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RR:0059

PROPOSED REVISION OF PUBLIC HEALTH REGULATIONS CHAPTER 37-A: WATER QUALITY STANDARDS

Statement for
Department of Public Health
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Introduction and Conclusions

The revision of PHR Chapter 37-A now proposed is improved in many respects over the revision that was considered in May 1978. Several changes appear to reflect comments by the Environmental Center on the earlier proposal.

However, even the present version is extremely complicated, far more so than is justified. The classification of the waters is much more detailed than is necessary, and much of the detail is not actually used. Many of the definitions are misleading, do not fit the examples to which they supposedly refer, do not cover the waters whose coverage is presumably intended, or do not provide intended differentiation. Standards are not applied to all of the parameters and water categories for which they are needed. Several of the standards are violated by nature.

We consider that the proper purpose of governmental regulation is the promotion of general welfare, a purpose explicitly indicated in the preamble of our national constitution that, in its entirety, was adopted in our own constitution. The welfare of concern is human welfare, overall and in the long term. This welfare cannot be promoted without some modification of the natural environment. On the one hand, some environmental detriments are unavoidable if natural resources are to be developed and used. On the other hand, some developments are considered to improve on nature, although extensive improvement on nature is generally extremely expensive.

It is generally very difficult to determine just what regulations of human activities or environmental standards will most appropriate in the light of the purpose of promoting overall, long-term human welfare. However, proper standards will very rarely require reductions of the concentration of materials below natural levels. Proper standards must

consider the losses as well as the gains associated with sticking closely to natural conditions. And proper regulations can be neither so complex nor so ambiguous as to confuse those who must comply with them.

We recommend that, prior to adopting the revision of PHR Chapter 37-A, the DOH amend the present proposal so as to remedy its deficiencies. Toward the amendment we provide a number of comments, some general and some specific. These further comments relate to: 1) the statutory authority of the DOH and the limits to that authority; 2) the classification scheme of the waters and the bottoms as it is now proposed; 3) some of the definitions proposed; 4) some of the standards proposed; 5) the zones of mixing proposal; and 6) issues raised at the hearing on the previous proposal.

Our comments concerning the proposed standards are incomplete. The Water Resources Research Center will as soon as possible provide additional comments on standards that seem inappropriate because they are not met in nature or otherwise.

Statutory authority and its limits

Under the Environmental Quality Act the DOH is empowered to regulate water pollution, in general (HRS 342-3) and specifically through the establishment of water quality standards, effluent standards, and standards of performance related to discharges (HRS 342-32(1)).

The Coastal Zone Management Act of 1977 establishes the objectives (HRS 205 A-2(b)) of protecting coastal ecosystems ((b)(4)) balanced by provision for public and private facilities of economic importance ((b)(5)); and the policies (HRS 205 A-2(c)) of regulating point and non-point sources of pollution to protect and where feasible restore the recreational value of coastal waters ((c)(1)(b)(vi)), preserving valuable ecosystems (c)(4)(B), minimizing degradation of coastal ecosystems (c)(4)(c), promoting water quality management ((c)(4)(d)), and regulation of adverse environmental impacts of development in the coastal zone (c)(5)(C). However, implementation of these objectives and policies has not been assigned to any agency, and indeed the Act specifically indicates that DPED, as the lead agency (HRS 205 A-1(8)), is to recommend necessary implementing legislation (HRS 205 A-3(8)).

The DOH water quality standards should be established with due regard to the continuation of appropriate uses of the waters and to the ecological concerns reflected in the Coastal Zone Act. By implication, at least, the DOH has the power to regulate inappropriate uses of waters and bottoms where such regulation is the most appropriate means to assure compliance with water quality standard considered necessary to protect appropriate uses. It does not necessarily follow that the DOH has authority to determine which uses are appropriate uses and which are inappropriate, predominant over, for example, the authority of the DLNR with respect to conservation and development of natural resources and the DOT with respect to harbor development.

The classification scheme

The scheme and its relation to standards, etc.

Water quality regulations are appropriately based on a combination of aquatic ecology, uses of the waters, and the desirability of disposal to the waters of various types

of wastes. In many cases the detrimental effects of water pollution are not manifest in the waters themselves but at the bottoms of the waters. Hence consideration of the ecology of the bottoms is also appropriate in establishing water quality regulations, and some of the regulations may best be phrased in terms of standards applying to the bottoms.

The proposed revision of Chapter 37-A includes a detailed classification based on the ecology of the waters and bottoms, permissible waste discharges, and uses of the waters and bottoms. Although specific standards apply to most of the detailed categories in the classification scheme as shown in Table 1 accompanying this statement, there are some categories to which only the "Basic Criteria" of Sec. 4 apply (Table 4); others to which these and certain restrictions on use apply (Table 3); and still others to which only the basic criteria, the use restriction, and restrictions on waste discharge apply (Table 2).

The utility of the scheme and implications of limitations to statutory authority

Because the details of classification indicated in Table 4 are not used in differentiating specific water quality standards, restricting waste disposals, or restricting uses, they serve no useful present purpose in the context of Chapter 37-A.

Springs and seeps, lakes, reservoirs, and low wetlands represent classification categories to which specific standards may be applied in the future, as implied in Section 5.3A. The failure to provide specific standards applying to anchialine pools, estuary bottoms other than Pearl Harbor, and soft bottoms in embayments and off the open coast may be an oversight. Otherwise, there seems to be no utility even in the future, in the context of Chapter 37-A, to the distinctions among the categories listed in Table 4.

Because the details of classification indicated in Table 3 form the basis for restrictions on use alone, their appropriateness in the context of Chapter 37-A is questionable. The proposed regulation does very appropriately recognize and provide water quality protection for uses established by other agencies such as the DLNR and certain federal agencies in their establishment of Natural Area Reserves, Marine Life Conservation Districts, Fish and Wildlife Refuges and State and National Parks, and in the protection of endangered species. However determinations by the DOH itself of uses to be protected and uses to be prohibited may be questioned. However, actions by the DH on its own initiation to identify uses to be protected and uses to be prohibited may be questioned, particularly where water quality standards are not differentiated on the basis of these uses.

Since there is no corresponding differentiation as to specific standards or restrictions on waste disposal, what is the purpose of the distinction between use classes I and II of marine bottoms (Section 3.4A and B)? In many cases, the assignments to the more restricted of these classes (Class I) have been made by DLNR, but how can the DOH defend the restrictions in the other proposed cases (Sections 7.3B1b; 7.5B1b through e) in the absence of any differentiation between standards for Class I and Class II? Under what authority can the DOH prohibit harbor construction in Class II reef flats (Section 7.5B2a) when no standards other than the basic standards are proposed for this class or for the special prohibition of harbor construction.

It may well be that the restrictions referred to above are justified, that they will in the future be enunciated by appropriate agencies, and that the DOH will in the future relate the restrictions to special water quality standards. For the present, the restrictions seem to lack justification.

Organization

From scanning Tables 1 through 4, it will be noted that the categories in the classification scheme are defined in part in the section on water classification (Section 2) and in part in the sections on criteria (Sections 5, 6, and 7). On the one hand, as noted earlier, some classification details provided in the classification sections are not used in differentiating standards. On the other hand, some classification details used in differentiating standards are provided only through footnotes in the tables of numerical standards in the standards sections. The placement of classification details varies considerably among the various categories of waters and bottoms.

Persons affected by the regulation would find it much easier to use if the classification categories were reduced to those actually used in differentiating standards and restrictions on waste disposals (and in differentiating permissible uses to the extent this is appropriate), and if the placements of the definitions of the categories were more systematically arranged. A tabular summary, similar to Table 1 would also be of considerable assistance to the users.

As in our comments on the earlier version of the revision of Chapter 37-A, we suggest that classification would be more satisfactory if instead of two major categories, inland and marine, it were based on three major categories, inland, coastal, and marine, like the classification in the chapter as it now exists.

Definitions

Basic definitions (Sec. 1.3)

The term "Northwestern Hawaiian Islands" does not seem to be used elsewhere in the regulation. Hence its definition (G) seems unnecessary.

The terms "coastal water" 3(c) and its components "Near-shore water" 3(A) and "Off-shore water" (B) provide a classification that is appropriate but is used only in distinguishing in which Class AA waters zones of mixing may be used. As defined, near shore waters are not identical to the non-oceanic marine waters, and coastal waters are not identical to other marine waters or to non-oceanic marine waters. The distinction between the terms is not consistent with the distinction between nearshore reef flats and offshore reef flats (Sec. 7.5 A 1 and 2). Further, the term coastal is used with respect to wetlands that do not fall within the definition of coastal water. Rather than introduce these definitions it would be preferable simply to indicate that zones of mixing cannot be established in Class AA waters except those 1000 feet or more from the shore.

Definitions applicable to inland waters (Sec. 5.1)

Since no distinctions are made elsewhere in the regulation, there is no point to defining the several varieties of streams (A1 and A2).

Since no use seems to be made elsewhere of the term "ecologically significant bodies of water" (3) the definition of this term seems pointless.

The term "deep" (E) is used only in the definitions of "natural lakes" (H) and "reservoirs," and the term "shallow" (F) only in the definitions of the three types of "wetlands" (J, K, L). For reasons indicated below, it would be preferable to use the depth criterion directly in those definitions rather than refer to the terms deep and shallow.

"Springs and seeps" (G) in actuality include springs whose flows exceed 5 mgd. and cannot be considered small. If "springs and seeps" are restricted in the regulation to those that are small, any standards pertinent to them will not apply to the major springs.

In the definitions of the terms "natural lakes" (H) and "reservoirs" (I) the topographic features responsible for their existence are referred to as impoundments. In the definitions of "elevated wetlands" (J), "coastal wetlands" (L), "anchialine pools" (M), and "estuaries" (N), the topographic features are referred to as basins. The term basin is actually more appropriately applied to lakes and reservoirs than to estuaries. Most of the estuaries (as covered in the restricted use of the term in the regulation) have no sills. It would seem preferable to use the term basin in the case of lakes and reservoirs and the combination basin or channel in the case of estuaries.

In ordinary usage, the distinction between lakes and ponds is not based on depth but on area, but among different regions the distinguishing area criterion varies greatly. By the depth criterion proposed in the regulation several bodies ordinarily considered lakes will be considered ponds, at least in part, and thus parts of wetlands.

At least in one case, Lake Waiau, the body of water may at some times be a lake and other times an elevated wetland. The effect is that the elevated-wetland standard of Section 5.3 B 2 applies continuously to the margins of Lake Waiau and sometimes to the water, but at other times no specific standard is applied to the center because it is a lake.

It should also be noted that swimming pools having depths exceeding 2 m will be, at least in part, "reservoirs" by the proposed definition, and that some small reservoirs will be "wetlands." It should be noted further that the maximum depths of a reservoir may vary from zero to many times 2 m depth.

Since specific standards are applied only to the "elevated wetlands," among these categories, it would be simplest for the present to delete the definitions of "lakes, reservoirs, low wetlands, and coastal wetlands and to insert the words "other inland waters such as" after the words "Section 4 apply to" in the second line of subsection 5.3 (A).

When specific standards are adopted for lakes, reservoirs, and the wetlands other than elevated, it would be best to define lakes and reservoirs in terms of areas and possibly maximum depths and to define wetlands in terms of prevailing depths considerably shallower than 2 m, but containing ponds of greater depth.

The intended placement of coastal fish ponds in the classification is not clear and seems critical. Having seasonal surface connections to the ocean they seem included in "estuaries" especially as these include "developed" estuaries, even if the connections are carefully controlled. However, "man-made ponds" are explicitly included in "coastal wetlands" , and although the connections of fish ponds to the ocean are seasonally controlled rather than occurring only "in rare circumstances" and they are not "usually without tidal fluctuations," it may be intended that the fish ponds be "coastal wetlands."

In the light of concerns for maintenance and restoration of ancient Hawaiian fishponds, one would think that there must be specific criteria that would be applicable to them. No specific standards are proposed for "coastal wetlands". The specific standards applied to estuaries may not reflect desiderata in coastal fishponds.

"Springs and seeps" (G) are divided between those that are stream-associated and those that are coastal. Coastal springs, if they are not associated with at least short streams, always flow into the ocean, not just usually as stated. They emerge on all kinds of coasts, not merely escarpments as stated.

As defined, most "estuaries" (N) will be stream mouth estuaries. They will not include most drowned river valleys (many of which are considered "embayments" (Sec 6.1A)) although such embayments are often included as estuaries. However, Pearl Harbor (a drowned river valley) is treated as an estuary (Sec 5.3B 36) even though its waters do not meet the "characteristically brackish" criterion (see Sec 1.3D). They will probably include some lagoons. However, Kaneohe Bay (a complex body that is both a set of drowned river valley estuaries and a lagoon, and whose salinities are similar to Pearl Harbor) is considered an embayment (Sec 6B 1 2). "Estuaries" explicitly include "developed" estuaries. It may be intended that the Ala Wai canal be included among these, although the deeper waters of the canal are not brackish.

The DOH should redefine the estuary category and/or reassign bodies of water to it so that applicable specific standards apply appropriately to the category and so that the definition fits the examples. The definition should describe the enclosing topography as a channel or basin, rather than as a basin alone, because many of the estuaries presumably intended for inclusion occupy depressions that are better described as channels than as basins.

Definitions applicable to marine bottoms (Sec 7).

The rationale for applying water quality standards to the bottoms of waters (inland as well as marine) has been discussed in the section of these comments on the classification scheme and its relation to standards. Some comments as to the definitions of marine bottom types flow from the rationale.

Sand beaches, although included as bottoms, (7.1A) are defined as shorelines. "Lava rock shorelines" (7.2 1) are considered bottoms. "Solution benches" (7.2 2) are considered bottoms although most such benches are above sea level except at high tide. Marine pools and protected coves (7.3) and "artificial basins" (7.4) are considered in their entirety as bottoms. What is surely intended for inclusion are those parts of sand beaches and those solution beaches that are below sea level, lava-rock bottoms to the 100 fathom limit, and the bottoms of marine pools, protected coves, and artificial basins.

Lava rock shorelines (7.2A 1) are defined as vertical rock faces (cliffs), horizontal basalt, volcanic tuff beaches, and boulder beaches. Vertical rock faces cannot be bottoms. Hawaiian lavas include other types than basalt; neither the flows nor their surfaces, are in general horizontal either as deposited or as eroded. All tuff is volcanic, and tuff itself does not form beaches though the sand eroded from tuff may.

Marine pools are defined as those in depressions on sea-level lava rock outcrops. An outcrop at sea-level may be a bench, but if it is entirely at sea level it cannot contain a depression or a pool. There seems to be no reason why pools in calcareous rocks should be excluded.

The definitions of marine bottoms need considerable improvement.

Standards

Basic water quality criteria (Sec 4).

It must be recognized that the terms "objectionable" and "undesirable" used in Secs. 4.1A, C, and E are highly subjective.

The criteria with respect to high temperature, etc. (4.1D) include levels that will be harmful to the biota. On the one hand, harm (as distinct from lethal effects) will not be demonstrated by a 96 hr. bioassay that is designed to test for acute toxicity in fish (Sec. 9). On the other hand, a phytoplankton bioassay test (Sec. 9) will not necessarily indicate harm to, say, coral. It should be noted that these criteria, as well as all other basic criteria apply to all waters, even zones of mixing. Some detriments to the biota may result from the disposal of waste heat, etc. to the waters. However, in terms of overall, long-term human welfare, these detriments may, in some places, be less than either the detriments associated with waste heat, etc. elsewhere, or the detriments resulting from discontinuation of the activities producing the waste heat, etc. As now phrased in terms of harm without specification of degree of harm or recognition of more-than-offsetting benefits, these criteria are not appropriate.

Cross-reference to the DOH "Conservation Standards" regulation, PHR Chapter 37-B, (actually sedimentation standards) should be supplied in the discussion of the basic standard relating to soil particles (Sec. F).

Bottom sediment standards

Streams (Sec 5.3B 1b)

In general, the bottom areas of a stream flowing through a rock channel that are bare and that are covered with sediment during normal flow conditions remain the same. In detail, however, the pattern of post-flood sediment deposition varies considerably from flood to flood. Furthermore, differential rates of sediment deposition between hard-bottom and soft-bottom areas may be expected to be much less in the case of artificially accelerated sedimentation than natural sedimentation. Problems of resuspension of the sediments and diffusion of pollutants from the sediments to the overlying waters may accompany the problems resulting directly from sediment deposition. These problems are the same whether the sediment deposition occurs in normally hard-bottom or normally soft-bottom areas. Hence the distinction between the hard-bottom standard (i) and the soft-bottom standard (ii) is, therefore, not a useful one.

The accumulation of sediment in a stream during a flood recession under entirely natural conditions may in some places be a meter or more. Hence the proposed standards of 5 and 10 mm are ridiculous.

It is doubtful that there have been sufficient measurements of the E_h of the interstitial water of stream-bottom sediments to establish an appropriate standard. In any case the E_h properly applies to the interstitial water, not to the sediment itself as proposed in (iii).

Under entirely natural conditions, the sediments accumulating in pools may contain more than 50% of grain-size smaller than the 2 mm. proposed as a standard (iv).

The only control of artificially generated sedimentation that is likely to be effective is that under PHR Chapter 37-B.

Estuaries (Sec 5.3B 3)

A bottom standard (E_H) is proposed for Pearl Harbor (b) but not for other estuaries (a). In the case of all other variables for which standards are proposed, the standards are more stringent for other estuaries than for Pearl Harbor. It seems highly questionable that a bottom standard is needed for Pearl Harbor but not the other estuaries unless, perhaps, enough is known to set an E_H standard only in the case of Pearl Harbor.

Sand beaches (Sec 7.1C 1).

Under natural conditions it is expectable that the proposed soil-sediment standard of 10 mm. will be exceeded after floods off the mouths of many streams discharging into embayments. If the sand off these stream mouths is not covered generally by more soil-sediment, it is because the fine material is redistributed by waves. The comment on effective control of sedimentation in the case of streams (see above) is applicable to sand beaches as well.

Rock Shorelines (Sec 7.1C 1).

The above comments relating to the proposed sediment standard for sand beaches apply also to the proposed standard for rock shorelines.

Water column standards

Springs and seeps (Sec 5.3A).

No specific standards are proposed for springs and seeps, even those that are stream-associated (5.1G) although their future development is suggested. The water of streams fed by springs and seeps must meet the water-column standards for streams (5.3B1A) immediately below the springs. Springs and seeps do not normally contribute turbidity to streams, but should not the other water column standards applied to streams be applied at least to those springs and seeps that feed streams?

There is good rationale for the lack of water quality standards for coastal springs. They would be much less effective than regulations of underground land fills and wastewater disposals, and standards applied to wastewaters disposed of underground. We already have such regulations and standards.

Streams (Sec 5.3B 1).

No distinction is made between standards applicable to the class 1b streams (3.2A 3) used for domestic water and the streams of classes 1a and 2 used for other purposes. This seems quite strange.

Elevated wetlands (Sec 5.3B 2)

According to Jane Massey (dissertation 1978) the waters of Lake Waiau had a pH ranging from 8.4 to 9.8 in 1977, far exceeding the proposed standard maximum. At least in part, and sometimes entirely, Lake Waiau has a depth of less than 2 m. and hence is defined as an elevated wetland. A pH standard of 7.0 is proposed for elevated wetlands. What could the DOH do to assure Lake Waiau compliance with this standard? Would compliance be desirable?

General comments on standards

No standards are proposed in the proposed revision of Chapter 37-A with respect to some parameters to which standards apply in the Chapter 37-A at present. One of these parameters is the concentration of coliform bacteria. Because total coliform concentrations are very poorly correlated with environmental detriments, the elimination of the total coliform standards is justified. Another of these parameters is, however, fecal coliform concentrations. At least in streams, fecal coliform concentrations are correlated with human health hazards. Hence fecal coliform standards for streams seem appropriate, and indeed their differentiation between Class 2a and Class 1B streams seems justified. The ratios of fecal coliform to fecal streptococci would be an even better parameter to apply the standards than the concentration of fecal coliforms alone. The appropriateness of these standards in coastal waters is still under investigation by the Water Resources Research Center.

Water quality standards should relate to detriments to human health, to esthetic detriments, or to detriments to aquatic biota. In some cases, the standards are more effectively applied directly to effects on the biota than to water quality parameters. With respect particularly to bottom conditions, the proposed revision of Chapter 37-A indicates that the DOH expects to develop standards with respect to biological communities. Biotic parameters such as plankton concentrations and changes in coral or algae distribution might be more appropriate than some of the water column standards.

To the above comments on the proposed standards, particularly the proposed numerical standards, the Water Resources Research Center expects shortly to add significantly.

Zones of mixing

The particular value of an environmental variable selected as a standard can represent, at best, the value that is generally most appropriate from the standpoint of overall, long-term human welfare. No matter how small the classification category to which it is applied, there will be variation within the category with respect to ecological conditions, to the value of using that category for waste disposal, and to the value of maintaining the suitability of the category for other uses. If the standard represents the value that is generally most appropriate, there are certain to be exceptional circumstances with respect to ecological conditions, uses for waste disposal, and other uses of the category, that would warrant selection of a value for the environmental variable different from the standard. In the light of the aim of promoting overall, long-term human welfare, application of a standard without provision for variances would be appropriate only if the range of ecological conditions and uses is so small that case-by-case determinations of the appropriate levels of the environmental variable would never

be warranted. Otherwise there should be provision for variances based on case-by-case analysis and determination. Wisely, the Environmental Quality Act makes provision for variances (HRS 342-7) and Chapter 37-A makes provisions at least for the specific kind of variances designated as zones of mixing.

- - - — A zone of mixing is a geographically defined area within a particular classification category in which, within prescribed limits, prescribed environmental values are allowed to exceed (or be less than) standard levels to the extent necessary to accommodate the effects of a waste disposal that is considered to be in the public interest. It is appropriate that zones of mixing be prohibited in those classification categories in which preservation of natural environmental quality is most important. It is inappropriate that they be prohibited in other categories.

In the proposed revision of Chapter 37-A, as at present, zones of mixing are prohibited in Class AA marine waters. In the revision, however, the Class A marine waters in which zones of mixing have been permissible would be divided among estuarine waters (considered inland waters), open coastal waters and embayments (considered marine waters), and artificial basins (considered marine bottoms). New zones of mixing would be prohibited in embayments. There is no explicit provision (either allowance or prohibition) for zones of mixing in estuarine waters or in artificial basins.

If a new zone of mixing were sought in an estuary similar to that in which Hawaiian Electric Co.'s Waiawa Power Plant ZOM or that in which Waialua Plantation's ZOM have been established, could these be considered by DOH? Could the DOH consider a new zone of mixing in Honolulu Harbor (considered an artificial basin), where ZOM's have been established for Dole and for Hawaiian Electric, even though Honolulu Harbor is an embayment in the ordinary use of the term and was originally a natural estuarine embayment although it is not included in the list of bodies defined as embayments? In either case, if not, why not? Furthermore, if there were sufficient rationale for establishing a ZOM, why should one not be considered in a place like Hanapepe Bay which is classified as an embayment and which has better mixing conditions than Honolulu Harbor?

Zones of mixing are proposed to be prohibited in the nearshore marine waters of Class AA. (Section 3.3A). The nearshore waters are defined as coastal waters with depths of less than 10 fathoms and, if there is no defined reef, as including deeper waters to a distance of 1000 feet offshore (Section 1.3A). Class AA coastal waters of the island of Hawaii are defined as those between Leleiwi Point (near Hilo) and Waiulaula Point (near Kawaihae) (Section 6.2B1a). Assuming this means clockwise from Leleiwi Point to Waiulaula Point (the direction is not specified), all of the coastal waters of the Puna, South Kona, and North Kona coasts and most of the South Kohala coast are included in Class AA. Some of the other ocean thermal energy conversion developments that are now planned and funded will may be undertaken in or result in discharges in waters less than 1000 feet from the shoreline. The discharges of water drawn from great depths in the ocean will contain nutrients in excess of the standards applicable to open coastal waters (Section from 6.2C). Is it the intent of the DOH to ban the proposed OTEC developments to the extent they would need zones of mixing in the nearshore waters? If so, what are the particular effects of the discharges from OTEC plants in the nearshore waters that would be so deleterious as to justify the ban?

Issues previously raised

Five primary issues were identified in the 16 September report of the Hearing Officer presiding over the May 1978 hearing on the earlier proposal for revision of Chapter 37-A,

The first was: "Whether the ecosystem approach adequately reflects the need for man's use of the waters." In our opinion the ecosystem approach is essential in the establishment of appropriate water quality standards. By itself a water classification on the basis of ecology would not be a sufficient basis for the establishment unless the ecology included the human ecology. However, the classification of the waters proposed by the DOH is not based on ecology alone. In our opinion a standard is appropriate if the costs of compliance with it are balanced by the benefits of compliance, both costs and benefits including non-economic as well as economic values.

The second issue was "Whether there is enough technical data to justify the proposed revisions at this time, and whether more studies should be done before promulgating them." The availability of completely adequate data can never be expected, and we reaffirm the opinion expressed at the earlier hearing that there is enough technical data to indicate many flaws in the present standards, and that their revision now is thoroughly justified. However, changes from the present standards should reflect appropriately all technical data now available. In our comments on the proposed standards we have indicated several that are not in accord with now available data.

The last three issues dealt with the earlier proposed standards as to minimum stream flow. We have not altered our opinions concerning the DOH proposal, but the issue and our comments are for the present moot because the DOH has withdrawn its proposal.

However, the last issue involved a question of more general applicability--whether there had been "adequate consideration of the social and economic impacts of implementing the requirements." With respect to this question, it was the opinion of the hearing officer that this question "reflected a lack of adequate communication about and possible misunderstanding of the basis and purpose of the proposed revisions" and that: "Some of the testimony reflect(ed) a philosophical objection to government interference." Both opinions are undoubtedly valid to some extent. However, the failures in understanding seem not to be restricted to those objecting to the original proposal. More than one philosophic objection was raised. We consider governmental interference unavoidable in balancing benefits or losses accruing to people in common against benefits or losses accruing to private parties. However, we consider governmental interference improper unless it balances the costs of compliance with standards against the benefits of compliance.

Table 1. Classification of waters and bottoms used in differentiating specific standards^{a)}

Classification				Placement ^{b)}	
Location	Salinity	Types	Subtypes	Definitions and defining types	Specific Standards ^{c)}
<u>Waters</u>					
Inland	Fresh	Streams	Dry season	1.3E, 2.2B1, 5.1A, 5.1C	5.3B1a (i)
			Wet season	1.3E, 2.2A, 2.2B1, 5.1A, 5.1D	5.3B1a (ii)
		Elevated wetlands	1.3E, 2.2A, 2.2B3, 5.1A, 5.1J	5.3B2	
	Brackish	Estuaries	Pearl Harbor	1.3E, 2.2A, 2.2B2, to 4	5.3B3b
			Others	1.3D, 2.2A, 2.2C2, 5.3B3b	5.3B3a
		Coastal wetlands	1.3D, 2.2A, 2.2C2, 5.3B3a	5.3B3a	
Marine	Saline	Embayments	"Wet"	1.3D, 2.2A, 2.2C2, 5.3B3a	5.3B3a
			"Dry"	1.3D, 2.2A, 2.2C1	
		Open coasts	"Wet"	1.3F, 2.3A, 6.1C (i)	6.1C (i)
			"Dry"	1.3F, 2.3A, 6.1C (ii)	6.1C (ii)
		Oceanic		1.3F, 2.3A, 6.2C (i)	6.2C (i)
			1.3F, 2.3A, 6.2C (ii)	6.2C (ii)	
			1.3F, 2.3A	6.3C	
<u>Bottoms</u>					
Inland	Fresh	Streams		1.3E, 2.2A, 2.2B1, 5.1A	5.3B1B
			Others	1.3E, 2.2A, 2.2B2 to 4	
	Brackish	Estuaries	Pearl Harbor	1.3D, 2.2A, 2.2C2, 5.3B3b	5.3B3b
Marine	Saline	Embayments & open coasts	Sand beaches	1.3F, 2.3A, 2.3B1, 7.1A	7.1C
			Rock shores, etc.	1.3F, 2.3A, 2.3B2, 7.2A	7.2C
			Pools, etc.		
			Sand bottoms	1.3F, 2.3A, 2.3B3, 7.3A, 7.3C1 to 4	7.3C1 to 4
			Others	1.3F, 2.3A, 2.3B3, 7.3A, 7.3C3 and 4	7.3C3 and 4
			Artificial basin	1.3F, 2.3A, 2.3B4, 7.4A	7.4C
			Reefs, etc.		
		Sand patches	1.3F, 2.3A, 2.3B5, 7.5A, 7.5C1 to 3	7.5C1 to 3	
		Remainder	1.3F, 2.3A, 2.3B4, 7.5A, 7.5C3	7.5C3	
		Oceanic	2.3A		

Notes: a) Basic criteria in Section 4 apply to all waters and bottoms.

b) Placements are indicated by reference to sections and subsections of the regulations.

Where necessary for differentiation, lower case roman numerals are added in parentheses.

Table 2. Classification of waters used in differentiating waste-discharge restrictions^{a)} but not specific standards

Classification		Placements	
Locations	Classes and types	Definitions and defining types	Waste-discharge restrictions ^{a)}
Inland	1	2.2A, 3.2A 1	3.2A 1
	2	" , 3.2B	3.2B
Marine	AA	2.3, 3.3A	3.3A
	A	" , 3.3B	3.3B
Coastal (As defined, not identical with either nor non-oceanic marine)	Near shore	1.3C, 1.3A	3.3A (i)
	Off shore	1.3C, 1.3B	3.3A (ii)

Notes: a) Restrictions on zones of mixing are included in waste-discharge restrictions.

Table 3. Classification of waters and bottoms used in differentiating intended or permissible uses but not in differentiating waste-discharge restrictions or standards

<u>Locations</u>	<u>Waters or bottoms</u>	<u>Classification</u>		<u>Placements</u>	
		<u>Classes</u>	<u>Subclasses types & subtypes</u>	<u>Definitions & defining types</u>	<u>Uses</u>
Inland	Waters	I	a	2.2A, 3.2A2	3.2A2
			b	2.2A, 3.2A3	3.2A3
Marine	Bottoms	I		2.3B, 3.4A, 7.1A, 7.2A, 7.3A 7.5A	3.4A
			II	Artificial basins	
		Shallow-draft harbors		2.3B4, 3.4B, 7.4A, 7.4B1	3.4B, 7.4B1a
		Deep-draft harbors		2.3B4, 3.4B, 7.4A, 7.4B1	3.4B, 7.4B1b
		Reef flats, etc.			
		Nearshore-Degraded	2.3B5, 3.4B, 7.5A1, 7.5B2a(i)	3.4B, 7.5B2a(i)	
Not graded	2.3B, 3.4B, 7.5A, 7.5B2a(ii)	3.4B, 7.5B2a(ii)			
Other	2.3B5, 3.4B, 7.5A1, 7.5B2a(iii) 7.5B2b and c	3.4B,			
Others	2.3B, 3.4B, 7.1A & 7.32, 7.2A&B2 7.3A & B2	3.4B			

Table 4. Classification of waters and bottoms not used in differentiating intended uses, waste-disposal restrictions, or specific standards

Classification				Placement of definition and defining types
<u>Locations</u>	<u>Salinity</u>	<u>Types</u>	<u>Subtypes</u>	
Inland	Fresh	Streams	Perennial-Continuous -Interrupted	5.1A1(i), 1.3E, 2.2B1 5.2A1(ii), 1.3E, 2.2B1
		Springs & seeps	Stream associated Coastal	5.1G(i), 1.3E, 2.2B2 5.1G(ii), 1.3E, 2.2B2
		Lakes		5.1H, 1.3E, 2.2B2
		Reservoirs		5.1I, 1.3E, 1.3E, 2.2B2
		Low wetlands		5.1K, 1.3E, 2.2B4
	Brackish	Coastal wetland		1.3D, 2.2A, 5.1L
		Anchialine pools		1.3F, 2.2C3, 5.1M
		Estuary bottoms		1.3D, 2.2C3, 2.2C2
	Generally	Ecologically significant		2.2A, 5.1B(i)
Not ecologically significant			2.2A, 5.1B(ii)	
Marine	Saline	Bottoms in embayments and off open coasts	Soft bottoms	1.3F, 2.3B6