



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION IX**

**75 Hawthorne Street**

**San Francisco, CA 94105-3901**

November 15, 2001

Mr. Gary Gill  
Deputy Director for Environmental Health  
Hawaii Department of Health  
P.O. Box 3378  
Honolulu, HI 96801

Dear Mr. Gill:

The U.S. Environmental Protection Agency (EPA) has completed its reevaluation of Hawaii's 1998 Clean Water Act Section 303(d) list submittal. EPA reconsidered its prior approval of Hawaii's 1998 Section 303(d) list pursuant to a court order issued September 5, 2001 by Judge David Alan Ezra of the Federal District Court for the District of Hawaii in *Hihwai Stream Restoration Coalition et al. v. Christine Todd Whitman*, CV. No. 00-00477 DAE/KSC. In that decision, Judge Ezra found that EPA's previous approval of Hawaii's 1998 Section 303(d) list was in error, and ordered EPA to carefully reconsider Hawaii's 1998 list.

EPA reviewed Hawaii's Section 303(d) list submitted March 31, 1998, a clarifying letter from the Hawaii Department of Health (DOH) to EPA dated April 28, 1998, supporting documentation and information submitted by DOH, and additional data and analysis compiled by EPA during our reconsideration of Hawaii's list. Based on this review, EPA has determined that Hawaii's 1998 list of 19 water quality limited segments (WQLSs) still requiring TMDLs partially meets the requirements of Section 303(d) of the Clean Water Act ("CWA" or "the Act") and EPA's implementing regulations. Therefore, by this letter, EPA hereby partially approves and partially disapproves Hawaii's 1998 Section 303(d) list. Specifically, EPA approves the State's decision to list 19 waters and associated pollutants.<sup>1</sup> However, EPA disapproves the State's decision not to list 92 additional water bodies, and additional pollutants for 15 waters already listed by the State, because EPA finds that available data and information support their listings.

EPA is identifying for inclusion on Hawaii's Section 303(d) list 92 additional waters and associated pollutants, and additional pollutants for 15 waters already listed by Hawaii. As discussed below, EPA is also identifying priority rankings for each listed water body. EPA will open a public comment period to receive comments concerning our decision to add waters and pollutants to the State's Section 303(d) list.

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<sup>1</sup> One listed segment, called West Maui by the State, is actually comprised of two disconnected segments - West Maui from Honolua to Lahina and the West Maui coast near Kihei. These two segments are listed separately in the revised 303(d) list for purposes of clarity.

The complete Section 303(d) list, including waters and pollutants listed by the State and those added to the list by EPA, and associated priority rankings, is provided in Enclosure 1. The statutory and regulatory requirements, and an explanation of EPA's reconsideration of Hawaii's compliance with each requirement, are described in Enclosure 2. The remainder of this letter summarizes the rationale for EPA's decision.

### Hawaii's 1998 Listing Submittal

The Hawaii 1998 Section 303(d) submission included 3 newly listed waters and 16 previously listed waters (including one for which a TMDL had been completed and approved by EPA in 1996, and one for which several TMDLs were subsequently completed in 2001). The new listings were based primarily on a water body assessment process described in the Waterbody Assessment Report (WBA) (March, 1998). Priority rankings for all listed waters were clarified through follow up communication with DOH. Priorities were established based on the degree of impairment, uses made of water bodies, the reliability of the data used in the assessment, and consistency with other program priorities. Waters previously listed on the 303(d) list were retained on the 303(d) list with the same priority rankings because TMDLs had not been completed and no information was available indicating that they were attaining water quality standards. Waimanalo Stream was targeted for TMDL development in the two years following 1998, consistent with the targeting requirement of 40 CFR 130.7.<sup>2</sup>

### EPA's Reconsideration of Hawaii's Submittal

EPA's reevaluation of Hawaii's 1998 list submittal considered all aspects of the State's listing decision, and focused upon three specific factors:

- (1) the State's use of its qualitative visual assessments of water body conditions in the listing process,
- (2) the State's efforts to gather and evaluate existing and readily available water quality data and information, and
- (3) the State's rationales for deciding not to list some waters based on these sources of data and information.

### Evaluation of DOH's Qualitative Water Body Assessments

Hawaii submitted a Section 303(d) list revision in 1997 that included several dozen more waters than were listed in 1996. EPA did not act on this off-year submittal. The 1997 submittal relied, for the most part, on qualitative visual assessments of water body conditions based on site visits made by DOH staff in response to public nominations. Hawaii's 1998 list submittal included 3 water bodies based on the results of the visual assessments. The 1998 list submittal provided a brief description of the basis for listing fewer waters based on the information contained in the visual assessments. EPA requested further explanations of DOH's rationales for the decision not to include on the 1998 list most of the waters identified as impaired to some degree in 1997.

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<sup>2</sup> All necessary TMDLs for Waimanalo Stream were adopted by DOH and approved by EPA in 2001.

DOH provided a brief supplemental explanation of its rationale for not listing most of the waters evaluated through the qualitative assessments. In 1998, EPA accepted the State's rationale and approved the 1998 list submittal.

In the *Hiihawai Stream Restoration Coalition* decision, however, the District Court found that the State's rationale was inconsistent with the administrative record, and ordered EPA to carefully consider the 1998 list submission. Thus, EPA has reevaluated the data and information used by DOH in 1998. For this reevaluation, EPA developed a quantitative method for scoring, ranking, and comparing DOH's qualitative assessments of water body conditions. This method was developed in consultation with DOH staff and was based, in substantial part, on a stream assessment method developed by the Natural Resource Conservation Service (NRCS) in Hawaii. The assessment method provides a method for considering whether narrative water quality standards were violated during the period before the 1998 listing decision. Based on our application of this scoring method, EPA found that 94 waters scored in the low or medium quality categories, including almost all the waters listed by DOH in its 1997 listing submittal. EPA has concluded that these waters meet Section 303(d) listing requirements and, in today's decision, is identifying the water bodies along with associated pollutants of concern for inclusion in the Section 303(d) list.

#### Evaluation of Waters Based on Water Quality Data

Federal regulations that govern Section 303(d) list development require states to assemble and consider all existing and readily available water quality data and information in the process of revising the Section 303(d) lists. In performing its reevaluation of Hawaii's 1998 submittal, EPA concluded that substantial amounts of available water quality data (principally for coastal waters) were not assembled and considered by the State in 1998. EPA gathered these data by retrieving Hawaii water quality data for the period 1993-1998 from the STORET national water quality database. DOH did assemble some data as part of its WBA analysis; however, the State's listing submittal did not explain how these data were evaluated for potential water quality standards exceedences. EPA compared the data retrieved from STORET and data gathered by the State for the WBA with applicable Hawaii numeric water quality standards. EPA found that applicable numeric standards were exceeded at numerous monitoring stations for which data were available. EPA has concluded that these water body locations meet Section 303(d) listing requirements and, in today's decision, is identifying the water bodies along with associated pollutants of concern for inclusion in the Section 303(d) list.

#### Scope of Future TMDL Development

EPA found that the data and information supporting EPA's list additions is limited and may now be outdated. The visual assessments developed by the State were based, in most cases, in only one or two visits to each water body. The listings based on monitoring data were supported by very limited information concerning the monitoring stations locations, which made it difficult to assess whether data collected at these

locations are representative of water quality conditions in the surrounding area. EPA reconsidered its decision on the Hawaii 1998 list based on the data and information existing and readily available at the time of the original listing decisions in 1998. Further, EPA determined that the available data and information support water body and pollutant additions to the 303(d) list. Therefore, EPA is adding a substantial number of waters and pollutants to the Hawaii 303(d) list based on limited data and information collected several years ago.

For each water body listed based on visual assessments, EPA is identifying the entire water body on the list because multiple locations were visited as part of each site visit by DOH staff. At the time TMDL development is initiated for these waters, EPA strongly recommends the collection of additional water quality data to confirm the presence and extent of water quality standards exceedences and to assist in the development of reliable TMDLs.

With regard to waters which EPA is listing based on water quality data collected at monitoring stations, EPA is limiting the geographic scope of the new listing decisions to the monitoring station locations themselves. Based on information in the State's submittal and subsequent discussions with DOH staff, the degree to which data collected at these monitoring stations is representative of surrounding water quality conditions is highly uncertain. At the time TMDL development is initiated for these waters, EPA strongly recommends that additional water quality data be collected based on a sampling design which provides representative results for the entire water body. These supplemental monitoring results will assist DOH in confirming the presence and extent of water quality standards exceedences.

#### Priority Ranking Decision and TMDL Schedules

We have also revised the State's 1998 priority rankings and established new priority rankings for newly-listed waters based on discussions with your staff. As requested by the State, we have updated the priority rankings for the entire list to reflect the current status of the State's TMDL development program and the State's current priorities. The criteria used to assign priority rankings are discussed in the enclosed staff report. These criteria are consistent with the criteria used by the State in 1998 and with the requirements of the Clean Water Act.

In 1997, EPA established a policy that each State should develop a long-term schedule for establishing TMDLs for all waters on the State's Section 303(d) list, even though this is not required by EPA's current regulations. See "New Policies for Establishing and Implementing TMDLs" (EPA, August 8, 1997). Hawaii developed such a schedule in 1999, and EPA reviewed it as part of EPA's overall TMDL program review in 2000. With the addition of waters to Hawaii's Section 303(d) list, and the revisions we are making to the priority rankings, the long-term schedule obviously needs to be revised. However, because the State is currently in the process of developing its 2002 Section 303(d) list, we recommend that the State continue with its near-term TMDL development

plans (which are consistent with EPA's revised priority rankings) and submit a revised long-term schedule concurrent with the 2002 list submittal.

#### Relationship Between This Action and 2002 Section 303(d) List Revision

As you know, the next Section 303(d) list submittal is due October 1, 2002. I appreciate DOH's current efforts to develop a new methodology for the next 303(d) listings. EPA expects the State to consider the revised 1998 listings and priority rankings, and the data and information sources on which they are based, when the 2002 list is prepared. However, EPA recognizes that the State may develop a new list in 2002 based on listing methods that are different than the methods used by EPA, and may yield different results. We look forward to working with DOH to develop a new 2002 listing methodology which best meets the State's needs and is consistent with federal listing requirements. The Hawaii 2002 list approved by EPA, or established by EPA in the event of a disapproval, will supercede the list established today by EPA.

#### Conclusion

I appreciate the cooperation provided by you and your staff as EPA conducted the reevaluation of the listing decision pursuant to the court's decision. If you have questions concerning our decisions or any of the supporting analysis, please call me at (415) 972-3572 or call David Smith at (415) 972-3416.

Sincerely,

|original signed by|

Alexis Strauss  
Director  
Water Division

Enclosure 1: Revised 1998 Section 303(d) List for Hawaii

Enclosure 2: Revised Review of Hawaii's 1998 Section 303(d) List

Cc: J. Harrigan  
D. Lau

Enclosure 1: Revised 1998 Section 303(d) List for Hawaii

Description of Table Columns:

- The Staff Report (Enclosure 2) describes the methods used to develop the revised list.
- The “Island/Listed Water Body column identifies the water bodies on the revised 303(d) list. Waters listed in **bold** type were listed by the State; remaining waters were added by EPA.
- The “Geographical Scope of Listing” column explains the geographical area to which the specific listings apply. For example, Wailoa Stream is the water body on the 303(d) list. The entire stream is listed for nutrients and turbidity; the Wailoa River Boat Ramp monitoring station location is listed for enterococci.
- The “Pollutant(s)” column identifies the specific pollutants for which the waterbodies were found to exceed applicable water quality standards.
- The “Basis for Listing” column identifies the basis for individual listing decisions. As described in the Staff Report, waters were listed based on prior listing, visual assessments, and/or numeric assessments.
- The “Station ID” column refers to the specific monitoring station location at which water quality data used in the numeric assessments were gathered (where applicable).
- The “Season” column explains whether waters listed based on numeric assessments were found to violate numeric water quality standards in the wet season (November-April), dry season (April-November), or both.
- The “Priority Ranking” column indicates the priority ranking for TMDL development associated with an individual listing decision (H indicates high priority, M indicates medium priority, and L indicates low priority for TMDL development).

<b>Island/Listed Water Body</b>	<b>Geographic Scope of Listing</b>	<b>Pollutant(s)</b>	<b>Basis for Listing</b>	<b>Station ID</b>	<b>Season</b>	<b>Priority</b>
<b>HAWAII</b>						
Wailoa Stream	Wailoa Stream	nutrients, turbidity	visual assessment			M
	Wailoa River Boat Ramp station	Enterococci	numeric assessment	001132	wet/dry	M
Alenaio Stream	Alenaio Stream	Nutrients	visual assessment			M
Kaieie Stream	Kaieie Stream	Nutrients	visual assessment			M
Wailuku Stream	Wailuku Stream	nutrients, turbidity	visual assessment			M
Hakalau Stream	Hakalau Stream	nutrients, turbidity,	visual assessment			M
Honolii Stream	Honolii Stream	nutrients, turbidity	visual assessment			M

Kolekole Stream	Kolekole Stream	nutrients, turbidity	visual assessment			M
Waiakea Stream	Waiakea Stream	nutrients	visual assessment			M
Kolekole Stream	Kolekole Stream	nutrients, turbidity	visual assessment			M
<b>Hilo Bay</b>	Bay inshore of Breakwater and near shore waters from Wainaku-Paukaa	nutrients, turbidity	visual assessment, prior listing			L
	Hilo Bay (Offshore) station	chlorophyll a turbidity	numeric assessment	001141	wet/dry dry	L
	Hilo Bay Lighthouse station	chlorophyll a turbidity	numeric assessment	001107	wet/dry wet	L
	Hilo Bay/Canoe Beach station	enterococci	numeric assessment	001138	wet	L
	Hilo Bay Boat Landing station	chlorophyll a	numeric assessment	001106	wet/dry	L
	Exit of Ice Pond station	phosphorus	numeric assessment	001102	wet/dry	L
	Honoli Cove station	enterococci	numeric assessment	001110	wet/dry	L
Kawaihae Harbor/ Pelekane Bay	Kawaihae Harbor/ Pelekane Bay	turbidity				L
	Spencer Park Beach station	turbidity chlorophyll a	numeric assessment	001225	wet wet	L
Kolekole Beach	Kolekole Gulch station	enterococci turbidity	numeric assessment	001118	wet/dry	L
Pualaa Beach Park	Pualaa Beach Park station	enterococci	numeric assessment	001143	dry	L
Leleiwi Beach Park	Leleiwi Beach Park station	phosphorus	numeric assessment	001121	dry	L
Banyan's Surfing Area	Banyan's Surfing Area station	enterococci	numeric assessment	001235	wet	L
Puhi Bay	Puhi Bay #3 station	turbidity chlorophyll a	numeric assessment	001130	dry wet/dry	L

Hapuna Beach	Hapuna Beach station	chlorophyll a turbidity	numeric assessment	001200	wet wet	L
Magic Sands Beach	Magic Sands Beach station	chlorophyll a turbidity	numeric assessment	001215	wet/dry dry	L
Richardson Ocean Center	Richardson Ocean Center station	chlorophyll a turbidity	numeric assessment	001136	wet/dry dry	L
Spencer Park Beach	Spencer Park Beach station	turbidity chlorophyll a	numeric assessment	001225	wet wet	L
Kailua Bay	Kailua Pier A-1 station	phosphorus	numeric assessment	001205	wet	L
Kealakekua Bay	Kealakekua Bay- off curio stand station	turbidity	numeric assessment	001211	dry	L
<b>KAUAI</b>						
Waimea River	Waimea River	turbidity	visual assessment			M
Kapaa Stream	Kapaa Stream	turbidity	visual assessment			M
Hanalei River	Hanalei River	turbidity	visual assessment			M
	Hanalei River (Weke Rd) station	enterococci	wet/dry	000839	wet/dry	M
Huleia Stream	Huleia Stream	turbidity	visual assessment			H
Uhelekawawa Stream	Uhelekawawa Stream	turbidity	visual assessment			M
Hanapepe River	Hanapepe River	turbidity	visual assessment			M
<b>Nawiliwili Bay</b>	Bay from breakwater to shore	turbidity, nutrients	visual assessment, prior listing			H
	Nawiliwili Harbor- Coast Guard Pier station	enterococci	numeric assessment	000817	wet	M
	Nawiliwili Bay offshore embayment station	nitrogen turbidity	numeric assessment	000881	wet/dry dry	M
	Kalapaki Beach (middle) station	enterococci	numeric assessment	000809	wet	L

<b>Waimea Bay</b>	Nearshore waters to 18' from Kekaha Oomano Pt. to point 1.5 miles southeast of Mahinaui Stream	suspended solids, turbidity	visual assessment, prior listing			L
	Waimea Bay Beach (near River) station	enterococci	numeric assessment	000823	wet/dry	L
<b>Hanapepe Bay</b>	Bay from breakwater to shore and nearshore waters	nutrients	visual assessment, prior listing			L
	Port Allen Pier station	nitrogen turbidity chlorophyl a	numeric assessment	000821	wet/dry dry wet/dry	L
Hanamaulu Bay	Hanamaulu Bay	turbidity	visual assessment			L
	Hanamaulu Beach (middle) station	enterococci	numeric assessment	000806	wet/dry	L
Hanalei Bay Landing	Hanalei Bay Landing station	enterococci	numeric assessment	000804	wet/dry	L
Kalihiwai Bay Beach	Kalihiwai Bay Beach station	enterococci	numeric assessment	000811	wet	L
Wailua River	Wailua River station	enterococci	numeric assessment	000822	wet/dry	M
Koloa Landing	Koloa Landing station	enterococci	numeric assessment	000837	wet	L
<b>MAUI</b>						
Honokowai Stream	Honokowai Stream	turbidity	visual assessment			M
Kahoma Stream	Kahoma Stream	turbidity	visual assessment			M
Ohia Stream	Ohia Stream	nutrients, turbidity, trash	visual assessment			M
Kahana Stream	Kahana Stream	turbidity,	visual assessment			M
Lower Waihee Stream	Lower Waihee Stream	nutrients	visual assessment			M
Iao Stream	Iao Stream	turbidity, trash	visual assessment			M
Honomanu Bay	Honomanu Bay station	enterococci	numeric assessment	000653	wet/dry	L

<b>Kahului Bay</b>	Bay inshore of breakwater	nutrients, turbidity	visual assessment, prior listing			L
	Kahului Bay station	turbidity chlorophyll a nitrogen	numeric assessment	000680	wet/dry wet/dry wet/dry	L
<b>West Maui Coast- North</b>	Nearshore waters to 60' from Honolua - Lahaina	nutrients, turbidity, suspended solids	visual assessment, prior listing			M
	Mala Wharf station	enterococci phosphorus	numeric assessment	000662	Wet Wet/dry	M
	Fleming Beach station	turbidity chlorophyll a	numeric assessment	000650	Wet/dry Wet/dry	M
	Fleming Beach North station	turbidity chlorophyll a	numeric assessment	000674	Wet/dry Wet/dry	M
	Hale Onoloa Condominium Shore station	chlorophyll a turbidity	numeric assessment	000651	Wet/dry Wet/dry	M
	Lahaina Small Boat Harbor station	Turbidity	numeric assessment	000657	Dry	M
	Mahinahina Condo Shoreline station	Turbidity Chlorophyll a	numeric assessment	000660	Wet/dry Wet/dry	M
	Sheraton Kaanapali Shoreline station	Chlorophyll a Turbidity	numeric assessment	000666	Wet/dry Wet/dry	M
	Waihikuli Beach station	Chlorophyll a Turbidity	numeric assessment	000678	Wet/dry Wet/dry	M
	Olowalu Shore Front station	Chlorophyll a Turbidity	numeric assessment	000663	Dry Wet/dry	M
<b>Kihei Coast (formerly listed as West Maui, Kihei)</b>	Nearshore waters to 60' from Kihei North - Kalama Beach	nutrients, turbidity, suspended solids	visual assessment, prior listing			M
	Kihei South station	phosphorus chlorophyll a	numeric assessment	000676	Wet/Dry Wet/dry	M

	Kihei North station	Chlorophyll a Turbidity	numeric assessment	000671	Wet/dry Wet	M
	Kamaole Beach #1 station	chlorophyll a turbidity	numeric assessment	000681	Wet/dry Wet	M
	Kamaole Beach #2 station	turbidity chlorophyll a	numeric assessment	000682	Wet/dry Wet/dry	M
	Kamaole Beach #3 station	chlorophyll a turbidity	numeric assessment	000683	Wet/dry Wet/dry	M
	Ulua Beach station	Chlorophyll a Turbidity	numeric assessment	000686	Wet/Dry Wet/dry	M
	Keawekapu Beach station	Turbidity Chlorophyll a	numeric assessment	000685	Wet Wet/dry	M
	Kalama Beach station	Turbidity Chlorophyll a	numeric assessment	000679	Dry Wet/dry	M
Maalaea Bay and Harbor	Maalaea Bay and Harbor	turbidity	visual assessment			L
	Maalaea Small Boat Harbor station	Turbidity Chlorophyll a	numeric assessment	000659	dry dry	L
Ukumehame Beach	Ukumehame Beach station	enterococci	numeric assessment	000698	Wet	L
Kanaha Beach	Kaa Shoreline station	Phosphorus Turbidity	numeric assessment	000655	Dry Wet/Drv	L
	Kahana Beach Park station	Phosphorus Turbidity	numeric assessment	000677	Dry Wet/Dry	L
Maalaea Beach	Maalea Condo station	Chlorophyll a turbidity	numeric assessment	000687	Wet/dry Wet/dry	L
Makena Beach	Makena Beach station	Chlorophyll a Turbidity	numeric assessment	000661	Dry Dry/Wet	L
<b>MOLOKAI</b>						
<b>South Molokai Coast</b>	Near shore waters to 18' from southwest point- Waialua	nutrients, turbidity, suspended solids	prior listing			L
Kawaalooa and Moomomi Bays	Kawaalooa and Moomomi Bays	Turbidity	Visual assessment			L

<b>OAHU</b>						
<b>Waimanalo Stream</b>	Waimanalo Stream	nutrients, turbidity, suspended solids	visual assessment			H (TMDLs approved 2001)
<b>Kapaa Stream/ Kawainui Marsh</b>	Kapaa Stream/ Kawainui Marsh	nutrients, turbidity, suspended solids, metals	visual assessment			H
Kapakahi Stream	Kapakahi Stream	nutrients, turbidity, trash	visual assessment			H
Kahawainui Stream	Kahawainui Stream	nutrients, turbidity	visual assessment			M
Moanoalua Stream	Moanoalua Stream	nutrients, turbidity, trash	visual assessment			M
Kamooalii Stream	Kamooalii Stream	nutrients, turbidity	visual assessment			M
<b>Kawa Stream</b>	Kawa Stream	nutrients, turbidity, suspended solids	visual assessment			H
Keaahala Stream	Keaahala Stream	nutrients, turbidity, trash	visual assessment			M
Manoa Stream	Manoa Stream	nutrients, turbidity	visual assessment			M
	Manoa Stream Fork station	Turbidity Nitrogen Fecal coliform	numeric assessment	ALWS03	Dry Wet/Dry Dry	M
Kalihi Stream	Kalihi Stream	nutrients, turbidity, trash	visual assessment			M
Palolo Stream	Palolo Stream	trash	visual assessment			M
	Manoa-Palolo Stream (KHS) station	Fecal Coliform Nitrogen Phosphorus	numeric assessment	ALWS04	Wet/Dry Wet/Dry Dry	M

	Palolo Stream Fork station	Nitrogen Turbidity	numeric assessment	ALWS02	Wet/Dry Dry	M
Waiawa Stream	Waiawa Stream	nutrients, turbidity, trash	visual assessment			H
Waikele Stream	Waikele Stream	nutrients, turbidity	visual assessment			H
Aiea Stream	Aiea Stream	turbidity, trash	visual assessment			H
Kaneohe Stream	Kaneohe Stream	nutrients, turbidity	visual assessment			H
Kiikii Stream	Kiikii Stream	nutrients, turbidity	visual assessment			M
Halawa Stream	Halawa Stream	nutrients, turbidity	visual assessment			H
Kaelepulu Stream/ Enchanted Lakes	Kaelepulu Stream/ Enchanted Lakes	nutrients, turbidity	visual assessment			M
	Kaelepulu Stream station	enterococci nitrogen	numeric assessment	000302	wet/dry wet/dry	M
Kaupuni Stream	Kaupuni Stream	nutrients, turbidity, trash	visual assessment			M
Kawainui Stream	Kawainui Stream	arsenic, lead, nutrients, turbidity	visual assessment			M
Maunawili Stream	Maunawili Stream	nutrients, turbidity, trash	visual assessment			M
Nuuanu Stream	Nuuanu Stream	nutrients, trash	visual assessment			M
Waihee Stream	Waihee Stream	nutrients	visual assessment			M
Anahulu Stream	Anahulu Stream	nutrients, turbidity	visual assessment			M
Kaawa Stream	Kaawa Stream	nutrients, turbidity	visual assessment			M
Paukawila/Paukauila Stream	Paukawila/Paukauila Stream	nutrients, turbidity	visual assessment			M

Waimalu Stream	Waimalu Stream	turbidity	visual assessment			H
Waimano Stream	Waimano Stream	turbidity	visual assessment			M
Kahaluu Stream	Kahaluu Stream	nutrients, turbidity	visual assessment			M
Salt Lake	Salt Lake	turbidity, trash	visual assessment			M
Makiki Stream (Jack in the Box)	Makiki Stream (Jack in the Box) station	Phosphorus Nitrogen	numeric assessment	ALWS06	Wet/Dry Wet/dry	M
<b>Ala Wai Canal and Harbor</b>	Ala Wai Canal and Boat Harbor	nutrients, pathogens, metals, turbidity, suspended solids	visual assessment, prior listing			H- nutrients M - others
	Ala Moana Bridge station	enterococci nitrogen	numeric assessment	000320	wet/dry wet/dry	L
	Ala Wai Canal (Diamond Head end) station	enterococci turbidity	numeric assessment	ALWS01	wet/dry dry	L
	Manoa-Palolo Stream mouth station	chlorophyll a nitrogen	numeric assessment	ALWS05	dry dry	L
	McCully Street Bridge station	enterococci	numeric assessment	000321	wet/dry	L
<b>Honolulu Harbor and Shore Areas</b>	Nearshore waters to 30' from 1 mile northwest of Honolulu Harbor/Sand Island channel to Waikiki Beach	nutrients, pathogens, metals, turbidity, suspended solids	prior listing			L
	Honolulu Waterfront-Aloha Tower	turbidity, trash	visual assessment			L
	Ala Moana Park (Diamond Head end) station	enterococci	numeric assessment	000154	wet	L
	Ala Moana Park Center station	nitrogen turbidity	numeric assessment	000153	wet/dry wet/dry	L

	Sand Island Point #2	turbidity nitrogen	numeric assessment	000165	dry dry	L
	Sand Island Point #3	turbidity nitrogen	numeric assessment	000165	dry dry	L
<b>Kewalo Basin</b>	Kewalo Basin	nutrients, suspended solids, turbidity, trash	visual assessment, prior listing			L
	Kewalo Basin station	nitrogen phosphorus turbidity	numeric assessment	000361	dry dry dry	L
<b>Wailua/Kaiaka Bays</b>	Nearshore waters to 60' from Puaena Point to a point 1.5 miles west of Kaika Point	nutrients, turbidity, suspended solids	visual assessment, prior listing			L
	Haleiwa Beach Park station	phosphorus nitrogen chlorophyll a	numeric assessment	000171	wet/dry wet/dry wet/dry	L
	Kaiaka Bay	enterococci nitrogen chlorophyll a turbidity	numeric assessment	000170	wet wet/dry wet/dry wet/dry	L
<b>Kahana Bay</b>	Nearshore waters to 30' from Mahie Point to a point one mile north of Kahana Bay station	suspended solids, turbidity	visual assessment, prior listing			L
	Kahana Park (1) station	nitrogen enterococci turbidity	numeric assessment	000178	wetdry wet <sup>1</sup> /dry wet/dry	L

<b>Keehi Lagoon</b>	Keehi Lagoon waters and nearshore waters to 30' from lagoon mouth to Pearl Harbor	nutrients, turbidity, suspended solids	prior listing			L
	Keehi Lagoon Point X	enterococci nitrogen chlorophyll a phosphorus	numeric assessment	000342	wet/dry wet/dry wet/dry wet/dry	L
<b>Pearl Harbor</b>	Harbor waters and nearshore waters to 30' from Keehi Lagoon to Oneula Beach	nutrients, turbidity, suspended solids	prior listing			H
	Blaisdell Park	nitrogen chlorophyll a	numeric assessment	000223	wet/dry wet/dry	H
Bellows Beach	Bellows Beach (Waimanalo Str. mouth) station	enterococci	numeric assessment	Bellows5	dry	L
	Bellows Beach (north runway) station	enterococci	numeric assessment	Bellows4	wet	L
<b>Kaneohe Bay</b>	Nearshore waters at mouths of Kaalaea, Waihee, Heeia, Kaneohe, and Kawa Streams	nutrients, turbidity, suspended solids	prior listing			H
	Kaneohe Beach Park station	nitrogen turbidity chlorophyll a	numeric assessment	000190	wet/dry wet/dry wet/dry	L
	Kaneohe Bay (Central Region) station	nitrogen turbidity chlorophyll a	numeric assessment	000403	wet/dry dry wet/dry	L
	Kaneohe Bay (Northern Region) station	nitrogen turbidity chlorophyll a	numeric assessment	000402	wet/dry dry wet/dry	L
	Heeia Kea Small Boat Harbor station	enterococci nitrogen chlorophyll a	numeric assessment	000362	wet wet/dry wet/dry	L

	Kaneohe Bay (Southern Region) station	chlorophyll a turbidity nitrogen	numeric assessment	000401	wet/dry dry wet/dry	L
	Kokokaki Pier	enterococci nitrogen	numeric assessment	000191	wet wet/dry	L
Kuhio Beach	Kuhio Beach station	enterococci	numeric assessment	00161	wet	L
Hawaii Kai	Hawaii Kai station	enterococci	numeric assessment	000229	wet	L
Kahanamoku Lagoon-Diamond Head	Kahanamoku Lagoon-Diamond Head station	enterococci	numeric assessment	000157	wet	L
Kailua Beach Park	Kailua Beach Park station	enterococci nitrogen chlorophyll a	numeric assessment	000193	wet wet/dry wet/dry	L
	Oneawa Beach station	chlorophyll a phosphorus nitrogen turbidity	numeric assessment	000394	wet/dry wet wet/dry wet/dry	L
Lanikai Beach	Lanikai Beach station	enterococci	numeric assessment	000194	wet	L
Pokai Bay	Pokai Bay (oceanic) station	nitrogen chlorophyll a	numeric assessment	000452	dry	L
	Pokai Bay (open coastal) station	nitrogen chlorophyll a	numeric assessment	000451	wet/dry	L
Waialae-Kahala Beach	Waialae-Kahala Beach station	enterococci	numeric assessment	000214	wet	L
Kewela Beach	Kewela Beach station	enterococci	numeric assessment	000173	wet	L
Kaiona Beach	Kaiona Beach station	enterococci	numeric assessment	000227	wet	L
Hanauma Bay	Hanauma Bay	trash	visual assessment			L
	Hanauma Bay (oceanic) station	chlorophyll a nitrogen	numeric assessment	000444	dry wet/dry	L
	Hanauma Bay station	turbidity nitrogen	numeric assessment	00201	wet/dry wet/dry	L

Maunalua Bay	Maunalua Bay (open coastal) station	nitrogen chlorophyll a	numeric assessment	000443	wet/dry wet	L
Mamala Bay	Mamala Bay (oceanic) station	nitrogen chlorophyll a	numeric assessment	000442	wet/dry wet/dry	L
	Mamala Bay (Sand Island offshore) station	nitrogen chlorophyll a	numeric assessment	000441	wet/dry wet/dry	L
Public Bath Beach	Public Bath Beach station	nitrogen chlorophyll a	numeric assessment	000162	wet/dry wet/dry	L
Gray's Beach	Gray's Beach station	nitrogen turbidity	numeric assessment	000159	wetdry wet/dry	L
Kewela Bay	Kewela Bay station	nitrogen chlorophyll a	numeric assessment	000173	wet/dry wet/dry	L
Sandy Beach Point	Sandy Beach Point #1 station	nitrogen turbidity	numeric assessment	000200	wet/dry wet/dry	L
Laie Bay	Laie Bay station	chlorophyll a nitrogen	numeric assessment	000175	wet/dry wet/dry	L
Makaha Beach	Makaha station	nitrogen chlorophyll a	numeric assessment	000185	wet/dry wet/dry	L
Ewa Beach Park	Ewa Beach Park station	phosphorus nitrogen	numeric assessment	000189	dry wet/dry	L
Kapalama Stream	Kapalama Stream	Nutrients, turbidity, trash	Visual assessment			M

## Enclosure 2: Revised Review of Hawaii's 1998 Section 303(d) Water body List

*Enclosure with November 15, 2001 letter from Alexis Strauss, EPA Region 9 to Gary Gill, Hawaii Department of Health*

Date of Transmittal Letter from State: March 31, 1998

Date of Receipt by EPA: April 1, 1998

### Purpose

The purpose of this review document is to describe the rationale for EPA's revised decision to partially approve and partially disapprove Hawaii's 1998 Section 303(d) water body list. EPA reconsidered its prior approval of Hawaii's 1998 Section 303(d) list pursuant to a court order issued September 5, 2001 by Judge David Alan Ezra of the Federal District Court for the District of Hawaii in the case of *Hihiwai Stream Restoration Coalition et al. v. Christine Todd Whitman*, CV. No. 00-00477 DAE/KSC. In that decision, Judge Ezra found that EPA's previous approval of Hawaii's 1998 Section 303(d) list was in error, and ordered EPA to carefully reconsider Hawaii's 1998 list.

This report describes EPA's detailed reconsideration of the State's 1998 listing decisions and our rationale for partially approving and partially disapproving the listing submission. For this reconsideration of Hawaii's 1998 listing decisions, EPA conducted a retrospective analysis of the State's review of data and information that were existing and readily available for the period prior to April, 1998. Data and information concerning the quality of Hawaii's waters after April 1998 were not considered as part of this reconsideration of Hawaii's 1998 listing decisions. This report is not intended to provide an analysis of the current quality of Hawaii's waters. The Hawaii Department of Health will be developing and submitting for EPA review a revised Section 303(d) list by October, 2002 that will include an assessment of current water quality conditions in the State's waters.

EPA is making a final decision to approve Hawaii's 1998 listings of 19 water bodies and the associated pollutants<sup>1</sup>. EPA is disapproving Hawaii's decisions not to list 92 water bodies and not to list additional pollutants for 15 waters already listed by the State for other pollutants. This report describes the basis for EPA's disapproval of Hawaii's decisions concerning these additional waters and pollutants and for EPA's identification of an additional 92 water bodies and several additional pollutants for 15 waters already listed by Hawaii.

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<sup>1</sup> One listed segment, called West Maui by the State, is actually comprised of two disconnected segments- West Maui from Honolulu to Lahina and the West Maui coast near Kihei. These two segments are listed separately in the revised 303(d) list for purposes of clarity.

EPA will open a public comment period to receive comment on the inclusion of these additional water bodies and pollutants on the list. Following the comment period, EPA will consider public comments and make any revisions it deems appropriate concerning the additional waters and pollutants. Section G describes the rationale for EPA's identification of additional water bodies and/or additional pollutants for currently listed waters to the list.

The following sections discuss those key elements to be included in the State's list submittal based on the Clean Water Act and EPA regulations (see 40 CFR 130.7). In this reevaluation, EPA conducted a new review of the methodology used by the State in developing the 303(d) list and the State's description of the data and information it considered. EPA's review of Hawaii's 303(d) list is based on EPA's analysis of whether the State reasonably considered existing and readily available water quality-related data and information and reasonably identified waters required to be listed.

### Statutory and Regulatory Background

Section 303(d)(1) of the Act directs States to identify those waters within its jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of Section 303(d).

EPA regulations provide that States do not need to list waters where the following controls are adequate to implement applicable standards: (1) technology-based effluent limitations required by the Act, (2) more stringent effluent limitations required by State or local authority, and (3) other pollution control requirements required by State, local, or federal authority. See 40 CFR 130.7(b)(1).

In developing Section 303(d) lists, States are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of waters: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the State's most recent Section 305(b) report; (2) waters for which dilution calculations or predictive modelling indicate nonattainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any Section 319 nonpoint assessment submitted to EPA. See 40 CFR 130.7(b)(5). In addition to these minimum categories, States are required to consider any other data and information that is existing and readily available. EPA's 1991 Guidance for Water Quality-Based Decisions describes categories of water quality-related data and information that may be existing and readily available. See Guidance for

Water Quality-Based Decisions: The TMDL Process, EPA Office of Water, 1991, Appendix C ("EPA's 1991 Guidance"). While States are required to evaluate all existing and readily available water quality-related data and information, States may decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring States to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations at 40 CFR 130.7(b)(6) require States to include as part of their submissions to EPA documentation to support decisions to rely or not rely on particular data and information and decisions to list or not list waters. Such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; (3) a rationale for any decision to not use any existing and readily available data and information for any one of the categories of waters as described in (§130.7(b)(5); and (4) any other reasonable information requested by the Region.

### Review of Hawaii's Submission

#### *A. Description of the methodology used to develop the list. (§130.7(b)(6)(I))*

The Hawaii 1998 Section 303(d) water body list submittal dated March 31, 1998 included the following items:

- Submittal letter discussing the listing process, the basis for new water body listings, priority rankings, and water body targeting.
- water quality limited segment maps.
- 1996-98 Water body Assessment (WBA) Report.
- Public comments and responsiveness summary.

In addition, Hawaii DOH clarified its submission in a letter to EPA dated April 28, 1998 and in a follow up telephone interview (personal communication with June Harrigan, July 6, 1998). In performing its 2001 reevaluation, EPA also obtained each of the attachments to the WBA which were referenced in the submittal. The attachments included individual site visit description sheets, site photographs, and numeric data for some waters assembled by the State. These documents provide a description of the methodology used to develop the 1998 §303(d) list. In performing its 2001 reevaluation, EPA considered all these items and also the documents discussed below in section G.

Hawaii spent a significant effort during 1996-98 in soliciting public participation in the development of the 303(d) list. Because little data or information concerning the water quality status of fresh water streams in Hawaii was available for the 303(d) listing process, Hawaii DOH developed a new assessment process for the 1998 listing cycle focused on freshwater streams (although tidal and ocean waters were also evaluated). Public nominations of impaired or

threatened waters were solicited beginning in early 1996 through newspaper advertisements, mailouts to interested parties, and press releases and subsequent radio and television press coverage. Seventy nominations were received. Hawaii DOH staff visited each nominated stream and conducted a qualitative assessment of stream conditions documented through extensive photography. In all, 87 of Hawaii's 376 perennial streams and about 125 miles of coastline were evaluated. These qualitative assessments were reviewed along with quantitative water quality data where available to develop judgements concerning the existence and extent of water quality impairment or threats. These judgements were based on a combination of professional judgement and review of physical evidence. The decision criteria used to place each evaluated watershed into one of four impairment categories (severe, moderate, slight, and none) are described in the WBA, pp. 4-10.

Hawaii listed 16 ocean or estuary waters on its 1996 303(d) list. Hawaii's 1996-98 listing assessment considered the water quality status of these waters; however, the focus of this effort was on freshwater perennial streams that had not been assessed in the past. DOH did not focus its 1998 assessment efforts on ocean or estuary waters because (1) there was no reason to believe their water quality status had changed significantly between 1996 and 98, (2) prior assessments had not addressed Hawaii's important fresh water resources, (3) controllable pollutant sources are generally located upstream of coastal waters, (4) methods for developing TMDLs for flowing streams are more readily available than for tidally-influenced waters, and (5) monitoring and assessment resources available to Hawaii DOH were so limited that it was infeasible to conduct thorough monitoring of all of Hawaii's waters (personal communication with June Harrigan, July 6, 1998). Hawaii DOH indicated that it reviewed all existing and readily available water quality data for ocean waters and estuaries for the 1998 303(d) listing process (personal communication with June Harrigan, July 6, 1998). Based on this data review, all previously listed waters were retained; however, the areal extent of the listed reaches of Kaneohe Bay was reduced to reflect the actual extent of impairment in these receiving waters in the vicinity of stream mouths (WBA, p. 11).

In addition to the waters which Hawaii added to the Section 303(d) list in 1998, Hawaii's WBA identifies 86 waters with levels of impairment in the moderate, slight, and none categories. Hawaii DOH did not list any of these waters on the 303(d) list because it determined that available information was insufficient to support a finding that the water bodies were impaired or threatened due to pollutant discharges (see letter of April 28, 1998). Even though it did not include these waters on the 1998 Section 303(d) list, DOH identified them in the WBA in order to draw attention to the problems caused by water diversions, channel modifications, habitat destruction and other forms of water quality stress (personal communication with June Harrigan, July 6, 1998).

In its initial review of Hawaii's submittal in 1998, EPA found that DOH's decision not to list most of the waters identified as somewhat impaired in the WBA was reasonable. However, pursuant to the court's decision in the case of *Hihiwai Stream Restoration Coalition et al. v. Christine Todd Whitman*, CV. No. 00-00477 DAE/KSC, EPA carefully reevaluated Hawaii's submittal, including the WBA and its supporting documentation. Based on this reevaluation, EPA

has determined that the data and information in the WBA supports the addition of 93 waterbodies to Hawaii's 1998 303(d) list. Section G below discusses EPA's analysis in greater detail.

Hawaii properly listed waters with nonpoint sources causing or expected to cause impairment, consistent with Section 303(d) and EPA guidance. In addition, for many of the waters being added to the list by EPA, data and/or information indicate that they are water quality-limited due in whole or in part to nonpoint sources. Section 303(d) lists are to include all WQLs still needing TMDLs, regardless of whether the source of the impairment is a point and/or nonpoint source. EPA's long-standing interpretation is that Section 303(d) applies to waters impacted by point and/or nonpoint sources. See EPA's April 1991 Guidance and the August 27, 1997 EPA guidance listed below. See also Memorandum from Robert Perciasepe, Assistant Administrator, Office of Water, to Regional Administrators and Regional Water Division Directors, "New Policies for Establishing and Implementing TMDLs," August 8, 1997.

Based on its reevaluation of HDOH's submittal, EPA has concluded that the methodology Hawaii used to develop the list resulted in identification of some, but not all waters and pollutants which meet the listing requirements of the Clean Water Act and EPA's Section 303(d) regulations and guidelines.

*B. Description of the data and information used to identify waters, including a description of the data and information used by the state as required by section 130.7(b)(5). (§130.7(b)(6)(ii))*

The state relied on information from the 1996-98 Water body Assessment Report and the 1994 and 1996 303(d) listing reports to generate the 1998 303(d) list (personal communication with June Harrigan, July 6, 1998). The 1998 303(d) list was consistent with the 1996 305(b) report (the 1998 305(b) report had not been completed at the time of the 1998 303(d) list submission) and assessments performed under the 319 non-point source program. HDOH's submittal indicated that the State also gathered and evaluated data and information obtained through an extensive process to solicit information from agency and citizen sources. According to Hawaii DOH, multiple letters were sent to agencies and groups which had previously expressed interest in water quality issues, and over 70 water body nominations were received from the public in response to these requests and advertised solicitations. The State visited nominated sites with the nominating individual and reviewed all available data and information using its assessment decision criteria described in the WBA (pp. 3-11).

HDOH indicated that it relied on a relatively narrow range of data and information types because relatively little regular ambient water quality monitoring had been conducted, and focussed assessments of water quality conditions in the State had rarely been conducted. Most regular monitoring of Hawaii's waters has focused upon near-shore beach areas, although some additional data have been collected through community monitoring efforts and to support preparation of Environmental Impact Statements (WBA, p. 3). HDOH staff noted that the utility of much of the

available data was limited by sporadic monitoring regimes and unspecified field and laboratory protocols. However, past 303(d) listing decisions which were continued in the 1998 list were supported by ambient water quality data analysis in most cases (e.g., West Maui).

Most waters were listed by the State based on qualitative analyses of water quality, as supplemented in some cases with quantitative data. The WBA describes the assessment procedure and decision criteria (pp. 1-10). The 3 newly listed waters were listed based on this approach. Waters listed on the 1996 303(d) list remain listed in 1998 because there was no information available to support their removal from the list. EPA's analysis of existing and readily available water quality data during our reevaluation of the 1998 list found substantial evidence that numeric water quality standards are being exceeded both in most waters listed by the State and many other water bodies. The WBA assessment examined some of these previously listed waters and found that none of them is fully meeting applicable water quality standards waters (personal communication with June Harrigan, July 6, 1998).

EPA has reviewed Hawaii's description of the data and information it considered for identifying waters on the 303(d) list. The HDOH submittal provided a short, somewhat vague description of its efforts to consider data and information in addition to the materials gathered for the WBA analysis. Based on our re-consideration of the submittal and other relevant information, EPA concludes that the State did not properly assemble and evaluate all existing and readily available data and information in developing its 1998 list. Although the State did compile some water quality data and information that were attached to the WBA, EPA found that a substantial amount of existing and readily available data and information was not gathered and evaluated by the State.

As part of the process of reconsidering the 1998 list submittal, EPA downloaded all Hawaii water quality data contained in EPA's national STORET database of water quality data for the years 1993-1998 in order to assess whether the State had actually obtained and considered all existing and readily available data and information. EPA determined that data reported in STORET is existing and readily available because it is easy to obtain through publicly accessible computer links and is amenable to analysis through the use of readily available spreadsheet analysis software. EPA also determined that a check of STORET would yield most readily available data for Hawaii for the 1993-1998 period because most water quality monitoring in Hawaii is conducted by HDOH, and HDOH regularly inputs its data into STORET. As described in Section G below, the data obtained from the STORET retrieval was evaluated by EPA as part of its overall reevaluation of Hawaii's listing submission pursuant to the decision in the case of *Hihiwai Stream Restoration Coalition et al. v. Christine Todd Whitman*.

The State's evaluation of data and information in each of the categories set forth in the EPA regulations is described below:

*Waters identified by the State in its most recent section 305(b) report as "partially*

*meeting" or "not meeting" designated uses or as "threatened" (§130.7(b)(5)(I))*

At the time Hawaii was establishing its 1998 list, the most recent Section 305(b) report for Hawaii was its 1996 §305(b) report which was issued following the submission of the 1996 303(d) list. The 1998 305(b) report had not been completed at the time of the Section 303(d) list submittal, but was expected to be based on the same analysis which supported the development of the 1998 303(d) list. Hawaii's 305(b) report is generally a very modest assessment based on extremely limited analysis of water quality conditions in Hawaii. The 1996 305(b) report focussed upon the Ala Wai Canal watershed, which was listed on the 1998 303(d) list for multiple pollutants. The 1998 303(d) list was consistent with the last statewide 305(b) report issued in 1994. The WBA assessments conducted in support of the 1998 303(d) list are significantly more extensive and provide a more comprehensive picture of Hawaii's water quality than any assessments done in support of past 305(b) reports. For these reasons, EPA concludes that that Hawaii adequately considered the data and information sources specified in 40 CFR 130.7(b)(5)(I).

*Waters for which dilution calculations or predictive models indicate nonattainment of applicable water quality standards (§130.7(b)(5)(ii))*

Hawaii DOH and EPA are unaware of any dilution calculations or predictive models which have been completed for Hawaiian waters which indicate nonattainment of applicable water quality standards in Hawaii waters (personal communication with June Harrigan, July 6, 1998). No such information was raised by public commenters. Therefore, EPA concludes that Hawaii adequately considered the data and information sources specified in 40 CFR 130.7(b)(5)(ii).

*Waters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions (§130.7(b)(5)(iii))*

The State widely solicited information about water quality problems as part of its nomination process described in the WBA. Data and information obtained as a result of this effort were evaluated and considered using the decision criteria developed for the 1998 listing process. The WBA and its attachments contain copies of the Hawaii DOH staff reports on visits to each water body evaluated as part of this process, as well as data for some of the water bodies evaluated by the State. In 1998, EPA concluded that Hawaii considered waters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions in development of its 1998 §303(d) water body list. As noted above, however, EPA has determined in the current reassessment that DOH did not gather all existing and readily available water quality data, some of which supports the finding that additional waters experienced water quality standards exceedences during the 1993-1997 period. EPA's analysis of these data is described in Section G below.

*Waters identified by the State as impaired or threatened in a nonpoint assessment submitted to EPA under section 319 of the CWA or in any updates of the assessment*

(§130.7(b)(5)(iv))

Most of the 19 waters listed by Hawaii 1998 had been listed for the past several listing cycles. As part of its review of Hawaii's 1992 list, EPA compared the proposed 303(d) list with the State's 319 nonpoint source assessment and found that the 1992 303(d) list was consistent with the 319 assessment. All of the waters identified on the 1992 303(d) list remained listed on the 1998 303(d) list. The state 319 nonpoint source assessment had not been updated since that time (personal communication with June Harrigan, July 6, 1998); therefore, there was no need to revisit the old 319 assessment during the course of developing the 303(d) lists in 1994, 96, and 98. Nevertheless, when more recent information on nonpoint source-related water quality impairments became available, that information was considered in the 303(d) listing process (e.g., West Maui waters). EPA concludes that Hawaii properly considered waters identified by the State as impaired or threatened in a nonpoint assessment submitted to EPA under section 319 of the CWA and any updates of the assessment in development of its 1998 §303(d) water body list.

*C. A rationale for any decision to not use any existing and readily available data and information for any one of the categories of waters as described in §130.7(b)(5) (§130.7(b)(6)(iii))*

Hawaii DOH's submittal and followup correspondence provided a brief rationale for the State's decision not to rely heavily on numeric water quality data for list development purposes. The State determined that the utility of much of the available data was limited by sporadic monitoring regimes and unspecified field and laboratory protocols. As explained in Section B above, EPA finds that this rationale is insufficient to support a decision not to list waters for which the available water quality data indicate that applicable numeric water quality standards are exceeded. Very limited information (also known as "metadata") concerning the sample collection design and procedures was available in the submittal or STORET retrieval to assess the State's concerns about the utility of available data. However, almost all the data submitted by the State or obtained through STORET was collected by monitoring staff employed by HDOH (or, in a few cases, the National Parks Service). EPA concludes that it is reasonable to consider these data in the listing process because the data were apparently collected by trained staff using approved analytical methods. As described in Section G below, EPA evaluated the numeric data to identify exceedences of water quality standards.

On May 21, 1998, Hawaii DOH issued a fish consumption advisory for all urban streams in the Honolulu area. The State did not consider this advisory as an information source for purposes of the 1998 303(d) listing decisions because the analysis was completed after the State submitted its 303(d) list. The State indicated that this advisory will be considered during the development of the next regularly scheduled 303(d) list revision. EPA agrees that this advisory, issued after the 1998 list submission, was not existing and readily available at the time the list was developed, and therefore it was reasonable for Hawaii to defer considering it until the next list submission. EPA has reviewed the State's rationale for not using this information source and finds such rationale

reasonable and sufficient for purposes of Section 303(d).

*D. Any other reasonable information requested by Regional Administrator. (§130.7(b)(6)(iv))*

According to EPA regulations, each State must demonstrate good cause for not including a water or waters on the list upon request by the Regional Administrator.

EPA Region 9 staff requested the following information during its 1998 review of the State's list: (1) a written description of the basis for listing waters identified in the WBA's severe impairment category but for not listing the waters identified in the other WBA categories, (2) a clarification of the manner in which the state reviewed available water quality data, (3) a clarification of the reasons for not relying on the 305(b) report for 303(d) listings, (4) a clarification of the manner in which dilution calculations, modelling results, and the 319 nonpoint source assessment were considered, and (5) a clarification of priority rankings of listed waters. The State provided responses to all the information requests from the Regional office during the course of the Region's review (see April 28, 1998 letter to EPA and record of communication with June Harrigan, July 6, 1998, which are in the administrative record).

In 2001, EPA also requested, and was provided with, copies of all the appendices to the WBA. As discussed in Section B above, EPA has determined that the State's rationales for not listing several waters identified in the WBA as at least somewhat impaired is insufficient. Based on EPA's reevaluation of the data and information reported in the WBA, EPA has also determined that several streams and coastal areas not listed by Hawaii meet Section 303(d) listing requirements.

As discussed in Section C above, EPA has determined that the State did not consider all existing and readily available data and information in its listing process. Based on EPA's evaluation of additional data and information obtained from the STORET database, EPA has determined that applicable numeric water quality standards were exceeded at several water quality monitoring stations, and that these locations meet Section 303(d) listing requirements.

*E. Prioritization of waters on the list taking into account the severity of the pollution and the uses to be made of such waters; the prioritization shall specifically include the identification of waters targeted for TMDL development in the next two years (§130.7(b)(4))*

EPA regulations interpret the requirement in Section 303(d)(1)(A) of the Clean Water Act that States establish a priority ranking for listed waters. The regulations at 40 CFR 130.7(b)(4) require States to prioritize waters on their Section 303(d) lists for TMDL development, and also to identify those WQLSs targeted for TMDL development in the next two years. In prioritizing and

targeting waters, States must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters. See Section 303(d)(1)(A). States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic, and aesthetic importance of particular waters, degree of public interest and support, and state or national policies and priorities. See 57 Fed. Reg. 33040, 33045 (July 24, 1992), and EPA's April 1991 Guidance listed below.

In 1998, EPA reviewed the State's bases for prioritizing listed waters, which were included in the State's submittal and in the WBA document. The State had set priorities for waters which had been listed in 1996 based on degree of water quality impairment, public interest, and degree of overlap with other program priorities. The priorities set for these waters remained as set in 1996, with the exception of Ala Wai Canal, which fell to a low priority since a TMDL had already been completed and approved by EPA. Priorities for the streams which were newly listed in 1998 were as follows. Waimanalo Stream was the State's highest priority water body for TMDL development at that time because TMDL work was already underway on this stream, and it is one of the four most severely impaired waters identified in the WBA. The two newly listed streams were classified as medium priorities.

According to EPA guidance, a state may elect to use criteria in addition to the severity of the pollution and the uses to be made of the waters to prioritize its §303(d) water body list (see April 1991 document listed below). Hawaii set low TMDL priorities for most of its listed waters because it planned to assess the condition of the drainages and streams which drain into each listed coastal water body, and anticipated that this assessment might lead to substantial changes in the delineation of listed water quality limited segments (submission letter, p. 2). In its initial 1998 listing decision, EPA found that the water body prioritization and targeting method used by Hawaii was reasonable and sufficient for purposes of Section 303(d). The State properly took into account the severity of pollution and the uses to be made of listed waters, as well as other relevant factors described above, and appropriately targeted waters for TMDL development in 1998-2000.

However, based on EPA's reassessment of the State's listing submission pursuant to the court's decision in the case of *Hihiwai Stream Restoration Coalition et al. v. Christine Todd Whitman*, EPA is adding numerous waters to Hawaii's 303(d) list. The court found that EPA erred in approving Hawaii's list because the Agency did not adequately address Hawaii's decision not to list 51 waters identified in the WBA. The court's decision did not address the priority ranking and targeting of waters in Hawaii's 1998.

However, the current priority rankings need to be updated in light of the revisions EPA is making to the 1998 list in today's action. New waterbodies added to the list need to be prioritised, and may also affect the pre-existing priority ranking of previously listed waters. EPA determined that it would not make sense to set priority rankings which are retroactive to 1998. Nor would it make sense to identify waters targeted for TMDL development within two years following 1998, since that period has already occurred. EPA's priority rankings are consistent with the State's

current priorities and plans for TMDL development.

The Clean Water Act requires the consideration of the severity of impairment and the uses to be made of water bodies in the determination of priority rankings. EPA's priority ranking approach considers the severity of impairment by setting the higher priority for waters identified by the State as having the most severe levels of water quality impairment, and lower priorities for waters where the degree of impairment appears to be lower or the degree of confidence in the finding of impairment is lower. While insufficient information was available in the listing submission or otherwise available to EPA to facilitate a relative ranking of the importance of the uses to be made of Hawaii's listed water bodies, EPA believes each designated use of Hawaii's listed water bodies is important. For many of the waters EPA is adding to the list, the public has demonstrated its interest in the uses of these waters through its participation in the State's process for nominating waters for consideration for listing. Most other waters added to the list by EPA are coastal waters, many of which support important recreational and aquatic life uses. Therefore, EPA concludes that the consideration of the uses to be made of water bodies does not provide a discriminating indicator for purposes of priority rankings for this listing decision.

EPA also considered other factors in setting priority rankings, consistent with EPA guidance (EPA, 1991). In particular, EPA sought to set near term priorities which are consistent with the State's current and near-future TMDL development plans. The State is currently developing or will soon begin development of TMDLs for several specific waters. Because the State has begun to develop TMDLs for many watersheds, EPA believes it is important to set priority rankings which do not unnecessarily disrupt the State's TMDL development strategy. In general, EPA is setting priority rankings which are consistent with the State's preferred approach to TMDL development, which focuses on assessment and development of TMDLs first for freshwater streams, second for estuarine waters, and third for coastal waters. This approach is based on the State's interest in addressing water quality problems from the top of the watershed down toward the ocean and because this approach enables the State to address the most controllable pollutant sources earlier in the TMDL process. EPA believes the strategy of first addressing more controllable sources of pollutant discharges to streams, which eventually flow to estuarine and coastal waters, provides a reasonable basis for implementing the TMDL program and, therefore, for setting priority rankings. In addition, the State intends to develop TMDLs in some situations where special funding is made available to support TMDL development (e.g., from enforcement actions or special agency initiatives). EPA believes it is reasonable to set a high priority for TMDL development in cases where extra funding is available to support TMDL development or the TMDL fits well with related water quality or watershed planning activities.

EPA regulations at 40 CFR 130.7(b)(4) require States to identify waters targeted for TMDL development within the next two years. For the purposes of this reevaluation, EPA interprets that section as requiring identification of waters targeted for TMDL development prior to the next listing decision, i.e., prior to October, 2002. As discussed above, EPA does not consider it reasonable to identify targeted waters for the 1998-2000 period, since that period has already

passed. On the other hand, it does not appear reasonable to specifically identify waters targeted past 2002, because during that year the State will submit revised priorities and targets with its 2002 list submittal. In this reevaluation decision, EPA is targeting for TMDL development in 2001-2002 all the waters it is identifying as a high priority. Thirteen waters, including 11 water bodies on Oahu and 2 on Kauai, are being targeted for TMDL development work in today's decision—a substantial increase over the number of waters targeted in Hawaii's 1998 listing decision.

Based on these considerations, EPA applied the following criteria to establish the priority rankings:

High Priority, Targeted For TMDL Development: Stream or estuarine water body/pollutant combinations:

- with substantial impairments,
- that are currently scheduled for TMDL development by the State in 2001-02,
- that are addressed by a consent decree requiring TMDL development in 2001-02 and/or,
- which are currently being addressed through other planning efforts or for which special funding exists to support early TMDL development.

Medium Priority: Other stream or estuarine water body/pollutant combinations, and/or waters with special funding to support earlier TMDL development.

Low Priority: Other listed water body/pollutant combinations.

*F. Identification of the pollutants causing or expected to cause violation of the applicable water quality standards (§130.7(b)(4))*

In its 1998 submittal, the State identified the pollutants causing or expected to cause exceedences of the applicable water quality standards, including those pollutants that have no corresponding numeric criteria in the State standards (e.g. sediment). The State's identification of pollutants are found in column 3 of the 303(d) list submitted to EPA.

In its revised listing decision, EPA is identifying additional water body/pollutant combinations and, for some waters, additional pollutants which meet 303(d) listing requirements. EPA has concluded that these water bodies are causing or contributing to exceedences of applicable water quality standards. For waters added to the list based on EPA's reassessment of the WBA materials, EPA identified the pollutants which appear to be responsible, at least in part, for observed water body impairments. EPA identified nutrients as a pollutant category in some listings because the WBA provides insufficient information to determine which specific nutrient is causing or contributing to the observed impairments. For waters added to the list based on EPA's assessment of available water quality data, EPA identified the specific pollutants for which numeric water quality standards were exceeded.

*G. Rationale for decision to partially disapprove the State's listing decision and add water bodies*

*and pollutants not listed by State.*

As discussed briefly above, the State's decisions not to list several water bodies and/or pollutants are inconsistent with federal listing requirements. This section describes the basis for EPA's decisions to (1) disapprove the State's decision to not list these water bodies and/or pollutants for currently listed water bodies, and (2) identify these water bodies for inclusion on the final 1998 Section 303(d) list for Hawaii. Section E above describes the basis for EPA's priority ranking decisions for listed waters.

*Rationale for listings based on review of numeric water quality data.*

The numeric water quality data analyzed by EPA in this reevaluation are from two sources: (1) appendix G to the WBA, which the State provided on EPA's request, and (2) STORET data, as described below.

As described above in Section C, EPA found that HDOH did not gather and consider all existing and readily available data and information, as required by Federal regulations. EPA has obtained additional available water quality data for Hawaii for the five year period 1993-1998 from EPA's STORET national water quality data base. EPA assessment guidance suggests that data of five years or less in age is most reliable for water quality assessment purposes (*Guidance for Preparation of the Comprehensive State Water Quality Assessment (305(b)) Report and Electronic Updates*, September 1997, p. 3-9). On this basis, EPA concluded that it was reasonable to limit its effort to gather additional existing and readily available data to a five year period.

In addition, EPA has concluded that it would be unreasonable to supplement the administrative record for this action by adding water quality data and information generated after the State submitted its 1998 listing decision. The Clean Water Act and Federal regulations require EPA to review State listing decisions for consistency with Clean Water Act requirements. EPA is reevaluating Hawaii's 1998 list submission pursuant to a court order *Hihwai Stream Restoration Coalition et al. v. Christine Todd Whitman*. The court found that EPA must reevaluate its 1998 decision to approve Hawaii's list submission. Therefore, it is appropriate to limit that reevaluation to the materials submitted or referenced by the State in its listing submission and any other data and information that were existing and readily available at the time the State was conducting its analysis supporting its April, 1998 listing decision. The State concluded that analysis in April 1998; therefore, only data and information available before that date could have been obtained and analyzed by the State in support of its listing decision. For these reasons, EPA concludes that it is reasonable to focus its data analysis on the data provided by the State (WBA, appendix G) and data retrieved from STORET for the 1993-1998 period.

EPA downloaded the water quality data from the STORET database and organized the data in Microsoft Excel spreadsheets. The STORET data spreadsheets and hard copies of the data referenced in the WBA submitted by the State were provided to EPA's contractor, Tetra Tech, Inc., which conducted additional analysis of the data and information.<sup>2</sup> The Tetra Tech analysis was based on the numeric water

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<sup>2</sup> The Tetra Tech analysis is described in greater detail in Tetra Tech, 2001.

quality standards (WQS) for Hawaii which are found in *Hawaii Administrative Rules, Title 11, Department of Health, Chapter 54*. With Tetra Tech’s assistance, EPA evaluated potential exceedences of narrative standards through the review of the information in the WBA, which is described in the following section.

Because the Hawaii WQS are based on both water body type and season, the first step in the analysis required the association of each station with a water body type and that the data analysis be consistent with the appropriate wet and dry season standard. The water body type analysis was conducted by calculating the geometric mean of salinity for each station. Table 1 presents a summary of the types of water bodies for each island. The classifying criteria for Table 1 are: inland when salinity<0.5 ppt; estuarine when 0.5<salinity<30 ppt; embayment criteria apply in specific coastal areas (from chapter 54 of Hawaii Water Quality standards) with salinity>=30; open coastal when salinity >=30 and were not included above criteria.

**Table 1. Water body-type summary**

Island	Total Number of Stations	Inland	Estuary	Embayment	Open-Coastal
Hawaii	96	0	51	12	33
Kauai	32	0	9	4	19
Maui	58	0	4	5	49
Oahu	78	4	8	14	51
<b>Total</b>	<b>264</b>	<b>4</b>	<b>73</b>	<b>34</b>	<b>153</b>

The standards indicate that the dry season is from November 1 through April 30 and the wet season is from May 1 through October 30. However, the definition of wet and dry seasons for embayments and open-coastal waters requires information on the quantity of incoming freshwater into the water body. Because we did not have sufficient information to determine this, we used the season definition for the inland waters as a surrogate for determining seasons for the other waterbody types.

In some cases, the data provided include data with remark codes indicating some data qualifier. The most prevalent included STORET codes “K” and “L”, which refer to data reported as less than or greater than the detection limits, respectively. For the data flagged with an “L”, values were always associated with the data and these values were usually significantly less than the applicable standard. Therefore, for these data, we used the presented value in our analysis of standards attainment. In the case of chlorophyll a, the value associated with STORET code “K”, was 2.5 ug/L, which is not less than the criteria. Therefore, we used a value of 1.25 ug/L (half the reported value) in our analysis of the data. The following summarizes the values observed when the less than detect remark code was included:

- chlorophyll a: 2.5 ug/L

- enterococci: 0.3 to 1 #/100ml
- fecal coliform: 0.7 to 1 #/100ml
- nitrate+nitrite: 0.01 ug/L
- total N: 0.1 ug/L
- total P: 0.0006 to 0.005 ug/L

The only pollutant data with a “K” remark, indicating that the value was too large to measure, were associated with fecal coliform and enterococci. The values presented when the “K” remark was included were 2,000 and 600 for fecal coliform and enterococci, respectively and these values were used in our analyses.

Using MS Access and a software package called Total Access Statistics 2000 (MS Access add-in), summary statistics (geometric mean, 10th percentile, and 2nd percentile) were calculated for each station based on the available data. For most of the parameters, the analysis was straightforward. However, for some parameters, the nature of the standard (narrative) or the amount of available data, made the analysis difficult. Note the following:

- **temperature**: the standards require comparison to ambient levels
- **salinity**: the standards require comparison to ambient levels
- **dissolved oxygen (% saturation)**: the standards specify relationship to salinity and temperature, but no specifics are provided.
- **enterococci**: No stations had the amount of data (5 consecutive available observation data within 30 day-period exceeds 7/100ml of enterococci standard) referenced in the standard. Therefore, consistent with EPA guidance, our analysis was conducted using seasonal geometric means for each station and comparing them to the criteria of 7 (EPA, 1986, EPA, 2001).
- **fecal coliform**: No stations had the amount of data referenced in the standards to support analysis of attainment. Therefore, consistent with EPA guidance, our analysis was conducted using seasonal geometric means for each station and comparing them to the criteria of 200; additionally, the 10<sup>th</sup> percentile of the data was compared to the not to exceed value greater than 10% value of 400 (EPA, 1986, EPA, 2001).

Tetra Tech prepared a summary MS Excel spreadsheet that presents data on numeric standards violations for each island. Tetra Tech also prepared MS Excel spreadsheets for each island that include the following four worksheets: (1) summary of data for inland stations; (2) summary of data for estuarine stations; (3) summary of data for embayments and coastal waters; and (4) the raw data used for the analysis. Finally, Tetra Tech provided a CD that contains the master database with the raw data for all stations. All of these materials are incorporated as part of the administrative record for this decision.

EPA analyzed the Tetra Tech spreadsheets to determine which waters should be added to the Section 303(d) list. Due to the concerns raised in the State’s list submittal about data quality

and representativeness, EPA established minimum sample sizes in order to provide a level of analytical rigor in the assessment of potential numeric standards exceedences. EPA and the States often establish minimum sample sizes when assessing water quality data in order to reduce the likelihood that waters are found to exceed applicable standards based on one or two unreliable data points. In setting minimum sample sizes, EPA balanced the desire for greater rigor in the analysis (which would suggest a very large minimum sample size) with the desire to assess as many water bodies as possible based on available data.

For coastal, ocean, and estuary waters, EPA selected a minimum sample size of ten because relatively large amounts of data were available for the majority of coastal, ocean, and estuary water body monitoring stations. A minimum sample size of ten has been widely used in other states as part of their water quality assessment methodologies. Finally, this approach is consistent with assumptions made in EPA water quality assessment guidance (Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) and Electronic Updates: Supplement, EPA-841-B-97-002B, September 1997). Our analysis indicated that very few monitoring station locations were excluded from consideration based on this minimum sample size.

For inland freshwater water bodies, EPA selected a minimum sample size of five because very limited freshwater data were available for the analysis. EPA was concerned that use of a larger minimum sample size would result in exclusion of streams from consideration for listing. However, our analysis indicated that very few monitoring station locations were excluded from consideration based on this minimum sample size.

EPA is also considering an alternative minimum sample size of ten for all waters, including freshwater streams. This alternative is being considered because (1) EPA is unaware of strong arguments in favor of setting different sample sizes for different water body types, (2) the State of Hawaii has indicated a preliminary preference for assessing streams based on a minimum sample size of ten, (3) selection of a ten sample minimum would marginally increase the analytical rigor supporting listing decisions for freshwater streams, (4) a common minimum sample size for all waters assessment method appears to treat all water bodies equally from an analysis standpoint, and (5) the practical effect on the 1998 revised Section 303(d) list is minimal.

Our conclusion that the practical effect of a change in the minimum sample size is minimal is based on the following considerations. If a ten sample minimum is applied for analysis of freshwater streams, the only changes to the list would affect three tributaries to Ala Wai Canal, which would no longer be listed specifically for wet seasonal exceedences of nitrogen and phosphorus standards, and dry season exceedences of fecal coliform standards. However, the streams would remain listed for dry season nitrogen and phosphorus standards exceedences, and one stream would remain listed for wet season fecal coliform standards exceedences. Moreover, each stream would be addressed for both wet and dry season nitrogen, phosphorus, and pathogen TMDLs because

Ala Wai Canal itself is listed for nutrients and pathogens. The Ala Wai Canal TMDLs will have to address the nutrient and pathogen issues in the streams that are tributary to the Canal.

EPA invites comments on both options concerning minimum sample sizes for freshwater stream assessment—the 5 sample minimum which serves as the basis for today’s decision, and the 10 sample minimum alternative decision rule discussed above.

EPA sorted the water bodies by sample sizes and identified the waters for which sufficient data were available to meet the minimum sample size review criteria. EPA then identified in the 303(d) list all water body monitoring station locations where the Tetra Tech analysis showed exceedences of one or more numeric standards. Thirty-nine waters were added to the 303(d) list based on numeric standards exceedences. In addition, 4 additional pollutants were identified for 15 waters already listed by the State for monitoring station located locations in these waters. The basis for listing these waters is identified in the Section 303(d) list as “numeric assessment”.

For the waters which EPA is listing based on water quality data collected at monitoring stations, EPA is limiting the geographic scope of the new listing decisions to the monitoring station locations themselves. Based on information in the State’s submittal and subsequent discussions with DOH staff, the degree to which data collected at these monitoring stations is representative of surrounding water quality conditions is highly uncertain. As discussed above, the State expressed concern in its 1998 list submittal that the utility of much of the available water quality data was limited by sporadic monitoring regimes and unspecified field and laboratory protocols. The State has also expressed concern about the reliability of monitoring protocols used during this period for some pollutants. Many monitoring stations are located near sources of pollutant discharges (e.g., at storm drain outfalls). Moreover, many beach monitoring stations are located in knee-deep water, where water quality conditions may be substantially different from other deeper water locations. For example, we would expect relatively elevated turbidity levels at such stations due to the turbulent effects of wave action. Finally, sample analysis plans were not available for EPA review in order to confirm that data were collected based on monitoring designs that would yield results that are representative of ambient water quality throughout the water bodies in the vicinity of the monitoring stations. EPA concluded that it was reasonable to rely on the available data to characterize conditions during the pre-1998 period at the monitoring stations themselves, but that it would not be prudent to characterize water quality conditions in the entire water body on this basis.

At the time TMDL development is initiated for these waters, EPA strongly recommends that additional water quality data be collected based on sampling designs which provide representative results for entire water bodies, or at least for the areas in the vicinity of the monitoring stations. These supplemental monitoring results will assist DOH in confirming the presence and extent of water quality standards exceedences and better targeting TMDL development efforts.

In addition to evaluating standards exceedences where minimum samples sizes were met, EPA also reviewed the data and associated information in the administrative record for monitoring stations that had too little data to meet the selected minimum sample sizes. If the data had indicated

extremely large excursions above one or more water quality standards (i.e., 500% of the standard) in more than 75% of the available samples, EPA would have considered listing the waters despite the small sample sizes. Similarly, if reliable independent evidence of standards exceedences were available (e.g., information concerning fish kills or persuasive qualitative analysis of water quality conditions), EPA would have considered listing the waters despite the small sample sizes. EPA found no cases in which listings were warranted based on these considerations. However, EPA concluded that it was reasonable to consider listings despite very small sample sizes if the magnitude of exceedences and/or existence of independent lines of corroborating evidence supported that conclusion.

*Rationale for listings based on review of qualitative visual assessments*

As described above, DOH conducted a qualitative visual assessment of 91 water bodies in support its 1997 Section 303(d) list update, and submitted the assessment report in support of the 1998 list submission to EPA. The WBA involved (1) solicitation of public nominations of impaired waters (2) site visits and field assessments, (3) evaluation of numeric water quality data for nominated waters, and (4) public review. EPA reevaluated this report (the WBA) and the individual site visit reports and numeric data assembled in support of the report. EPA evaluated the numeric data assembled for the WBA as part of the numeric data assessment described in the previous section. This section describes EPA analysis of the qualitative assessments.

The visual assessments, although qualitative and limited in seasonality and area, provided information that can be used to evaluate compliance with Hawaii's narrative water quality standards. In the WBA, DOH interpreted the State's narrative water quality standards, found at Hawaii Administrative Rules, Chapter 11-54, Water Quality Standards, Section 11-54-04, to provide that the following conditions should not be present:

- Silt or other materials that have settled to form objectionable bottom deposits;
- Floating debris, oil, grease, scum, or other floating materials;
- Silt or other materials in amounts sufficient to produce objectionable color or turbidity in a water;
- Evidence of nutrient enrichment, such as algal blooms or excessive amounts of nuisance vegetation; and
- Evidence of high siltation and sediment loading rates such as denuded stream banks, lack of riparian habitat heavily eroded streambeds, and soil deposits.

In the WBA and 1998 list submissions, DOH provided a summary analysis and photographs of water bodies based on the results of the site visits. DOH did not provide a clear rationale for its decision to include on the 1998 Section 303(d) list some, but not all, waters found to have some level of impairment in the 1997 WBA summary report. For the purposes of this reevaluation, EPA requested that the State provide copies of all the site visit and field assessment photographs and data sheets. After reviewing these documents, EPA

concluded that is reasonable to identify waters on the Section 303(d) list based on the WBA site assessments. However, the analysis submitted by the State in 1998 did not provided a sufficient basis for determining which waters were reasonably likely to be exceeding narrative water quality standards and therefore warranted inclusion on the Section 303(d) list. Therefore, EPA determined that it would be necessary to develop and apply a more rigorous method for assessing the information reported in the WBA.<sup>3</sup>

In order to objectively evaluate the site visit and field assessment photos and data sheets, a water quality score sheet (Table 2) was developed. The score sheet is based on the USDA Natural Resource Conservation Service (NRCS) Stream Assessment Protocol (NRCS protocol). The NRCS protocol was developed in 2000-2001 by NRCS's Hawaii State Biologist with assistance from a group of stream experts from Hawaii. NRCS field staff use the NRCS protocol to (1) assess the health of stream habitats and (2) identify

Table 2. WATER QUALITY SCORESHEET used to rank waterbodies based on visual field assessments.

Element	<u>Waterbody Name</u>			
Number of site visits : Two or more 1.5-2.0 One 1.0 None 0				
PART I				
Evidence of criteria violations: None 1.2-2.0 Historical 0.5-1.2 1994-8 0				
Number of pollutants with criteria violations: One 1.5-2.0 2-3 0.8-1.5 >3 0-0.8				
Consumption advisories: None 1.5-2.0 Historical 0.8-1.5 In effect now 0				
Fish kills: None 1.5-2.0 Historical 0.8-1.5 Last 5 years 0				
PART II				
Sources readily apparent: No 1-2 Yes 0-1				

<sup>3</sup> For more information on EPA's methodology for reviewing the WBA results, see Wiltse, 2001.

<p>Eutrophication:</p> <p>Water clear with no significant algal scum or microalgae; rocks may be slimy but algae not obvious 2.0-1.5</p> <p>Large clumps of macroalgae present, or distinctive green/ brown scums visible on bottom/sides of stream 1.0-0.5</p> <p>Water distinctly green or pea green; or channel choked with grasses, hyacinths, floating aquatic vegetation 0</p>				
<p>Litter/Trash:</p> <p>No litter or trash is present 2.0-1.8</p> <p>Litter or trash is evident but not prominent 1.0-0.5</p> <p>Abundant trash, unsanitary wastes (e.g. animal carcass or excrement, diapers, many dead fish) 0</p>				
<p>Channel Condition:</p> <p>Natural channel 2.0-1.8</p> <p>Channelized by humans but natural walls and bottom 1.7-1.2</p> <p>Walls hardened (concrete/riprap) 1.1-0.6</p> <p>Walls and bottom hardened 0.5-0</p>				
<p>Riparian Vegetation/Channel Erosion:</p> <p>Diverse vegetation, stable, high groundcover 2.0-1.8</p> <p>Grassed banks, or grazed, disturbed 0.5-1.7</p> <p>Little to no riparian vegetation, exposed dirt on banks, evidence of bank erosion 0-0.4</p>				
<p>Canopy/Shade:</p> <p>Canopy 20-80% cover 2.0-1.6</p> <p>Canopy &gt;80% cover 0.5-1.5</p> <p>Canopy &lt;20% cover 0-0.5</p>				
<p>Turbidity:</p> <p>Very clear, bottom visible 2.0-1.5</p> <p>Moderately turbid 1.0-0.5</p> <p>Very turbid 0</p>				
<p>Should not be considered impaired (from field assessment):</p> <p>Yes 2.0-1.5</p> <p>Unknown 0.5-1.5</p> <p>No 0-0.5</p>				
<p>Other evidence of pollutant impairment: (e.g., temperature, photo evidence, comments, other reference to narrative criteria violations)</p> <p>No 2.0</p> <p>Uncertain 0.5-1.5</p> <p>Certain 0-0.5</p>				
<p>Waterbody is listed as impaired or tributary to listed water:</p> <p>Not tributary to listed water 2.0</p> <p>Tributary to listed water 1-1.8</p> <p>Listed water 0</p>				
TOTAL SCORE:				
TOTAL SCORE/# ELEMENTS				

RATING OF AVERAGE				
1.8-2.0 Very High Water Quality				
1.5-1.7 High				
1.1-1.4 Medium				
0-1.0 Low				

restoration actions to improve stream ecosystems. The NRCS protocol is simple, was developed specifically for Hawaii’s streams, has been widely field tested on streams of varying quality, and is being used by a variety of community groups and by DOH’s Clean Water Branch. It includes elements that directly assess pollution and human-caused impacts to streams. For these reasons, we based our ranking of the 1996-1998 visual assessments on the NRCS protocol.

Several elements of the score sheet were taken directly from the NRCS protocol: eutrophication, litter/trash, channel condition, riparian vegetation/channel erosion, canopy/shade, and turbidity. The other elements were based on information provided in the data sheets for the 1996-1998 Assessment. These elements were scored similar to the NRCS elements with 2.0 representing the optimal condition and 0.0 representing extreme impairment.

The field assessment data sheets and photos from the 1996-1998 Assessment were individually reviewed. In order to maximize consistency, all sites were evaluated and scored by EPA Region 9’s Hawaii TMDL liaison. Scores for Part II of the scoring system were used to rank streams and coastal segments; information on consumption advisories and fish kills (Part I of the scoring system) was incorporated into Part II in the element that addresses “other evidence of pollutant impairment”. For streams, 10 elements were scored. Where information to evaluate one or more elements for a water body was lacking, those elements were omitted. For coastal segments, 7 elements were scored because the elements that address stream channel condition, riparian vegetation and canopy/shade were not applicable to coastal areas. A mean of the scores for individual elements was used to rank the level of impairment for the water bodies. This approach allows for objective comparison of waters where different numbers of elements were scored. The mean scores were grouped following the categories developed by NRCS for their protocol, i.e. low = 0-1.0, medium = 1.1-1.4, high = 1.5-1.7, and very high = 1.8-2.0, where very high represents waters with the best water quality based on visual assessments.

Sixty-three streams were scored, based on the photographs and data sheets from the site visits conducted in 1996-97. The results presented in Table 2 show that 26 streams were rated low, 27 medium, 7 high, and 1 very high water quality. These ratings correspond well with the rankings (severe impairment, moderate, slight, and no impairment) assigned by DOH in the WBA (DOH, 1998). Three water bodies were rated as “slightly impaired by DOH in the WBA. Based on the application of the scoring system described above, EPA found that these waters rated “high” in quality. Therefore, we did not include them on the revised 303(d) list. See “Review of waters not recommended for listing on the basis of visual assessment.”

November 14, 2001, for addition discussion of EPA's rationale for not listing these three water bodies.

EPA found that 12 coastal segments were rated low, 7 medium, 6 high, and 3 very high water quality. Similarly these ratings for coastal segments generally corresponded with the rankings (severe impairment, moderate, slight, and no impairment) assigned by DOH in the WBA.

EPA concluded that waters that scored low or medium on the visual assessments pursuant to this scoring system are appropriate for inclusion on the Section 303(d) list. This decision rule results in the addition of 50 streams and 5 coastal segments to the list based on visual assessments. This conclusion is reasonable because the scoring methodology fully accounts for all qualitative evidence of water quality impairment presented in the WBA and provides a quantitative mechanism for distinguishing between levels of water quality conditions present in each water body. Further, our conclusions are in general agreement with DOH's independent interpretations of the site visit information as reported in the WBA.

In EPA's judgment, the listing of 55 new waters on the basis of visual field assessments is conservative, in the sense that this approach may result in including some waters which, upon further examination and/or collection of monitoring data, may prove to meet water quality standards. This is because we include all of the waters ranked "moderately impaired" plus some waters ranked slight or no impairment by DOH (1998). The information that contributed to these assessments and rankings is minimal. It is based on one to three (usually one) site visit to a limited number of sites on the water body, generally during dry weather conditions and therefore represents an incomplete evaluation. It reflects the best professional judgment of the authors of DOH (1998) and EPA staff who reviewed the site assessment data sheets. It does not include numeric water quality data or documented exceedences of numeric water quality criteria (which are addressed in the prior section of this report). Further monitoring may well indicate that some of these waters have acceptable water quality and are not impaired.

For each water body listed based on visual assessments, EPA is identifying the entire water body on the list because multiple locations were visited as part of each site visit by DOH staff. The pollutants of concern are identified on the basis of visual observation only, as described in the site visit data sheets, and do not reflect actual water quality monitoring for pollutants. At the time TMDL development is initiated for these waters, EPA strongly recommends the collection of additional water quality data to confirm the presence and extent of water quality standards exceedences and specific pollutants causing exceedences, and to assist in the development of reliable TMDLs.

### *Conclusion*

EPA has concluded that data and information that were existing and readily available at

the time of Hawaii's 1998 listing submittal were sufficient to support the addition to the Section 303(d) list of 92 water bodies and several additional pollutants for 15 water bodies already listed by Hawaii. EPA will open a public comment period to receive comments concerning our decision to add waters and pollutants to the State's Section 303(d) list. Following the comment period, EPA will revise the water body list if necessary based on information received in public comments. EPA will prepare a responsiveness summary explaining how EPA considered each public comment in its decision. EPA will then transmit the final Section 303(d) list to the State of Hawaii.

#### H. *References*

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