS 177-5 (11) but in HRS 178 (2) in combination with HRS 178 (3) and (4). In order to prevent waste, the DLNR must be able to declare that the waste is occurring. However, the purposes of a "designation" are not merely to prevent waste on the part of one developer of groundwater but to regulate potential competition. The detection of excessive waste by one developer is ground for regulation of the use of that developer but should not be grounds for a "designation" leading to regulations of all developers of the resource.

3.8 Effective date

The purpose, practical effect, and legality of considering the effective date of a designation to be earlier than the actual date of designation are highly questionable. The purpose of the section, and of HRS 177-15 (a) seems to be to provide an effective date for the recognition of existing uses in Sec. 4.1 rather than the effective date for such regulations of groundwater draft as may be issued. Rather than make the designation retroactive, it would be preferable to define the effective date of the prescribed controls

as 90 days after the date of designation, and even better to define existing uses in Sec. 4.1 as uses in effect 90 days before the effective date of designation.

3.9 Modifying and rescinding designated areas

See comment on 3.8.

4. Preserved uses (generally)

The proposed regulation does not make clear whether "preservation" of a use applies to the use alone or (as would seem) to the combination of the use and the user. If applying to the combination, there is a possible legal problem. See comment on 6.1.

4.1 Existing uses defined

"Existing uses" should include "natural discharges remaining after withdrawals" as well as "withdrawals of water". Concerning the effective date, see comment on 3.8.

6.1 Supply permits

Although the requirement of a permit to sell groundwater rights, in this section and in HRS 177-20 (b), may be generally appropriate, in some circumstances the grant of the permit must be regarded as a ministerial action, not a discretionary one. Take, for example, a preserved use of groundwater drawn, in accordance with a water right under the correlative rights doctrine, for irrigation, in the land to which the correlative right pertains. If the land is sold by the original owner to another person, the transfer of ownership of the water right with the land would under 6.1 require a permit, although under the correlative rights doctrine it would occur automatically, and the permit should appropriately be merely ministerial if the new owner intends to continue the same use.

Springwater discharges, although developed as surface water, may be counted on as much as well discharges developed from groundwater, and are as subject to water rights. Among the uses which should be subject to "preservation" are uses of spring waters.

7.2 Notice of Water shortage (in addendum)

Concerning the pertinence of a "notice of determination" to an "area," see comments on the definition of "groundwater area" in 1.5.

7.3 Powers of board (in addendum)

In line 3 of the introduction "has" should read "have".

As does HRS 177-33 (2), this section prescribes a fixed priority scheme for drafts from an aquifer (area) in which there is a shortage. It is appropriate that more stringent limitations be placed on drafts for certain purposes than on drafts for others. However, it will generally be appropriate to limit all drafts, rather than only those of low priority. We trust the language of this section will not be interpreted as requiring the DLNR to

forbid draft for an agricultural purpose, for example, if the deficiency of supply may be compensated by reasonable differential limitations placed on all drafts.

7.4 Orders of the Board (in addendum)

This section would allow draft-limiting orders to take effect as much as 30 days prior to their final publication. The last publication would be three weeks after first publication. Hence the orders would take effect nine days before their first publication. This seems questionable. See comment on 3.8.

9. Prohibition of Waste and deterioration (Sec. 7 prior to addendum)

This proposed section attempts to distinguish, among deleterious effects: (i) those that may result from the construction of wells, and (ii) those that may result from well draft. Among the deleterious effects recognized are salt-water upconing and salt-water intrusion. The intent of the recognition is appropriate with respect to Herzberg lenses, such as constitute most major basal-water aquifers in Hawaii, but the language should be improved from a technical aspect.

Salt-water coning, strictly speaking, involves a rise of the salt-fresh interface (or zone of mixture) at the base of such a lens, beneath the well, so that salt water is actually drawn into the well. Short of salt-water coning in this sense, there may be brackish water coning. The extent of salt-water or brackish-water coning is controlled by the combination of the construction of the well, the draft from the well, the original thickness of the aquifer and the character of its hydraulic conductivity, and the draft of other wells from the aquifer. Such coning is of direct concern to the operator of the well, because it affects the salinity of the water drawn. It is of consequence to the operators of other wells in the aquifer in that, with variations in the continuity of the draft, it introduces salt into higher levels of the aquifer resulting in increasing the thickness of the zone of mixing. It may result, therefore, in increased salinity of water drawn by other wells from the aquifer. Salt-water coning and excessive brackish-water coning, or the results of the combination as excessive increases in the thickness of the zone of mixture, should be subject to DLNR control through regulation of both well construction and well draft.

The term salt-water intrusion came into use in areas underlain by below-sea-level aquifers of restricted depth in which, with a reduction of head, salt water intrudes inland from the sea along the aquifer, nearly horizontally. Such conditions may pertain in some caprock aquifers in Hawaii. However, in the major basal aquifers in Hawaii, the salt water is present at depth beneath the fresh groundwater even in nature, and the significant movement of the salt-water interface is not near-horizontal but near-vertical. Salt-water encroachment, a term used in HRS 177-2 (3), would indicate the movement of concern better than salt-water intrusion.

As now drafted, DLNR would have to force the owner of any well whose draft causes salt-water intrusion or encroachment to modify the well. Any draft from any well causes a reduction in head. Any reduction of head in a Herzberg lens will cause some salt water encroachment. The extent of the encroachment (as distinct from the inducement of upconing of salt or brackish water) is a function of the rate of draft rather than the construction of the well. Excessive salt-water intrusion or encroachment should be grounds for regulation of draft. Intrusion does not constitute appropriate grounds for regulating well construction.

10.5 Well records (Sec. 8.5 prior to addendum)

The proposed regulation appropriately proposes that well owners must keep certain records. However, some of the proposed requirements are, or should be, redundant to other requirements or are unimportant.

The history of drilling (or construction) of the well, water bearing formations (and non-water bearing formations), static water levels encountered in drilling, chloride contents encountered in drilling, construction of the well, elevation and location of the well, and bench mark description, should all be filed in the application to drill a new well in 8.2 or in the drillers report in 8.4.

Groundwater temperatures may be significant in some cases, but a continuing record of groundwater temperatures will not be useful in the case of most wells.