

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

In the Matter of Water) Case No.: CCH-OA95-1
Use Permit Applications,)
Petitions for Interim)
Instream Flow Standard)
Amendments, and Petitions)
For Water Reservations for)
The Waiāhole Ditch Combined)
Contested Case Hearing)
_____)

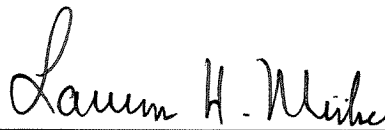
MINUTE ORDER NUMBER 95

Attached is the Hearing Officer's Findings of Fact, Conclusions of Law, and Decision and Order in the matter of water use permit applications, petitions for interim instream flow standard amendments, and petitions for water reservations for the Waiāhole Ditch combined contested case hearing (CCH-OA95-1) on second remand from the Hawai'i Supreme Court.

The Commission on Water Resource Management (Commission) is providing the opportunity for any party in this case to file written exceptions to the Findings of Fact, Conclusions of Law, and Decision and Order. The deadline to file written exceptions is noon, Friday, October 7, 2005. Any party wishing to present oral arguments on the written exceptions must submit written exceptions by the October 7, 2005 deadline.

The Commission will hear oral arguments on the written exceptions at a date, time and place to be announced.

DATED: Honolulu, Hawai'i SEP - 6 2005 .



LAWRENCE H. MIKE, Hearing Officer
Commission on Water Resource Management

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

In the Matter of
Water Use Permit Applications,
Petitions for Interim Instream
Flow Standard Amendments, and
Petitions for Water Reservations
For the Waiāhole Ditch Combined
Contested Case Hearing:

HEARING OFFICER'S PROPOSED
FINDINGS OF FACT, CONCLUSIONS
OF LAW, AND DECISION AND ORDER

ON SECOND REMAND

TABLE OF CONTENTS

	<u>Page</u>
I. Introduction	1
II. Background	1
III. Findings of Fact	12
A. Designation of an IIFS for Certain Windward Streams	13
1. Waiāhole Ditch and Tunnel System	13
2. Impact on Windward Stream Flows	16
3. Measurement of Stream Flows	18
4. Amended IIFS Under D&O II	19
5. Ditch-Related Events That Could Have Affected The USGS Estimates	19
B. The 2.2 mgd of Unpermitted Water	20
C. Practicability of PMI and Campbell Estate Using Alternative Ground Water Sources	21
1. PMI	22
2. Campbell Estate	24
a. Alternative Sources	24
i. New wells and mixed alternative	25
ii. EP-5/6	26
iii. The WP-2 battery of wells	27
iv. EP-15/16 (Ewa Shaft)	27
b. Lessees' water costs	29
c. Prioritizing among public trust resources	30
D. Actual Needs of Field Nos. 115, 116 and 145 (Jefts)	31

E.	Actual Needs of 229 Acres in Field Nos. 146 and 166 (Garst Seeds)	32
F.	ADC’s Permit for Systems Losses	33
	1. Water use permit for system losses	33
	2. Section 174C-49(a)(2): reasonable-beneficial use	35
	3. Remaining criteria for a permit under Section 174C-49(a)	41
IV.	Conclusions of Law	42
A.	Designation of an IFS for Certain Windward Streams	42
B.	The 2.2 mgd of Unpermitted Water	46
C.	Practicability of PMI and Campbell Estate Using Alternative Ground Water Sources	48
D.	Actual Needs of Field Nos. 115, 116 and 145 (Jefts)	59
E.	Actual Needs of 229 Acres in Field Nos. 146 and 166 (Garst Seeds)	59
F.	ADC’s Permit for System Losses	59
G.	Conclusion	64
V.	Decision and Order	65
A.	Introduction	65
B.	Designation of an IIFS for Certain Windward Streams	65
C.	The 2.2 mgd of Unpermitted Water	67
D.	Practicability of PMI and Campbell Estate Using Alternative Ground Water Sources	68
E.	Actual Needs of Field Nos. 115, 116 and 145 (Jefts)	69
F.	Actual Needs of 229 Acres in Field Nos. 146 and 166 (Garst Seeds)	69
G.	ADC’s Permit for System Losses	69

H.	Summary	71
Figure 1:	Apportionment of Waiāhole Ditch Water	73
Table 1:	Stream Flows	74
Table 2:	Waiāhole Ditch System—Leeward Oahu Agricultural Water Use Permits	75
Table 3:	Waiāhole Ditch System—Leeward Oahu Water Use Permits, Other Uses	76
Table 4:	Summary of Allocations (mgd)	77
Appendix A:	Standard Water Use Permit Conditions	78
Appendix B:	Rulings on the Proposed Findings of Fact Submitted by the Parties	81

1 **I. Introduction**

2
3 This Decision and Order responds to the Supreme Court of the State of Hawai`i's
4 (hereinafter, "Court") second remand of the Commission on Water Resource
5 Management's (hereinafter, "Commission") "In the Matter of Water Use Permit
6 Applications, Petitions for Interim Instream Flow Standard Amendments, and Petitions
7 for Water Reservations for the Waiāhole Ditch Combined Contested Case Hearing."
8

9 The Commission issued its original Findings of Fact, Conclusions of Law, and
10 Decision and Order, Case No. CCH-OA95-1 (hereinafter, "D&O I") on December 24,
11 1997.
12

13 On appeal, the Court in In re Use Permit Application (hereinafter, "Waiāhole
14 I"), 94 Haw. 97, 9 P.3d 409 (2000), remanded seven issues to the Commission with
15 further hearings if necessary. All other aspects of the Commission's decision not
16 otherwise addressed in the opinion were affirmed.
17

18 The Commission issued its response (hereinafter, "D&O II") on December 28,
19 2001.
20

21 Several parties again appealed, and the Court on June 21, 2004, remanded five
22 issues to the Commission in In re Use Permit Application (hereinafter, "Waiahole II")
23 105 Haw. 1, 93 P.3d 643 (2004).
24
25

26 **II. Background**

27
28 Initial construction on the Waiāhole Ditch and Tunnel System (hereinafter,
29 "Waiāhole Ditch") took place between February 1913 and December 1915 to transport
30 water from windward streams and springs to irrigate sugar cane fields on the drier
31 leeward side. During construction, large amounts of dike-impounded ground water were
32 encountered at the high altitudes (between approximately 700 to 800 feet elevation) at
33 which the transmission tunnels were being bored, and subsequent extensions of the tunnel
34 system during 1925 to 1933 and again in 1964, have resulted in a system that currently
35 collects mostly dike-impounded ground water. These dike-impounded waters also
36 previously fed Waiāhole (and its tributary Waianu), Waikāne and Kahana streams
37 through springs and seeps, resulting in diminished flows in these streams.
38

39 On April 19, 1989, the Commission adopted the Interim Instream Flow Standard
40 (IIFS) for all windward O`ahu streams as "that amount of water flowing in each stream
41 on the effective date of this standard, and as that flow may naturally vary throughout the
42 year and from year to year without further amounts of water being diverted offstream
43 through new or expanded diversions, and under the stream conditions existing on the
44 effective date of the standard." (Effective May 4, 1992.) In essence, the IIFS provides
45 that no additional diversions from the "status quo" shall be made without amending the

1 IIFS. A restoration of stream flows above the “status quo” also requires amending the
2 stream’s IIFS.

3
4 On May 5, 1992, the Commission designated the five aquifer systems of
5 windward O`ahu as ground-water management areas. Notice of the action was published
6 on July 15, 1992, the effective date of designation. Under the Water Code, users of
7 ground water must apply for a water use permit within one year of the effective date of
8 designation.

9
10 In June 1993, Waiāhole Irrigation Company (hereinafter, “WIC”) filed a
11 combined water use permit application for all of the then-existing water users of the
12 Waiāhole Ditch water transported to Central O`ahu.

13
14 In August 1993, O`ahu Sugar Company, Ltd. (hereinafter, “OSCO”) announced
15 that it would cease its sugar operations by 1995.

16
17 In November 1993, the Department of Agriculture (hereinafter, “DOA”)
18 petitioned the Commission “to preserve the present use flow of the Waiāhole Ditch
19 system for agricultural uses...to take effect upon the demise of the Oahu Sugar
20 Company’s operations.” Other petitions to reserve water under Haw. Rev. Stat. Sec.
21 174C-49(d) were later filed by the Office of Hawaiian Affairs (hereinafter, “OHA”)
22 (8/94); the Kahalu`u Neighborhood Board No. 29, the Hakipu`u `Ohana, and the
23 Waiāhole-Waikāne Community Association (hereinafter, collectively referred to as the
24 “Windward Parties”) (9/94); Kamehameha Schools Bernice Pauahi Bishop Estate
25 (hereinafter, “KSBE”) (12/94); and the Department of Hawaiian Home Lands
26 (hereinafter, “DHHL”) (1/95).

27
28 In December 1993, the Windward Parties petitioned to amend the IIFS for
29 windward O`ahu streams affected by the Waiāhole Ditch. (OHA also petitioned to amend
30 the IIFS for windward streams in February 1995.)

31
32 In response to complaints received in May 1994, the Commission investigated
33 releases of Waiāhole Ditch water into central O`ahu gulches. After site visits, public
34 informational meetings and a staff report on these releases, the Commission considered
35 an “Order To Show Cause to Waiāhole Irrigation Company Why It Should Not Be
36 Ordered To Cease Wasting Water” at its September and October 1994 meetings. The
37 Commission deferred action on the matter and asked interested groups to enter into
38 expedited mediation of the release issue in lieu of holding a contested case hearing.

39
40 Mediation on the Waiāhole interim release issue was held in November 1994,
41 with seventeen parties participating.

42
43 In December 1994, the Commission adopted a “Mediation Agreement, Waiāhole
44 Ditch Interim Water Releases,” signed by most of the Waiāhole Ditch water users,
45 applicants and petitioners to allow 8 million gallons per day (mgd) to flow past the North
46 Portal (below the crest of the Ko`olau mountains between the windward and leeward

1 sides) in the Waiāhole Tunnel and release the remainder back into Waiāhole Stream.
2 (This order was amended in June 1995 to release 2 mgd of the remainder into Waianu
3 Stream, a tributary of Waiāhole Stream below the release point into Waiāhole Stream.)
4

5 In January 1995, the Commission ordered that a combined contested case hearing
6 be held on: 1) all related applications for water use permits, 2) all related petitions to
7 reserve water, 3) the petitions to amend the IIFS, and 4) any other matters related to the
8 Waiāhole Ditch.
9

10 In April 1995, a public hearing was held to give all interested persons and
11 organizations the opportunity to testify or present information on Waiāhole Ditch matters
12 and to request to be an intervening party, orally or in writing, by the end of the public
13 hearing.
14

15 In May and July 1995, the Commission granted standing to twenty-five parties
16 and denied standing to nine parties.
17

18 From May to November 1995, there were seventeen meetings, which included six
19 pre-hearing conferences, a field investigation, four hearings on existing uses and six
20 hearings on motions.
21

22 The contested case hearing was held from November 1995 to September 1996,
23 during which time there were fifty-two days of hearings, including four evening sessions,
24 written testimony from 161 witnesses—of which 140 testified orally—and 567 exhibits
25 introduced into evidence.
26

27 The Commission issued its Proposed Findings of Fact, Conclusions of Law, and
28 Decision and Order in July 1997 and heard oral arguments on written exceptions in
29 August 1997.
30

31 On December 24, 1997, the Commission issued D&O I.
32

33 In D&O I, the Commission:
34

- 35 1) determined that the Waiāhole Ditch and Tunnel System (hereinafter,
36 “Waiāhole Ditch”) developed a total of 27 million gallons per day (mgd),
37 consisting of 23.3 mgd measured at the North Portal, which is directly
38 underneath the crest of the Ko`olau Mountains, and an additional 3.7 mgd
39 measured at Adit 8, where the Waiahole Ditch surfaces in Waiawa on the
40 leeward side;
41
- 42 2) amended the IIFS for certain windward streams by adding 4 mgd from the
43 Waiāhole Ditch to Waiāhole Stream and 2 mgd to Waianu Stream (a tributary
44 of Waiāhole Stream), whose base flows had been diminished by the
45 construction of the Waiāhole Ditch;
46

- 1 3) determined that a reasonable duty of water for diversified agriculture was
2 2,500 gallons per acre per day (gad);
3
- 4 4) recognized “agricultural uses” totaling 12.22 mgd, based on past agricultural
5 uses of Waiāhole Ditch water: 1) 10 mgd representing 2,500 gad multiplied by
6 approximately 4,000 acres of former OSCO sugarcane lands irrigated by the
7 Waiāhole Ditch when OSCO was in full production; plus 2) 2.22 mgd
8 representing approximately 1,552 acres of Dole/Castle & Cooke’s agricultural
9 lands multiplied by their requested usage amounts or 2,500 gad, whichever
10 was less;
11
- 12 5) approved agricultural water use permits for 10.64 mgd of the 12.22 mgd and
13 proposed that the remaining 1.58 mgd be designated an agricultural reserve
14 through formal rulemaking after the contested case proceedings;
15
- 16 6) deferred formal rulemaking action on the other water reservation petitions to a
17 later date;
18
- 19 7) approved leeward non-agricultural water use permits for a total of 1.29 mgd;
20
- 21 8) denied certain leeward applications in whole or in part for agricultural or non-
22 agricultural water use permits;
23
- 24 9) made allowances for 2.1 mgd in operational losses for Waiāhole Irrigation
25 Company (WIC); and
26
- 27 10) ordered that any water under the agricultural and non-agricultural water use
28 permits that were not being used, as well as the 1.58 mgd for the proposed
29 agricultural reserve and the remaining 5.39 mgd of Waiāhole Ditch flows not
30 subject to water use permits, be released into windward streams until they
31 were used under current and/or future water use permits, in addition to the 4
32 mgd added to Waiāhole Stream and the 2 mgd added to Waianu Stream under
33 the amended IIFS for these two streams.
34

35 WIC had requested a water use permit for 2.0 mgd of Waiāhole Ditch water as
36 operational losses. The Commission had denied the request but recognized that
37 operational water losses do occur and hence provided the 2.1 mgd of Kahana Stream
38 surface waters being diverted into the Ditch as an allowance for such losses. The
39 Commission took this action because it had concluded that it had no water use permit
40 authority over Kahana Stream surface waters, because the Kahana watershed was not in a
41 surface water management area. The Commission had further stated its intention to
42 initiate the process of designation for the Kahana watershed as a surface water
43 management area and to consider the Kahana surface water diversions for future
44 restoration of Kahana Stream. Because the 2.1 mgd would continue to be diverted from
45 Kahana Stream into the Waiāhole Ditch and to the leeward side until such actions could

1 be taken, the Commission concluded that it should be used as an allowance for WIC's
2 operational losses.

3
4 In light of the integrated nature of the relevant water sources and infrastructure,
5 the Commission had also ordered that the 27 mgd developed by the Waiāhole Ditch (23.3
6 mgd windward of the North Portal and 3.7 mgd leeward of the North Portal) be regulated
7 as a unified water system within the windward Ko'olaupoko and Kahana Water
8 Management Areas and the leeward Waipahu-Waiawa Water Management Area.

9
10 The Commission also ordered the agricultural parties, with the cooperation and
11 participation of WIC and DOA, to draft an Implementation Plan incorporating the
12 principles of the "Farm Delivery Agreement" to form a cooperative to coordinate and
13 facilitate the delivery of water.

14
15 Finally, the Commission proposed to establish technical advisory committees
16 representing a cross-section of interests to address specific areas of concern, most
17 notably, the effects of stream flow restoration, conservation measures and financing of
18 the technical studies.

19
20 Notices of Appeal to the Court were filed by the Windward Parties; Hawai'i's
21 Thousand Friends; City & County of Honolulu, Planning Department and Board of Water
22 Supply; and KSBE. Notices of Cross-Appeal were filed by: The Robinson Estate; Pu'u
23 Makakilo, Inc. (hereinafter, "PMI"); State of Hawai'i, DOA and Department of Land and
24 Natural Resources (hereinafter, "DLNR"); Estate of James Campbell (hereinafter,
25 "Campbell Estate"); Dole Food Company, Inc./Castle & Cooke; Department of Navy;
26 and Land Use Research Foundation (hereinafter, "LURF").

27
28 In December 1999, the Court heard oral arguments on certain issues of the
29 Waiāhole Ditch Combined Contested Case Hearing and issued its **Waiāhole I** decision
30 on August 22, 2000.

31
32 On August 31, 2000, KSBE filed a motion for reconsideration, which was denied
33 on September 27, 2000.

34
35 On October 2, 2000, the Supreme Court filed the Final Judgment, officially
36 remanding the case to the Commission.

37
38 The Court in **Waiāhole I** remanded the following issues for additional findings
39 and conclusions, with further hearings if necessary. All other aspects of the
40 Commission's decision not otherwise addressed in the opinion were affirmed.

- 41
42 1) further consideration of the designation of an IIFS for windward streams
43 based on the best available information, as well as the specific
44 apportionment of any flows allocated or otherwise released to the
45 windward streams;
46

- 1 2) the merits of the petition to amend the interim standard for Waikāne
2 Stream;
- 3
- 4 3) the actual need for 2,500 gad over all acres in diversified agriculture;
- 5
- 6 4) the actual needs for certain leeward parcels of agricultural lands;
- 7
- 8 5) the practicability of Campbell Estate and PMI to use alternative leeward
9 ground-water sources;
- 10
- 11 6) practical measures to mitigate the impact of variable off-stream demand
12 on the streams; and
- 13
- 14 7) the merits of the permit application for Waiāhole Ditch system losses.
- 15

16 On October 3, 2000, the Commission issued an interim order for no changes in
17 water allocations, no issuance of additional water use permits and no further diversions
18 from windward streams affected by the Waiāhole Ditch, pending determination of an
19 IIFS for these streams.

20

21 In November 2000, DLNR withdrew from further participation as a party in the
22 remanded case.

23

24 In November 2000, the Commission delegated the remanded Waiāhole Ditch
25 Combined Contested Case Hearing to a Hearing Officer and appointed Dr. Lawrence
26 Miike.

27

28 At the February 2001 pre-hearing conference, the parties were notified that the
29 hearing officer had concluded that the record of the first hearing provided adequate
30 information without the need for additional hearings to designate an IIFS for the
31 windward streams, as well as the specific apportionment of any flows allocated or
32 otherwise released to these streams. Thus, the hearing would be limited to five of the
33 seven issues remanded by the Supreme Court: 1) the actual need for 2,500 gallons per
34 acre per day over all acres in diversified agriculture; 2) the actual needs of Field Nos. 146
35 and 166 (ICI Seeds), and Field Nos. 115, 116, 145, and 161 (Gentry and Cozzens); 3)
36 practicable measures to mitigate the impact of variable off stream demand on the streams;
37 4) the practicability of Campbell Estate and PMI using alternative ground-water sources;
38 and 5) The merits of the permit application for ditch “system losses.”

39

40 The hearing was held on April 4, 2001, with closing arguments held on April 24,
41 2001. The hearing officer submitted his proposed Decision and Order to the Commission
42 on August 1, 2001, and on December 28, 2001, the Commission issued D&O II.

43

44 In D&O II, the Commission amended the IIFS of the windward streams by adding
45 9.9 mgd to their base flows, with the remaining 17.1 mgd available for offstream use as
46 follows: 1) 10.01 mgd issued in agricultural use permits; 2) 3.29 mgd issued in non-

1 agricultural use permits (including 2.0 mgd for operational losses); 3) 1.58 mgd for the
2 proposed agricultural reserve; and 4) 2.22 mgd in non-permitted water (this water and the
3 proposed agricultural reserve would be available for future water use permit
4 applications).

5
6 1) Amended IIFS:

- 7 a) Waiāhole Stream: 4.8 mgd¹ added to current base flow of 3.9 mgd,
8 for an amended IIFS of 8.7 mgd base flow, measured at its
9 confluence with its tributary, Waianu Stream;
10 b) Waianu Stream: 3.0 mgd² added to current base flow of 0.5 mgd,
11 for an amended IIFS of 3.5 mgd base flow, measured at its
12 confluence with Waiāhole Stream;
13 c) Waikāne Stream: 2.1 mgd³ added to current base flow of 1.4 mgd,
14 for an amended IIFS of 3.5 mgd base flow, measured at an altitude
15 of 75 feet; and
16 d) Kahana Stream: no change in its IIFS from the current base flow of
17 11.2 mgd, measured at an altitude of 15 feet.⁴
18 e) In addition, the non-permitted water and any water not consumed
19 for day-to-day operations for any of the permitted uses were to be
20 released into the windward streams in the following manner: 1) 0.9
21 mgd into Waikāne Stream, and 2) the remainder to be released into
22 Waiāhole Stream.

23
24 2) Practicable measures to mitigate the impact of variable off-stream demand on
25 the streams because of the use of 12-month moving averages (MAV)⁵ to
26 measure water uses:

- 27 a) Waiāhole Stream: the 8.7 mgd may be reduced to 6.6 mgd no more
28 than five (5) non-consecutive days a month;
29 b) Waianu Stream: the 3.5 mgd may be reduced to 3.0 mgd no more
30 than five (5) non-consecutive days a month;
31 c) Waikāne Stream: no variation from 3.5 mgd; and
32 d) Kahana Stream: no variation from 11.2 mgd.
33 e) To account for variable off-stream demand, an additional 2.6 mgd
34 would be available, but only up to five non-consecutive days a
35 month from Waiāhole and Waianu Streams. Regardless of the 12-

¹ 4.0 mgd had been added in D&O I.

² 2.0 mgd had been added in D&O I.

³ No Waiāhole Ditch water had been added in D&O I.

⁴ In **Waiāhole I**, the Court had ordered the Commission to consider amending the IIFS for Waikāne Stream but not for Kahana Stream, in addition to Waiāhole and Waianu Streams. However, the Commission included Kahana Stream in its analysis before deciding to keep its IIFS at the status quo.

⁵ With the use of 12-MAV to measure use, it was theoretically possible to use all of the Waiāhole Ditch flows at some times and still average the permitted amounts over a twelve-month period, thereby leaving no water to be added to the windward streams during these times.

1 MAV, the streams' amended IIFSs had to be met before leeward
2 offshore uses would be accommodated.⁶
3

- 4 3) Actual Needs for 2,500 gad over all acres in diversified agriculture:
5 a) 2,500 gad for acres under cultivation or planned to be under
6 cultivation was reaffirmed as a reasonable water duty for leeward
7 diversified agriculture, and the diversified agriculture water use
8 permits were conditioned on a showing of actual use, not to exceed
9 2,500 gad, within four years of the date of D&O II.
10
- 11 4) The Actual Needs of Certain Fields:
12 a) The award to Campbell Estate for Fields 115, 116, 145 and 161
13 was revised as follows: 1) 2,500 gad for 267 acres in Fields 115,
14 116 and 145, for a total of 0.66 mgd; and 2) 2,000 gad for 208
15 acres in Field 161, for a total of 0.42 mgd. Furthermore, the award
16 for the 803 acres in Fields 140, 156 and 172 was revised from
17 2,500 gad to 2,000 gad, for a total of 1.60 mgd, when Campbell
18 Estate requested a revision for these fields, reflecting Del Monte's
19 decision to only grow pineapple.
20
- 21 5) Practicability of Campbell Estate and PMI using alternative ground-water
22 sources:
23 a) The Commission found that the scenarios developed for Campbell
24 Estate by its consultant, Belt Collins Hawaii, did not provide
25 practical alternative ground-water sources for either Campbell
26 Estate or PMI, because the assumptions in those scenarios were not
27 applicable.
28 b) The Commission found that the wells that Campbell Estate had
29 retained⁷ had chloride contents exceeding Board of Water Supply
30 standards for irrigation water applied over drinking water aquifers
31 and that, if Campbell Estate were to drill a new well, it would have
32 to be in the Waipahu-Waiawa aquifer, because allocations in Ewa-
33 Kunia had reached or were close to the sustainable yield, and that
34 most of Campbell Estate's Kunia lands overlay the Ewa-Kunia
35 aquifer.
36 c) The Commission found that the three ground-water alternatives
37 examined by PMI were not practicable.
38 d) The Commission also found that the physical impact on the
39 Waiāhole Ditch and the economic impact on its operational
40 viability if Campbell Estate were required to use ground-water

⁶ This policy negated any possibility that the use of the 12-MAV could impact the amended IIFS for the windward streams.

⁷ The windward parties had also objected to the transfer of Campbell Estate's water use permit for Ewa Shaft (EP-15/16) to the Honolulu Board of Water Supply and its subsequent change in use from agricultural to domestic use. The Commission found that the windward parties had full and fair opportunity to present these issues and did present these issues in the context of the remanded contested case hearing and concluded that the transfer was legal because the provisions of the Water Code had been met.

1 sources would make such an alternative to use of Waiāhole Ditch
2 water not practical.

3 e) Finally, the Commission concluded that, if water from the
4 Waipahu-Waiawa aquifer were to replace Waiāhole Ditch water
5 for Campbell Estate and PMI, water from windward public trust
6 resources that are available for non-trust purposes after measures
7 had been taken to enhance those windward public trust resources
8 would be given priority over a leeward public trust resource.
9

10 6) Merits of the permit application for Waiāhole Ditch system losses:

11 a) The Commission issued a water use permit to the State of Hawai`i,
12 Agribusiness Development Corporation⁸ (hereinafter, “ADC”), the
13 successor to WIC, for 2.00 mgd, conditioned on ADC conducting
14 studies on the probable contribution to system losses from leakages
15 in the unlined portions of the Ditch and in the reservoirs and any
16 other probable, major contributor. Depending on the outcome of
17 those studies, ADC was to conduct followup studies on the
18 feasibility of addressing those leaks and the costs of such projects
19 and to take appropriate actions to reduce such leakages.
20

21 Appeals were filed by the Windward Parties, Hawai`i’s Thousand Friends and
22 KSBE. However, among the Windward Parties, Waiāhole-Waikāne Community
23 Association did not join the Kahalu`u Neighborhood Board and Hakipu`u `Ohana in
24 filing a joint opening brief, and KSBE stipulated to a dismissal of its appeal, leaving
25 Kahalu`u Neighborhood Board, Hakipu`u `Ohana, Ka Lāhui Hawai`i and Hawai`i’s
26 Thousand Friends as appellants.
27

28 Appellees were the Commission, Robinson Estate, Campbell Estate, PMI, ADC,
29 and City and County of Honolulu, Planning Department and Board of Water Supply.
30

31 In **Waiahole II**, issued on June 21, 2004, the Court, in reviewing D&O II on
32 appeal, remanded for further findings and conclusions:
33

34 1) The designation of an IIFS for windward streams:

35 a) while concluding that the Commission’s approach in setting the
36 amended IIFS was erroneous, the Court also concluded: “If, on
37 remand, the Water Commission is able to support its conclusion
38 with findings quantifying the windward streams’ flows during the
39 1960s, then the 1960s testimonials would be sufficient to set the
40 IIFS at the levels established in the D&O II, inasmuch as: (1) more
41 water would be added to the streams than that which adequately
42 supported the streams’ ecosystem in the 1960s see D&O II at 104;
43 (2) the increase in stream flow over the 1960s stream flow would
44 be beneficial in light of the Water Commission’s finding that

⁸ ADC, as the successor in interest to WIC effective July 1999, is the present applicant for a water use permit for system losses occurring in connection with the operation of the Waiāhole Ditch.

1 increasing a stream's flow results in stream habitat improvement,
2 see D&O II at 104; and (3) appurtenant rights, riparian uses, and
3 existing uses would be accounted for by further increases in stream
4 flow, see D&O II at 112. The foregoing would then adequately
5 establish that instream values would be protected to the extent
6 practicable for interim purposes (*footnote omitted*).” (105 Haw. at
7 12)

8
9 2) The 2.22 mgd of non-permitted water:⁹

- 10 a) The Court first quoted from its opinion in **Waiāhole I**: “(T)he
11 Commission should incorporate any allowances for scientific
12 uncertainty into its initial determination of the minimum standard.
13 Any flows in excess of this standard shall remain in the stream
14 until permitted and actually needed for offstream use, in keeping
15 with the policy against waste and in recognition that the standard
16 merely states an absolute minimum required under any
17 circumstances. These unallocated flows, however, will not
18 constitute a distinct category or quantity, but will fluctuate
19 according to variations in supply and demand.” (94 Haw. at 156)
- 20 b) However, the Court then went on to state: “On remand, it appears
21 that the 2.2 mgd were not allocated. The Windward Parties argue
22 that by failing to include the unpermitted 2.2 mgd in the IIFS, the
23 Water Commission fails to protect instream values to the extent
24 practicable. Although nothing in the record indicates that the Water
25 Commission created a separate and distinct category by not
26 including 2.2 mgd of unpermitted water in the IIFS, the Water
27 Commission, nevertheless, failed to make any findings regarding
28 the 2.2 mgd, leaving this court without a means to decide the
29 issue.” (105 Haw. at 13)

30
31 3) The practicability of Campbell Estate and PMI using alternative ground water
32 sources:

- 33 a) The Court concluded that Campbell Estate failed to meet its
34 threshold burden of establishing the absence of practicable
35 alternatives but that PMI had met its threshold burden.
- 36 b) However, the Court concluded that the Commission erred by also
37 basing its decision that Campbell Estate and PMI had no practical
38 alternative water sources on the effect reduced flows would have
39 on the Waiāhole Ditch's economic viability and on the theory that

⁹ In D&O II, there was 3.80 mgd in non-permitted water: 1.58 mgd for a proposed agricultural reserve and a remainder of 2.22 mgd for other offstream uses. In D&O I, 12.22 mgd had been designated for agricultural uses, 10.64 mgd of which had been issued in agricultural use permits, leaving a remainder of 1.58 mgd for a proposed agricultural reserve. This left 2.22 mgd for other offstream uses under future water use permit applications. In D&O II, the agricultural use permits were reduced to 10.01 mgd, which should have increased the proposed agricultural reserve from 1.58 mgd to 2.21 mgd and reduced the remaining non-permitted water from 2.22 mgd to 1.59 mgd. These corrections will be addressed in this Decision and Order.

1 public trust resources may not be prioritized. Even if the
2 Commission did not rely on all of these factors in reaching its
3 decision, the Court concluded that the Commission failed to
4 articulate as such in its analysis with reasonable clarity.
5

6 4) the actual needs of Field Nos. 115, 116 and 145 (Jefts):

7 a) The Court concluded that there was insufficient evidence to
8 establish that 267 acres of lands in these fields were to be
9 cultivated.

10 5) the actual needs of 229 acres in Field Nos. 146 and 166 (Garst Seeds):

11 a) The Court concluded that there was insufficient evidence that
12 2,500 gad was needed for 229 acres of these fields.
13

14 6) ADC's permit for system losses:

15 a) The Court concluded that ADC did not establish that its system
16 losses met the water use permit requirements.
17

18
19 On August 25, 2004, the Commission delegated the remanded hearing to
20 Commissioner Lawrence Miike as the hearing officer.
21

22 On September 22, 2004, the Commission held a hearing on its draft "Third
23 Amended Interim Order for No Changes in Water Allocations, No Issuance of Additional
24 Water Use Permits and No Further Diversions from Windward Streams Affected by the
25 Waiāhole Ditch Pending Determination of Interim Instream Flow Standards (IIFS) for
26 Affected Windward Streams," in which the Commission proposed that Campbell Estate
27 and PMI may continue their uses until the appropriate IIFS for the affected windward
28 streams have been set and a Commission decision rendered on their applications for
29 water use permits in accordance with Waiāhole II. A similar situation had arisen after
30 Waiāhole I, where the Court had held that the Commission was authorized to allow such
31 uses pending a final decision on their water use permit applications, and the Commission
32 had allowed such uses to continue. On September 30, 2004, the Commission issued its
33 Amended Interim Order allowing Campbell Estate and PMI to continue their uses.
34

35 On October 1, 2004, the Hearing Officer issued Minute Order Number 88, setting
36 the prehearing conference for November 9, 2004.
37

38 At the November 9th prehearing conference, the date of the start of the hearing
39 was set at April 5, 2005. A schedule was determined for the filing of opening statements,
40 opening briefs, witness lists, witness statements and exhibits. The parties were limited to
41 four of the six issues remanded by the Court: 1) the practicability of Campbell Estate
42 using alternative ground water sources; 2) the actual needs of Fields Nos. 115, 116 and
43 145 (Jefts); 3) the actual needs of 229 acres in Fields Nos. 146 and 166 (Garst Seeds);
44 and 4) ADC's permit for system losses.
45

1 On November 12, 2004, the Hearing Officer issued Minute Order Number 89,
2 stating that no further hearings would be necessary for item #1, the designation of an IIFS
3 for windward streams; item #2, the 2.22 mgd¹⁰ of non-permitted water; and part of item
4 #3, the practicability of PMI using alternative ground water sources. The Hearing Officer
5 concluded that there was sufficient evidence in the existing record to address these issues.
6

7 On March 28, 2005, the Hearing Officer issued Minute Order Number 90,
8 confirming the start of the contested case hearing as 9:00 a.m. on April 5, 2005.
9

10 On March 28, 2005, the Kahalu`u Neighborhood Board, Hakipu`u `Ohana and Ka
11 Lāhui Hawai`I filed a motion to deny PMI's water use permit application for 0.75 mgd,
12 stating that "its golf course is not even in operation, despite many years of these
13 proceedings" and that "its actual water needs have evaporated."
14

15 On April 5, 2005, the contested case hearing was begun and concluded.
16

17 On April 7, 2005, Minute Order Number 91 was issued, establishing the dates for
18 written and oral closing arguments and Proposed Findings of Fact, Conclusions of Law,
19 and Decision and Order.
20

21 On April 26, 2005, Minute Order Number 92 was issued, granting DOA/ADC's
22 motion to supplement the record of the April 5, 2005 hearing; and Minute Order Number
23 93 was also issued, granting the Windward Parties motion for Leave to Conduct
24 Necessary Discovery filed on April 22, 2005.
25

26 On May 12, 2005, Minute Order 94 was issued, granting the Windward Parties
27 motion for an Extension of Time to Complete Necessary Discovery.
28

29 Written Closing Arguments were submitted by the parties on June 7, 2005,
30 Closing Oral Arguments were held on June 22, 2005, and Proposed Findings of Fact,
31 Conclusions of Law, and Decision and Order were submitted on June 29, 2005.
32
33

34 **III. Findings of Fact**

35

36 The findings of fact (FOF) for designation of an IIFS for windward streams, the
37 2.2 mgd of unpermitted water, and the practicability of PMI using alternative ground
38 water sources are based on the existing record prior to the April 5, 2005 hearings. FOF
39 from D&O I and II are in brackets, with FOF from D&O I identified by number, and FOF
40 from D&O II identified by page and line numbers. FOF not included in D&O I and II are
41 referenced by their original sources in parentheses.
42

43 The parties submitted a total of 229 proposed individual FOF after the April 5,
44 2005 hearings on the practicability of Campbell Estate using alternative ground water

¹⁰ To be corrected to 1.59 mgd. See footnote 9, *supra*.

1 sources, the actual needs of Field Nos. 115, 116 and 145 (Jefts), the actual needs of 229
2 acres in Field Nos. 146 and 166 (Garst Seeds), and ADC’s permit for systems losses.
3 Appendix B lists the Commission’s rulings on the proposed FOF submitted by the parties
4 and whether they were accepted or rejected. References to the record are in parentheses,
5 and the FOF numbers of the various parties are in brackets. Modifications were made for
6 clarification and accuracy and are in the Ramseyer Format. Deletions are in brackets and
7 additions are underlined. Both deletions and additions are in bold type.

8
9 **A. Designation of an IIFS for Certain Windward Streams**

10
11 The Court on remand concluded that the Commission failed to support its
12 conclusion that the IIFS flows established in D&O II are more than the flows in the 1960s
13 and went on to state that if the Commission is able to support its conclusion with findings
14 quantifying the windward streams’ flows during the 1960s, then the 1960s testimonials
15 would be sufficient to set the IIFS at the levels established in D&O II.

16
17 Stream flows are expressed in base (ground-water contribution) and average (the
18 addition of rain and runoff to base flow) flows. The changes to the affected windward
19 streams from construction of the Waiāhole Ditch are determined by examining the base
20 flows of the streams, because construction of the Waiāhole Ditch affected the flows of
21 certain windward streams by decreasing the ground-water contribution to these streams’
22 flows.

23
24 The United States Geological Survey (USGS) uses multiple-year data to estimate
25 post-Waiāhole Ditch base and average stream flows.

26
27 The USGS estimates represent the flows of the windward streams in the post-
28 Waiāhole Ditch period up to the initial onset of this Contested Case, including: 1) the
29 1960s, 2) the time when the initial IIFS were established in May 1992 as the status quo
30 flows, and 3) the times when D&O I and II amended the IIFS by adding the amounts
31 specified in those Decisions and Orders to the base flows. Several events have taken
32 place that may have affected the USGS estimates since they were published in 1969. The
33 impact of these changes on the relationship between the base flows in the 1960s and the
34 amended flows established in D&O II is discussed in the Conclusions of Law.

35
36 **1. Waiāhole Ditch and Tunnel System**

37
38 1. “Dikes, mostly vertical and parallel or subparallel to the fissure zone, control
39 movement and discharge of ground water because they are less permeable than the rocks
40 they intrude. Dikes impound or partly impound ground water by preventing or retarding
41 its movement toward discharge points. The top of this water, called high-level water in
42 Hawaii, is at an altitude of about 1,000 feet in the north end of windward Oahu and 400
43 feet near the south end of Waimanalo Valley.” [D&O II, at 13, lines 27-36]

- 1 2. The bed rock, on which these dike-impounded waters rest, extends to about 400
2 feet elevation in the Waiāhole-Waikāne drainage basin, and acts as a dam for the high-
3 level water in the dike compartments. [D&O II, at 13, lines 38-40]
4
- 5 3. The total length of the Waiāhole Ditch system is approximately twenty-five (25)
6 miles, stretching from Kahana Valley in windward O`ahu to Honouliuli in the Leeward
7 plains. [D&O I, FOF 3]
8
- 9 4. The system is comprised of two (2) major parts. The collection part of the system
10 consists almost entirely of tunnels starting from Kahana and running through Waiawa.
11 This is where the water is collected. The delivery part starts from Adit 8, where the
12 tunnel surfaces in Waiawa, and runs downstream to the Leeward plains. [D&O I, FOF
13 10]
14
- 15 5. The system collects primarily ground water and some surface water through a
16 series of development tunnels in the Ko`olau Mountains and transports the non-potable
17 water to Central and Leeward O`ahu, primarily for agricultural purposes. [D&O I, FOF 1]
18
- 19 6. The [**main tunnel of**] initial system was constructed between 1913-1916 as a way
20 to transport water to irrigate Oahu Sugar Company, Ltd.'s ("OSCO") sugar cane fields in
21 central Oahu. [D&O I, FOF 5]
22
- 23 7. At that time, when the system was initially constructed, the system was designed
24 to collect surface waters from surface water intakes on the Windward side of the island
25 and the water would be transported through a trans-Koolau tunnel which also developed
26 additional ground waters. [D&O I, FOF 6]
27
- 28 8. The transmission tunnel from Kahana to the North Portal, an opening in the pali
29 face at ditch level on the windward side, is 24,621 feet in length, and 790 feet elevation
30 at the Kahana end. [D&O II, at 14, lines 22-26]
31
- 32 9. The portion of the tunnel from the North Portal leeward is known as the Trans-
33 Ko`olau Tunnel or the Waiāhole Main Bore. It is 14,500 feet in length, and the elevation
34 is approximately 724 feet at the south portal Adit 8, and 754 feet at the North Portal.
35 [D&O II, at 14, lines 19-22]
36
- 37 10. The transmission tunnel runs parallel to the dikes and thus develops and collects
38 little or no ground water, while the Trans-Ko`olau Tunnel or Main Bore runs
39 perpendicular to and penetrates the dike compartments and develops and collects
40 significant amounts of ground water. (Exhibit N-118, at 15, figure 8)
41
- 42 11. Work on the Main Bore, which began in February 1913, was completed in
43 December 1915. Discharge from the dike compartments penetrated by the Main Bore
44 reached equilibrium with recharge in May 1916, when excess flow from storage ceased.
45 ("Geology and Ground-Water Resources of the Island of Oahu, Hawaii," by Stearns and
46 Vaksvik, Division of Hydrography, Department of Public Lands, Territory of Hawaii,

1 May 1935, at 402-404; cited in Exhibit N-118, at 12, and by Lum, Transcript, 4/24/96, at
2 27, lines 17-22)

3
4 12. Between 1925 and 1935, the Kahana, Waikāne #1, Waikāne #2 and the Uwau
5 Main Tunnels, **which were drilled perpendicular to the collection tunnel and**
6 **penetrated the dike compartments,** were developed to collect dike-impounded water.
7 As the system collected more dike water, it collected less surface water. Thus, except
8 between 1925 and 1935 when the development tunnels were under construction, the
9 amount of water flowing through the Ditch system has been relatively constant from
10 1916. [D&O II, at 14, lines 33-39]

11
12 13. In 1964 the Uwau tunnel was extended by about 270 feet, and about 177 of those
13 feet **[was] were** past the crest of the Ko'olaus into Waipio lands owned by Castle &
14 Cooke. [D&O II, at 14, lines 41-42 and at 15, lines 1-2]

15
16 14. Until 1982 about 1 to 1.5 mgd of water was pumped from Waiāhole Stream at 450
17 feet elevation into the Waiāhole Ditch. This practice was stopped due to pumping costs.
18 [D&O II, at 15, lines 4-6]

19
20 15. In 1992 a bulkhead was installed at the Kahana Development Tunnel by the State
21 of Hawai'i. [D&O II, at 15, lines 8-9]

22
23 16. Average flows in the Waiāhole Tunnels follow. Except for the period when the
24 development tunnels were being built, variability in ditch flow runs roughly between 20
25 to 30 mgd. The average flows for the period 1989 to 1993 were selected because the
26 flows were neither extraordinarily high nor were they extraordinarily low, and it was also
27 after pumping from Waiāhole Stream into the ditch system had ceased. [D&O II, at 15,
28 lines 11-16]

29
30 17. **[Hatton also stated that t]**The period of stability in Ditch flows started about
31 1938, with variability in Ditch flows ranging roughly between 20 to 30 mgd. Prior to that,
32 there were much higher flows during the time when the stored waters in the dikes pierced
33 by the tunnel system were being depleted. [D&O II, at 35, lines 6-9]

34
35 18. According to the U.S. Geological Survey: "Because the tunnel system and the
36 dike-impounded reservoirs are under steady-state conditions, there is no further depletion
37 of ground-water storage in the aquifers." [D&O II, at 35, lines 11-13]

38
39 19. The average amount of water developed from the Kahana Development Tunnel
40 was 2.6 mgd. In addition, there was about an additional 2.1 mgd of Kahana Stream
41 surface water that is also collected, giving the total waters collected from Kahana of
42 about 4.7 mgd. [D&O II, at 15, lines 18-21]

43
44 20. Waikane #1 develops approximately 4.2 mgd, and Waikane #2 develops
45 approximately 1.1 mgd. At this point in the system, the total waters developed, including
46 the Kahana waters, were approximately 10 mgd. [D&O II, at 15, lines 23-26]

1
2 21. The system then enters the lands of Uwau and Waianu. The Uwau Development
3 tunnel has two components: the original Uwau Tunnel, and its 1964 extension.
4 Approximately 8.7 mgd is developed in the main part of the Uwau Development Tunnel
5 on the windward side of the Ko`olau crest, and another 4.8 mgd is developed in the Uwau
6 Tunnel extension, on the leeward side of the Koolau crest, for a total of 13.5 mgd. At this
7 point, the total water developed is 23.5 mgd. [D&O II, at 15, lines 28-34]
8

9 22. The 1964 Uwau extension developed only a net of 2.77 mgd. Before the extension
10 was built, some of the water upstream of the gauge was finding its way into the already
11 existing main Uwau development tunnel. Therefore, about half of the Uwau Tunnel
12 extension water represents a decrease from the main tunnel prior to construction of the
13 extension. [D&O II, at 15, lines 36-41]
14

15 23. The total water developed between the lands of Uwau and Waianu and the North
16 Portal gauge, which is directly underneath the crest of the Ko`olau, was approximately
17 1.3 mgd. Therefore, the system to this point for the period of record developed
18 approximately 24.8 mgd. [(D&O II, at 15, lines 43-46)
19

20 24. During this period of record, 1989 to 1993, the Kahana bulkhead was installed in
21 early 1992. Ditch flows from Kahana tunnel have been reduced by approximately 1.5
22 mgd to 1.1 mgd from the original flow of 2.6 mgd. Therefore, the system from Kahana to
23 North Portal gate developed approximately 23.3 mgd. [D&O II, at 16, lines 1-5]
24

25 25. Beyond the North Portal, **the opening in the pali face on the windward side,** the
26 tunnel then enters the lands of Waiawa, which **begin at the crest of the Ko`olau where**
27 **the North Portal gauge is located and** are owned by Kamehameha Schools/Bernice
28 Pauahi Bishop Estate (“KSBE”). (This section between the North Portal and Adit 8 is
29 called the “main bore.”) [D&O II, at 16, lines 7-10]
30

31 26. For the period of record from 1989 to 1993, the total average water developed
32 between the North Portal crest gauge station and the gauging station at the leeward end of
33 the main bore at Adit 8 was 3.7 mgd. Thus, the total water developed from Kahana to
34 Adit 8 is approximately 27.0 mgd for the period of record. [D&O II, at 16, lines 12-16]
35

36 2. Impact on Windward Stream Flows 37

38 27. “Valleys on the windward side penetrate deeply into the mountains and cut into
39 the dike-impounded reservoir, whereas most of the leeward valleys do not. This causes
40 proportionately more dike-impounded water to leak to the windward side from the area
41 underlying the crest. Consequently, the ground-water divide lies (somewhere) to the
42 leeward along most of the crest.” [D&O II, at 17, lines 20-24]
43

44 28. “The flow of Waiāhole (and its tributary, Waianu), Waikāne, and Kahana Streams
45 have (*sic*) been affected by the Waiāhole Ditch tunnel system, which diverts water at an

1 altitude of 800 feet.”¹¹ (Exhibit N-118, at 74) Thus, the U.S. Geological Survey does not
2 consider Hakipu`u Stream to be affected by the Waiāhole tunnels. [D&O II, at 17, lines
3 26-29]

4
5 29. Hakipu`u Stream does not go all the way back up to the Ko`olau crest, and a good
6 portion of that stream is below 400-foot elevation (that is, below the top of the bed rock
7 underlying the dike-impounded ground water through which the tunnel system has been
8 dug – Exhibit M-36D, at 2). [D&O II, at 17, lines 31-34]

9
10 30. “Waiāhole, Waianu, and Waikāne Streams lie down-gradient from Uwau tunnel
11 and Waikāne tunnels 1 and 2 and lie entirely in the dike complex. The total base flow of
12 the streams below tunnel level is 5.8 mgd or only about a third of the flow of the
13 upgradient tunnels. In contrast, Kahana Stream, downgradient from Kahana tunnel, lies
14 only partly in the dike complex and mostly in the marginal dike zone. Its base flow below
15 tunnel level is 11.2 mgd, or about three times the flow of the tunnel (before the Kahana
16 bulkhead was installed).” [D&O II, at 17, lines 36-42]

17
18 31. “Leakage and overflow from the dike-impounded water bodies, not exploited by
19 tunnels, continues (*sic*) to provide flow in all streams at the lower levels. Exceptions are
20 the lower parts of Hakipu`u and Kaaawa Streams, which are somewhat isolated from the
21 main Ko`olau mass.” (Exhibit M-36D, at 35) In other words, the lower reaches of the
22 streams are being fed by dikes that are not cut by the tunnel. Windward streams are
23 gaining streams, although Hakipu`u Stream is a losing stream in much of its reach.
24 Between altitudes of 400 and 250 feet, Waiāhole Stream cuts deeper into saturated rock
25 in this reach than streams in the other valleys, resulting in more leakage into the stream.
26 [D&O II, at 17, lines 44-45; at 18, lines 1-7]

27
28 32. However, while experts agree that the stream flows have been affected
29 significantly by the tunnels, they disagree on whether there is a one-to-one relationship
30 between ditch flows and loss of flows from the streams. The following statements
31 illustrate these disagreements.

32
33 “Under natural conditions, all of the water (collected by the Waiāhole Tunnel
34 complex) probably drained to Kaneohe Bay, including the 10 mgd or so from the
35 leeward side of the crest.” (Excerpts from “Report on the Hydrologic
36 Investigation of Groundwater and Surface Water Conditions in the Windward
37 O`ahu Water Management Area, O`ahu,” by George A.L. Yuen and Associates,
38 Inc., for the Commission on Water Resource Management, September 1989, and
39 revised February 1990, Exhibit N-119 at 63)

40
41 “Before excavation of the main bore, part of this water probably moved to the
42 windward area, and the rest moved leeward from the ground-water divide. Owing
43 to a lack of detailed information, half the average discharge...and half of the Q90
44 (of the main bore)...are assigned to the windward side.” (Exhibit N-118, at 74)

45

¹¹ Note, *supra*, FOF 8-9, that the actual elevations are 790 feet at Kahana and 754 feet at North Portal.

1 “(S)hould the Ditch flow be discontinued, the dike-confined water will discharge
2 naturally at the surface in the form of springs feeding windward streamflow, and
3 beneath the surface recharging adjacent windward dike-confined and basal
4 aquifers. In the undeveloped state, the dike compartments now supplying the
5 Waiāhole Ditch system undoubtedly also leaked water in the leeward direction,
6 ultimately recharging the aquifers of the Pearl Harbor region.” (Meyer, written
7 direct testimony, exhibit H, at 7) [D&O II, at 18, lines 9-12; at 19, lines 10-17, 21-
8 34]
9

10 3. Measurement of Stream Flows

11
12 33. Stream flows are measured in: 1) base flows and 2) average flows, at specified
13 places along the streams’ reaches, usually with corresponding altitudes noted. [D&O II,
14 at 20, lines 24-26]
15

16 34. Most of Hawai`i’s streams are classified as straight channels. Straightness is
17 determined by the ratio of the valley length to the river length, and in Hawai`i they are
18 about the same. Their steepness has some bearing on this. In steep channels, when you
19 put more flow in, they tend not to spread out and not to deepen very much compared to
20 how they speed up. The water just goes faster, it doesn’t get a lot deeper, and it doesn’t
21 spread out a whole lot more with increasing flows. Streams in Hawai`i are typically very
22 flashy in nature. They can rise up to many times the base flow when a storm occurs, then
23 come right back down. Windward streams are usually short and have steep gradients, are
24 flashy, and can rise and fall several feet in a few hours. The annual maximum discharge
25 usually occurs in the cooler months, October through April. [D&O II, at 20, lines 28-39]
26

27 35. The base flow is an estimate of the ground-water contribution to the stream. The
28 Q90 flow is used as an index of the reliability of flow from a water source for water
29 development studies and represents that volume of water that is equaled or exceeded 90
30 percent of the time over the period of record. The Q90 flow is an estimate of the dry
31 weather flow (base flow) of streams, and, in most cases, the Q90 flow is an estimate of
32 the ground-water contribution to the stream. [D&O II, at 20, lines 41-45; at 21, lines 1-2]
33

34 36. The average flow is an average of all flows, including the base flow and rainfall,
35 runoff and percolating groundwaters from the surface. Therefore, the base flow is less
36 than the actual amount of water that flowed in the streams during the time periods
37 chosen. [D&O II, at 21, lines 4-7]
38

39 37. The United States Geological Survey (USGS) uses multiple-year data to compute
40 stream flows, and its “inventory of streamflow for all perennial streams in windward
41 Oahu” uses the base period July 1, 1926, to June 30, 1960. Estimates of the long-term
42 average and Q90 flows of Waiāhole, Waianu, Waikāne, and Kahana Streams are as
43 follows:
44

1 Waiāhole Stream: the point of maximum base flow is at its confluence with
2 Waianu Stream,¹² where the long-term average flow is 6.9 mgd¹³ and the Q90
3 flow is 3.9 mgd.

4
5 Waianu Stream: the point of maximum base flow is at its confluence with
6 Waiāhole Stream, where the long-term average flow is 1.2 mgd and the Q90 flow
7 is 0.5 mgd.

8
9 Waikāne Stream: the point of maximum base flow is at 75 feet altitude, where the
10 long-term average flow is 4.2 mgd and the Q90 flow is 1.4 mgd.

11
12 Kahana Stream: the point of maximum base flow is at 15 feet altitude, where the
13 long-term average flow is 29.5 mgd and the Q90 flow is 11.2 mgd. [D&O II, at
14 21, lines 9-26]

15 16 4. Amended IIFS Under D&O II

17
18 38. D&O II amended the IIFS for Waiāhole, Waianu, Waikāne and Kahana Streams
19 by adding additional amounts of water from the Ditch as follows:

20
21 Waiāhole Stream: 3.9 mgd + 4.8 mgd = 8.7 mgd, which may be reduced to 6.6 mgd no
22 more than five (5) non-consecutive days a month;

23 Waianu Stream: 0.5 mgd + 3.0 mgd = 3.5 mgd, which may be reduced to 3.0 mgd no
24 more than five (5) non-consecutive days a month;

25 Waikāne Stream: 1.4 mgd + 2.1 mgd = 3.5 mgd; and

26 Kahana Stream: 11.2 mgd + 0.0 mgd = 11.2 mgd. [D&O II, at 112, lines 17-27]

27 28 5. Ditch-Related Events That Could Have Affected the USGS 29 Estimates¹⁴

30
31 39. **[Hatton also stated that t]**The period of stability in Ditch flows started about
32 1938, with variability in Ditch flows ranging roughly between 20 to 30 mgd. Prior to that,
33 there were much higher flows during the time when the stored waters in the dikes pierced
34 by the tunnel system were being depleted. [D&O II, at 35, lines 6-9]

35
36 40. In 1964 the Uwau tunnel was extended by about 270 feet, and about 177 of those
37 feet **[was] were** past the crest of the Ko`olau into Waipio lands owned by Castle &
38 Cooke. [D&O II, at 14, lines 41-42 and at 15, lines 1-2]

39

¹² The elevation at this point is 80 feet. (Lum, Transcript, 4/24/96, at 74, line 25 to 75, line 1)

¹³ This is the average flow at the point in the stream where the base flow has reached its maximum. Average flows further downstream would be higher, the amount depending on runoff and rain in the part of the watershed which drains into these lower reaches of the stream. In contrast to average flows, contribution of base flow at points lower downstream would not increase and would be the same as its contribution at the elevation where base flow had reached its maximum.

¹⁴ Some of the following FOF repeat previous FOF to highlight changes in the Ditch system that could have affected the stream flows during and since the 1960s.

1 41. The 1964 Uwau extension developed only a net of 2.77 mgd. Before the extension
2 was built, some of the water upstream of the gauge was finding its way into the already
3 existing main Uwau development tunnel. Therefore, about half of the Uwau Tunnel
4 extension water represents a decrease from the main tunnel prior to construction of the
5 extension. [D&O II, at 15, lines 36-41]
6

7 42. Until 1982 about 1 to 1.5 mgd of water was pumped from Waiāhole Stream at 450
8 feet elevation into the Waiāhole Ditch. This practice was stopped due to pumping costs.
9 [D&O II, at 15, lines 4-6]
10

11 43. In 1992 a bulkhead was installed at the Kahana Development Tunnel by the State
12 of Hawai'i. [D&O II, at 15, lines 8-9]
13

14 44. As of 1993 d(D)itch flows from Kahana tunnel have been reduced by
15 approximately 1.5 mgd to 1.1 mgd from the original flow of 2.6 mgd. [D&O II, at 16,
16 lines 1-5]
17

18 **B. The 2.2 mgd of Unpermitted Water**
19

20 45. In D&O II, the Waiāhole Ditch system flow was estimated at 27.0 mgd. [D&O II,
21 at 142, table 1]
22

23 46. Under the amended IIFS, a total of 9.9 mgd was added to Waiāhole (4.8 mgd),
24 Waianu (3.0 mgd) and Waikāne Streams (2.1 mgd). [D&O II, at 134, lines 6-19]
25

26 47. Therefore, 17.1 mgd was available for offstream uses. [D&O II, at 152, figure 2]
27

28 48. 10.01 mgd was issued for Leeward O`ahu agricultural water use permits. [D&O
29 II, at 143, table 2]
30

31 49. 3.29 mgd was issued for Leeward O`ahu water use permits, other uses. [D&O II,
32 at 144, table 3]
33

34 50. Therefore, 3.80 mgd remained unpermitted and available for future water use
35 permits. [D&O II, at 152, figure 2]
36

37 51. In D&O I, the Commission recognized “agricultural uses” totaling 12.22 mgd,
38 based on past agricultural usage of Waiāhole Ditch system water. [D&O I, at Decision
39 and Order, page 6]
40

41 52. Agricultural water use permits for 10.64 mgd were issued in D&O I, leaving 1.58
42 mgd of the 12.22 mgd for a proposed “agricultural reserve” that was to be established
43 under future formal rule making procedures under HAR Section 13-171-60. [D&O I, at
44 Decision and Order, page 7]
45

1 53. In D&O I, the unpermitted water equaled 6.97 mgd: 1.58 mgd for the proposed
2 agricultural reserve and a remainder of 5.39 mgd. [D&O I, at Decision and Order, page
3 26, figure A]
4

5 54. In D&O II, the unpermitted water equaled 3.80 mgd: 1.58 mgd for the proposed
6 agricultural reserve and a remainder of 2.22 mgd. [D&O II, at 152, figure 2]
7

8 55. In D&O II, the amounts of the proposed agricultural reserve and the remaining
9 unpermitted water were incorrectly stated. D&O II issued 10.01 mgd for Leeward O`ahu
10 agricultural water use permits instead of the 10.64 mgd issued in D&O I. [D&O II, at
11 143, table 2] Thus, the proposed agricultural reserve should have been 2.21 mgd (12.22
12 mgd minus 10.01 mgd) and not 1.58 mgd.
13

14 56. Thus, the corrected amounts that comprised the 3.80 mgd in unpermitted water in
15 D&O II are: 1) 2.21 (and not 1.58) mgd for a proposed agricultural reserve; and 2) a
16 remainder of 1.59 (and not 2.22) mgd for other future offstream uses.
17

18 57. In D&O I, the unpermitted water, as well as any water for which a water use
19 permit had been issued but was not being used, were to be released into the windward
20 streams at locations determined by the Commission. [D&O I, at Decision and Order,
21 pages 10 and 11]
22

23 58. In D&O II, 0.9 mgd of the release was to be into Waikāne Stream, with the
24 remainder into Waiāhole Stream. [D&O I, at 139-140]
25

26 C. Practicability of PMI and Campbell Estate Using Alternative Ground 27 Water Sources 28

29 59. In D&O II, the Commission issued water use permits for Waiāhole Ditch water to
30 PMI and Campbell Estate on three criteria: 1) both PMI and Campbell Estate had no
31 practicable alternative sources available; 2) “the physical impact on the Ditch and the
32 economic impact on the continued operational viability of the Ditch if Campbell Estate is
33 required to use ground-water sources makes such an alternative to use of Waiāhole Ditch
34 water not practical;” and 3) “if water from the Waipahu-Waiawa Management Area of
35 the Pearl Harbor aquifer were to replace Ditch water for Campbell Estate and PMI, water
36 from windward public trust resources that are available for non-trust purposes after
37 measures have been taken to enhance those windward public trust resources, would be
38 given priority over a leeward public trust resource.” [D&O II, at 127, lines 7-10; 128,
39 lines 39-43; 138, lines 24-26] On the third criterion, the Commission had interpreted the
40 Court’s order in **Waiāhole I** as requiring the use of Pearl Harbor ground water for
41 irrigation if it were practicably available and pointed out that the Court had also
42 concluded in the same decision that it is neither feasible nor prudent to designate absolute
43 priorities between broad categories of uses under the water resources trust, there was no
44 categorical imperative for resource protection, and public and private uses must be
45 weighed on a case-by-case basis. (94 Haw. at 142) The Commission therefore reasoned

1 that, if there were no absolute priorities between broad categories of uses, there should
2 not be absolute priorities between public trust water resources.

3
4 60. The Court in **Waiāhole II** responded to the three criteria as follows:

- 5 1) “PMI met its burden of establishing the absence of practicable alternative
6 water sources,” but “the Water Commission entered no FOFs or COLs as
7 to whether Campbell Estate satisfied its burden of establishing that no
8 practicable alternatives existed,” (105 Haw. at 17) For Campbell Estate,
9 the Commission in its FOFs had analyzed alternative scenarios developed
10 by Campbell Estate in the original hearings, updated by information in the
11 remand (D&O II, at 88, line 38 to 94, line 14), but the Court concluded
12 that, even if the Commission had properly considered these scenarios, they
13 did not render an alternative impracticable. (105 Haw. at 17)
- 14 2) “The Water Commission did not make any finding as to the water flow
15 required to maintain the ditch’s economic and operational viability.” (105
16 Haw. at 20)
- 17 3) “(T)he Water Commission’s reasoning, that public trust resources may not
18 be prioritized because public trust uses may not be prioritized, is illogical.
19 Considering whether alternative water resources are practicable innately
20 requires prioritizing among public trust resources. As such, by failing to
21 prioritize among public trust resources, the Water Commission failed to
22 fulfill its duty, under the Water Code and the public trust doctrine, of
23 considering whether practicable alternatives exist (emphasis in original).”
24 (105 Haw. at 20)

25
26 61. Even though the Court in **Waiāhole II** found that PMI had met its burden of
27 establishing the absence of practicable alternative water sources, it concluded that the
28 Commission failed to articulate with reasonable clarity whether it also had relied on the
29 other two criteria in reaching its decision. (105 Haw. at 20)

30 31 1. PMI

32
33 The following Findings of Fact reiterate the Commission’s FOF that led the Court
34 to conclude in **Waiāhole II** that PMI had met its burden of establishing the absence of
35 practicable alternative water sources.

36
37 62. PMI considered three ground water alternatives to Waiāhole Ditch water. A
38 source contemplated in the original golf course plans was the Ewa Caprock aquifer. The
39 application was rejected because the chlorides were in the 900 to 1,100 ppm range and
40 would be used over a potable aquifer. Estimates of desalinating the water to below 200
41 ppm were \$6,000,000, exclusive of land and easement acquisition, with estimated
42 operating costs of \$3.00 per 1,000 gallons, which was not considered economically
43 feasible. In addition, the original arrangements for the plant site lease and easements to
44 the golf course were not available to PMI at the time it purchased the property in
45 foreclosure. [D&O II, at 94, lines 16-24]

1 63. The second alternative was an on-site basal well in the Ewa-Kunia aquifer, with
2 1998 construction costs estimated at \$900,000 and operating costs of \$0.18 per 1,000
3 gallons. This was considered economically feasible, but the property has deed restrictions
4 prohibiting an on-site well, and the likelihood of obtaining an allocation for a basal well
5 in the Ewa-Kunia aquifer is remote. The current sustainable yield is 16 mgd, the existing
6 allocations total 14.5 mgd, applications are pending for an additional 3.1 mgd, and the
7 milestone yield for the aquifer is 14 mgd. [D&O II, at 94, lines 26-33] The sustainable
8 yield for the Ewa-Kunia aquifer was revised downward by the Water Commission from
9 20 mgd to 16 mgd on March 15, 2000. Permitted use as of 12/8/2000 was 14.492 mgd,
10 leaving a balance of 1.508 mgd. The Board of Water Supply's share of the 14.492 mgd is
11 9.220 mgd, and it has averaged 7.984 mgd over the five-year period 1996-2000, leaving a
12 balance of 1.236 mgd in permitted use. However, the 1.236 mgd balance is not available
13 as a potable supply, because it consists of 0.954 mgd from the Makakilo Well, which
14 cannot be pumped due to high chlorides of between 250 to 260 ppm, and 0.291 mgd from
15 the Barber's Point nonpotable wells. [D&O II, at 95, lines 4-12]

16
17 64. The third alternative was a basal well in the Waipahu-Waiawa aquifer, using EP-
18 5,6 (owned by Campbell Estate and with a marginally acceptable chloride content of 180
19 ppm). Estimated construction costs were \$3,000,000 and estimated operating costs were
20 \$0.39 per 1,000 gallons to a delivery point at Farrington Highway, exclusive of the
21 pumping and delivery charge by the well operator to move the water from the well to
22 Farrington Highway. PMI considered this alternative marginally feasible. Other factors
23 affecting practicability were the chloride level of the water, available pumping capacity, a
24 long-term pumping agreement, the ease of obtaining an allocation in the Waipahu-
25 Waiawa aquifer, and the ease and cost of obtaining an easement from the Farrington
26 Highway delivery point, under the H-1 Freeway to the golf course property. With the
27 marginally feasible economics and difficulty in obtaining supply agreements and
28 easements, PMI did not consider this a practicable alternative. [D&O II, at 95, lines 35-
29 45; at 96, lines 1-2]

30
31 65. Board of Water Supply standards for irrigation water applied over drinking water
32 aquifers is 160 ppm. EP-10 has a chloride content of 460 ppm and some of the water
33 from the battery of wells feeding into the EP-18 pumping station also exceed the
34 standard. EP-3,4 is at 260 ppm, EP-5,6 is at 180 ppm, and EP-7,8 is at 240 ppm. [D&O
35 II, at 94, lines 5-9]

36
37 66. Based on the foregoing FOF, the Court in **Waiāhole II** concluded that PMI met
38 its burden of establishing the absence of practicable alternative water sources. (105 Haw.
39 at 19)

40
41 67. In Minute Order No. 89, dated November 12, 2004, the Hearing Officer
42 established the date for the remanded hearings as April 5, 2005, framed the issues to be
43 resolved on remand, and determined that no further hearings were necessary regarding
44 the practicability of PMI using alternative ground water sources, as there was sufficient
45 evidence in the existing record to address that item. The Windward Parties did not object
46 to Minute Order No. 89 nor requested that additional issues be considered. The deadline

1 for filing all pre-hearing motions was established as March 28, 2005. On March 28, 2005,
2 the Windward Parties filed a motion to deny PMI’s water use permit application on the
3 grounds that PMI had to again demonstrate its actual water needs in light of PMI’s
4 current usage and the fact that the golf course was not yet operating. At the April 5, 2005
5 remanded hearing, the Hearing Officer denied the Windward Parties’ motion, stating that
6 the issues would be limited to those identified by the Court in Waiāhole II—i.e.,
7 practicable alternatives for PMI—and that the subject of the motion would be referred to
8 the Commission and its staff for follow-up and decision. (Transcript, 4/5/2005, p. 6, line
9 7 to p. 7, line 2)

10
11 **2. Campbell Estate**

12
13 **a. Alternative sources**

14
15 68. Campbell Estate established criteria for analyzing alternatives that were based
16 upon the needs of the farmers and the protection of groundwater sources. (Exhibit B-RD-
17 46, Tom Nance Memo, pp. 1-3) [Campbell Estate, FOF 11]

18
19 69. The criteria used by Campbell Estate consisted of the following:
20 a. Within the particular aquifer system in which the wells are located, there
21 must be a remaining allocated supply of at least 3.98 **(MGD)mgd**.
22 b. There must be available well sites that can pump 4700 **(GPM)gpm** (1.7
23 times the Water Use Permit [WUP] amounts) without adversely
24 impacting other existing wells or having a gradual deterioration in the
25 quality of the water pumped.
26 c. The salinity of the groundwater supply should be no greater than the
27 salinity of groundwater beneath the fields on which the water is applied.
28 (Exhibit B-RD-46, Tom Nance Memo, p. 3) [Campbell Estate, FOF 12]

29
30 70. Groundwater sources from the Ewa-Kunia Aquifer system were eliminated as an
31 alternative because there is just 0.543 **(MGD)mgd** available from the sustainable yield of
32 that Aquifer. (Exhibit B-RD-46, Tom Nance Memo, p. 4) [Campbell Estate, FOF 13]

33
34 71. Groundwater sources from the Ewa Caprock Aquifer were eliminated as an
35 alternative because the water is brackish with chlorides varying from 500 mg/l to 1,500
36 mg/l. (Exhibit B-RD-46, Tom Nance Memo, p. 4) [Campbell Estate, FOF 14]

37
38 72. The Waipahu-Waiawa Aquifer System has 21 **(MGD)mgd** available from its
39 sustainable yield of 104 **(MGD)mgd and is the source of the ground water for**
40 **Campbell Estate’s analysis**. (Exhibit B-RD-46, Tom Nance Memo, p. 4) [Campbell
41 Estate, FOF 15]

42
43 73. The ground water from the Waipahu-Waiawa Aquifer is of potable water quality.
44 (Transcript of Hearing, April 4, 2001, p. 277, lines 18-20) [Campbell Estate, FOF 46]

1 74. Campbell Estate proffered evidence regarding five alternative ground water
2 sources **from the Waipahu-Waiawa Aquifer** for the Waiāhole Ditch: (1) construction of
3 new wells near where the Waiāhole Ditch enters Campbell Estate lands; (2) a mixed
4 alternative of 2.42 mgd from the new wells and 1.56 mgd from the Waiāhole Ditch; (3)
5 **the EP-5/6 well battery**; (4) **the WP-2 battery of 12 wells** and WP-30, **an abandoned**
6 **Oahu Sugar Company booster station that is not a source of supply**; and (5) the Ewa
7 Shaft (also known as EP 15/16 or Well No. 2202-01). (See Campbell’s Op. Br. at 4-6;
8 Ex. B-RD-46) [Windward Parties, FOF 15]

9
10 **i. New wells and mixed alternative**

11
12 75. **For a new well and (I)** in order to minimize infrastructure cost, it would make
13 most sense to drill a well at the 645-foot level as **the Waiāhole Ditch (it)** enters
14 Campbell Estate land. (Exhibit B-RD-46, Tom Nance Memo, p. 6) [Campbell Estate,
15 FOF 45]

16
17 76. The infrastructure cost for drilling a new well would be \$0.74 per 1,000 gallons, if
18 the source were to provide an average of 3.98 (MGD)**mgd**.¹⁵ (Exhibit B-RD-46, Joe
19 Vierra Letter, p. 3) [Campbell Estate, FOF 47]

20
21 77. For use of 2.42 mgd,¹⁶ new wells would run \$0.88 per 1,000 gallons. (Exhibit B-
22 RD-46, Joe Vierra Letter, p. 2)

23
24 78. The combined source of **2.42 mgd from** a new well and using **1.56 mgd of**
25 existing Waiāhole Ditch Water is also \$0.74 per 1,000 gallons to supply an average of
26 3.98 (MGD)**mgd. This is based on: 1) water from the new well is estimated at \$0.88**
27 **per 1,000 gallons; 2) Waiāhole Ditch water is estimated at \$0.37 per 1,000 gallons;**
28 **and 3) \$0.06 per 1,000 gallons is added for an estimated 10% amortization of**
29 **construction costs necessary to merge the two systems and make them usable for**
30 **Campbell Estate’s lessees**. (Exhibit B-RD-46, Joe Vierra Letter, p. 3) [Campbell Estate,
31 FOF 48]

32
33 79. These figures incorporate an eight percent (8%) **(return) rate** for borrowing
34 money to construct the improvements. (Vierra, Transcript, 4/5/05, p. 46, line 25 to p. 47,
35 line 12) [Campbell Estate, FOF 49]

36
37 80. Eight percent is a **(reasonable)** rate based on the fact that it represents an average
38 interest rate over a twenty-year period. (Vierra, Transcript, 4/5/05, p. 46, lines 14-20, and
39 p. 48, lines 13-15) [Campbell Estate, FOF 50]

40
41 81. Interest rates on business loans are renegotiated every three years. (Vierra,
42 Transcript, 4/5/05, p. 42, lines 3-12 and p. 47, line 24 to p. 48, line 5) [Campbell Estate,
43 FOF 51]

44

¹⁵ 3.98 mgd is the amended total request by Campbell Estate.

¹⁶ 2.42 mgd is the current average use.

1 82. Based on an amortization rate of 5 percent, which is closer to today's prime rate,
2 the cost to Campbell Estate of drilling and pumping a new well near where the Waiāhole
3 Ditch enters Campbell's lands, when considered alone or as a mixed alternative, would
4 be approximately 63.**(2)5** cents per thousand gallons for 3.98 mgd. (See Vierra,
5 Transcript, 4/5/05, p. 43, line 21 to p. 44, line 6; p. 52, line 24 to p. 53, l. 3; Federal
6 Reserve Board, Monthly Bank Prime Loan [Rates] (June 6, 2005) (available at:
7 <http://www.federalreserve.gov/releases/h15/data/m/prime.txt>)) [Windward Parties, FOF
8 27]

9
10 83. The prime rate is the short-term lending rate for a bank's best customers.
11 Campbell Estate does not qualify for the prime rate. (Vierra, Transcript, 4/5/05, p. 52,
12 lines 12-16)

13
14 **ii. EP-5/6**

15
16 84. The unit cost for improvements to make EP-5/6 operational would be \$0.95 per
17 1,000 gallons, if this source were to provide 3.98 **(MGD)mgd**. (Exhibit B-RD-46, Joe
18 Vierra Letter, p. 2) [Campbell Estate, FOF 37]

19
20 85. For usage of 2.42 mgd, the cost to use EP-5/6 would be \$1.16 per 1,000 gallons.
21 (Exhibit B-RD-46, Joe Vierra Letter, p. 2)

22
23 86. The chloride levels of the water drawn from EP-5/6 have varied over the past
24 three years between 140 and 180 MG/L. (Exhibit B-RD-46, Tom Nance Letter, p. 5)

25
26 87. The Court has confirmed the Commission's use of a 160 MG/L limit for irrigating
27 fields over drinking water aquifers.¹⁷ (105 Haw. at 19)

28
29 88. The available recent chloride data for EP-5/6 do not definitively establish that its
30 water meets the 160 MG/L maximum chloride as being acceptable for irrigation use over
31 drinking water aquifers. (Exhibit B-RD-46, Tom Nance Letter, p. 9)

32
33 89. Although recent data indicates that the chloride levels from EP-5/6 have
34 decreased, its use as an irrigation water source would still adversely impact the Ewa Shaft
35 **(EP-15/16)** for the following reasons: based on past history, chlorides of EP-5/6 will
36 increase over their present levels with the additional pumping to the Waiāhole-irrigated
37 fields, chlorides of the irrigation return water will be increased due to evaporation loss
38 and plant evapotranspiration, and the link between the quality of water applied on
39 Waiāhole-irrigated fields and the salinity of water pumped from the Ewa Shaft was
40 clearly established **during the OSCO period. For a long time, OSCO imported the**
41 **slightly brackish water from the WP-5 well battery via the WP-10 booster to**
42 **Reservoir 155 to supplement Waiāhole water to irrigate the fields in question.**
43 **During that period, water of the Ewa Shaft was typically around 200 MG/L. When**
44 **WP-5 was shut down about a decade before OSCO closed, chlorides of the Ewa**

¹⁷ MG/L is equivalent to ppm. See FOF 65, *supra*.

1 **Shaft steadily declined to their present level.** (Exhibit B-RD-46, Tom Nance Letter, p.
2 9) [Campbell Estate, FOF 34]

3
4 **iii. The WP-2 battery of wells**

5
6 90. The cost to establish **the WP-2 battery of twelve wells** as a source is \$0.96 per
7 1,000 gallons, if providing 3.98 **(MGD)mgd**. (Exhibit B-RD-46, Joe Vierra Letter, pp. 2-
8 3) [Campbell Estate, FOF 41]

9
10 91. The cost for providing 2.42 mgd from WP-2 is \$1.18 per 1,000 gallons. (Exhibit
11 B-RD-46, Joe Vierra Letter, pp.2-3)

12
13 92. Campbell Estate would need to obtain easements over land that it does not own in
14 order to deliver the WP-2 water to its lessees' lands. The cost estimates include the cost
15 of the pipeline across these lands but no costs for easement acquisitions from landowners.
16 (Exhibit B-RD-46, JoeVierra Letter, p. 3)

17
18 93. WP-2 is located very near EP-5/6. (Vierra, Transcript, 4/5/05, p. 38, lines 4-21)
19 [Campbell Estate, FOF 39]

20
21 94. Based on the criteria used by Campbell Estate in analyzing alternative
22 groundwater sources, **Campbell Estate believes** WP-2 should not be used as a
23 groundwater source because it is also makai of the fields irrigated with Waiāhole Ditch
24 Water and could damage the groundwater beneath the fields. (Exhibit B-RD-46, Tom
25 Nance Memo, p. 4) [Campbell Estate, FOF 40]

26
27 **iv. EP-15/16 (Ewa Shaft)**

28
29 95. EP-15/16 is a BWS resource that is not yet in service and permitted for municipal
30 purposes, not specifically for large agricultural usage. (Exhibit B-RD-46, Joe Vierra
31 Letter, pp. 2-3)

32
33 96. Based on BWS's prevailing rate for irrigation water from a potable source at
34 \$0.99 per 1,000 gallons and an estimated added cost of delivering water of \$0.40,
35 Campbell Estate's consultant estimated the cost of delivering water from EP-15/16 as
36 \$1.39 per 1,000 gallons. (Exhibit B-RD-46, Joe Vierra Letter, pp. 1-2)

37
38 97. After July 1, 2005, the BWS rate will increase from \$0.99 to \$1.12 per 1,000
39 gallons. (Amended Exhibit N-222, p. 4)

40
41 98. Based on a BWS rate of \$1.12 per 1,000 gallons, the cost of delivering water from
42 EP-15/16 would be \$1.52 per 1,000 gallons (\$1.12 + \$0.40).

43
44 99. Until July 1, 2005, **BWS's Schedule of Rates and Charges states that** BWS will
45 charge 75 cents per thousand gallons for agricultural water in blocks over 13,000. After

1 July 1, 2005, that rate will increase to 77 cents per thousand gallons. (Amended Exhibit
2 N-222, p. 4) [Windward Parties, FOF 38]

3
4 100. Based on a BWS rate of 77 cents per 1,000 gallons, the cost of delivering water
5 from EP-15/16 would be \$1.17 per 1,000 gallons (\$0.77 + \$0.40).

6
7 101. **A witness from BWS stated that i(If water were available from the Board of
8 Water Supply, the cost of obtaining water from the Board of Water Supply would be
9 \$1.98 per 1,000 gallons, the rate for non-residential usage in effect until July 1, 2005,
10 when it increases to \$2.24. (Declaration of Dean Shimizu, ¶4, Amended Exhibit N-222-
11 4, and Transcript of the Deposition of Dean S. Shimizu p. 34, lines 16-24) [Campbell
12 Estate, FOF 26]**

13
14 102. Based on a BWS rate of \$1.98 per 1,000 gallons, the cost of delivering water from
15 EP-15/16 would be \$2.38 per 1,000 gallons (\$1.98 + \$0.40).

16
17 103. Based on a BWS rate of \$2.24 per 1,000 gallons, the cost of delivering water from
18 EP-15/16 would be \$2.64 per 1,000 gallons (\$2.24 + \$0.40).

19
20 104. In addition to per gallon water charges, the use of EP-15/16 as a source of water
21 **g(w)ould** subject the Applicant to one-time meter fees (referred to as “Water System
22 Facilities Charges”). (Amended Exhibit N-222-4 and –5 and the Declaration of Dean
23 Shimizu, A Civil Engineer VI, with the Board of Water Supply; amended Exhibit N-222-
24 6 to –8) [Campbell Estate, FOF 27]

25
26 105. Part of this fee could be waived. (Declaration of Dean Shimizu, p. 27, line 22 to p.
27 28, line 6) [Campbell Estate, FOF 31]

28
29 106. BWS’s regulations provide that it “may negotiate water system facilities charges
30 **(WSFC)** other than those in the [rate]schedule when it is determined that the schedule is
31 inappropriate. The Department may also negotiate agreements with developers for
32 payment of the actual costs of installation of the necessary water system facilities or
33 require the installation of the facilities by the developer in lieu of payment of water
34 system facilities charges.” (Exhibit N-223, p. 2) [Windward Parties, FOF 62]

35
36 107. WSFC “**(will not be levied) will not be levied** on developments where the
37 developer installs at his cost, a complete water system including source and transmission
38 and daily storage facilities.” **((emphasis added))** Exhibit N-223, p. 2) [Windward Parties,
39 FOF 63]

40
41 108. The EP-15/16 was already drilled and pumps were already installed before that
42 well was transferred to BWS. (Exhibit N-224, p. 33, lines 9-17)

43
44 109. There already is a storage tank near the Ewa Shaft, and Campbell Estate expects
45 to install the necessary infrastructure from the storage tank near EP 15 & 16 to the point
46 of delivery to Campbell Estate’s farmers, which is estimated at \$0.40 and already

1 included in the consultant's estimated cost of \$1.39 per 1,000 gallons. (Exhibit B-RD-46,
2 Vierra letter, p. 1; Exhibit N-224, Shimizu deposition, pp. 33, line 22 to p. 34, line 15)

3
4 **b. Lessees' water costs**

5
6 110. Water from the Waiāhole Ditch is currently being provided to the farmers at the
7 rate of \$0.40 per 1,000 gallons. (Littleton, Transcript, 4/5/05, p. 15, lines 14-17)
8 [Campbell Estate, FOF 52]

9
10 111. The four farmers with long-term leases have escape clauses **tied to the**
11 **Consumer Price Index (CPI)** which permit(s) the respective lessees to leave. (Hatton,
12 Transcript, 4/5/05, p. 57, lines 1-12; Written Testimony of Bert Hatton, p. 1, line 9 to p.
13 2, line 6) [Campbell Estate, FOF 53]

14
15 112. If water reaches the rate of 63.5 cents per 1,000 gallons, Del Monte is entitled to
16 terminate its lease. (Id.) [Campbell Estate, FOF 54]

17
18 113. If water reaches the rate of 62.7 cents per 1,000 gallons, Garst Seeds is entitled to
19 terminate its lease. (Id.) [Campbell Estate, FOF 55]

20
21 114. If water reaches the rate of 60.6 cents per 1,000 gallons, Sugarland Farms is
22 entitled to terminate its lease. (Id.) [Campbell Estate, FOF 56]

23
24 115. If water reaches the rate of \$52.3 cents per 1,000 gallons, Larry Jefts Farms is
25 entitled to terminate its lease. (Id.) [Campbell Estate, FOF 57]

26
27 116. Based on the April 2005 CPI of 194.6, the most recent CPI available at the
28 deadline for the parties' written closing arguments, the escape clauses for Campbell
29 Estate's lessees increased from 52.3 to 53.3 cents per thousands gallons for Jefts, from
30 60.6 to 61.7 cents per thousands gallons for Sugarland, from 62.7 to 63.8 cents per
31 thousand gallons for Garst, and from 63.5 to 64.7 for Del Monte. (See
32 <http://www/bls.gov/news.release/cpi.t01.htm>. See generally Campbell's Op. Br., at 3-4;
33 Windward Parties' Written Closing Argument at 4) [Windward Parties, FOF 34]

34
35 117. Larry Jefts, who holds the Campbell Estate leases for both Sugarland and Larry
36 Jefts Farms, stated that he would be willing to pay an additional cost for Campbell Estate
37 to transport water to their fields from an alternative source. He also acknowledged that he
38 could abandon both leases if the costs exceed the lease terms, but that he would
39 "have to look at the terms and conditions associated with obtaining the delivery of water
40 to my farms and assess any risks involved. It would be a business decision." (Jefts,
41 Written Statement, January 14, 2005, p. 2, lines 6-19)

42
43 118. Paul Stuart of Garst Seed Company also acknowledged that Garst could abandon
44 its lease if the costs exceed the lease terms, and also stated that "(a)ny higher cost of
45 water would cause my company to evaluate its options, including early termination of the

1 lease and relocating to other areas with more reasonable water delivery options.” (Stuart,
2 Written Statement, January 14, 2005, p. 3, lines 8-20)

3
4 119. Edward Littleton of Del Monte also acknowledged that Del Monte could abandon
5 its lease if the costs exceed the lease terms, and also stated that Del Monte would not pay
6 additional costs for Campbell Estate to transport water to their fields from an alternative
7 source, because competition and the large worldwide supply of fresh pineapple have been
8 driving the prices of their fruit down and any increased production costs puts it at a
9 disadvantage with its competitors. (Littleton, Written Statement, January 14, 2005, p. 1,
10 line 17, to p. 2, line 5; Littleton, Transcript, 4/5/05, p. 13, line 21, to p. 14, line 21)

11
12 120. The fifth lessee, Hawaii Agricultural Research Center (HARC), is on a month-to-
13 month agreement with Campbell Estate and not in negotiation for a long-term lease.
14 HARC is a non-profit organization and just needs to meet its costs. If its water costs
15 increase to \$0.66 per 1,000 gallons, HARC will probably not be able to meet its current
16 contract for potatoes. If costs increase to \$0.79 per 1,000 gallons, HARC probably could
17 not meet its current contracts for its other crops. (Santo, Transcript, 4/5/05, p. 11, line 2 to
18 p. 13, line 5)

19
20 121. Campbell Estate’s leases provide that its lessees must pay all taxes for the lands at
21 issue in the 2005 remanded hearing, including property taxes. (See, e.g., State of Hawai`i
22 Commission on Water Resource Management, Transcript of the April 4, 2001 Remanded
23 Hearings at 87, lines 9-17, Exhibit B-RD-37, at 11-2) [Windward Parties, FOF 50]

24
25 122. (Since p)Portions of Campbell Estate’s lands are dedicated to agricultural use for
26 periods of one, five, or ten years, so property taxes are assessed at five, three, and one
27 percent of the total market value for the property, respectively. (City and County of
28 Honolulu, Rev.Ord. § 8-7.3(b)(2) (“Hon. Ord.”)) [Windward Parties, FOF 51]

29
30 123. If a Campbell Estate lessee exercised its escape clause and terminated its lease,
31 and the land was “not in substantial and continuous agricultural use,” the agricultural
32 dedication could be lost and Campbell Estate would be responsible for future property
33 taxes, which would be assessed at 100% of the fair market value of that property. (Hon.
34 Ord. § 8-7.3(o), attached as Exhibit B to the Windward Parties’ Written Closing
35 Argument; see also id. at § 8-7.3(m), attached as Exhibit B to the Windward Parties’
36 Written Closing Argument) [Windward Parties, FOF 52]

37
38 124. Campbell Estate has reserved the right to subsidize water costs to prevent tenants
39 from terminating their leases. (See e.g., Exhibit N-179, Lease Between Campbell Estate
40 and Del Monte Fresh Produce (Hawai`i), Inc., at 20) [Windward Parties, FOF 48]

41 42 c. Prioritizing among public trust resources

43
44 125. The Court in Waiāhole II concluded that “(c)onsidering whether alternative water
45 resources are practicable innately requires prioritizing among public trust resources.”
46 (105 Haw. at 20)

1
2 126. The Court in Waiāhole I concluded that “the public trust doctrine applies to all
3 water resources, unlimited by any surface-ground distinction.” (94 Haw. at 135)
4

5 127. The Water Code states: “The common law of the State to the contrary
6 notwithstanding, the commission shall allow the holder of a use permit to transport and
7 use surface or ground water beyond overlying land or outside the watershed from which
8 it is taken if the commission determines that such transport and use are consistent with
9 the public interest and the general plans and land use policies of the State and counties.”
10 (HRS Ch. 174C, § 174C-49(c))
11

12 128. In Waiāhole I the Court identified domestic water uses of the general public,
13 particularly drinking water, as a public trust purpose. (94 Haw. at 137)
14

15 129. Agriculture, while a constitutionally specified public purpose, is not one of the
16 four public trust purposes currently specified by the Court, but can be “accommodated”
17 when it “promotes the best economic and social interests of the people of this state.” (94
18 Haw. 141) [D&O II, p.128, lines 23-26]
19

20 130. In D&O I, the Commission had imposed a higher standard of review for
21 agricultural versus non-agricultural uses, and the Court in Waiāhole I concluded that
22 “such measures lay squarely within the Commission’s appointed function of weighing
23 and negotiating competing interests in regulating the water resources of this
24 state... (N)othing in the record suggests that the Commission’s decision to subject golf
25 course irrigation to different standards or conditions than other uses was arbitrary or
26 capricious.” (D&O I, Conclusions of Law, pp. 26-27; 94 Haw. at 169)
27

28 131. In D&O I, the Commission concluded that “Oahu’s remaining ground-water
29 resources must be directed to its highest and best use. There must be an increased
30 emphasis on water conservation, water reclamation and reuse, and system efficiency
31 improvements. One way to stretch Oahu’s remaining resources is to utilize lower quality
32 water for irrigation purposes, replacing the use of higher quality ground water. Thus,
33 reclaimed water and brackish caprock water should be used for irrigation purposes
34 whenever it is both possible and allowable. (D&O I, Decision and Order, p.1)
35

36 132. The groundwater from the Waipahu-Waiawa Aquifer is of potable water quality.
37 (Transcript of Hearing, April 4, 2001, p. 277, lines 18-20) [Campbell Estate, FOF 46]
38

39 133. According to the City and County of Honolulu, Campbell Estate and PMI should
40 not be given water use permits from leeward ground-water sources merely because there
41 is unallocated permitted ground water available, and they must justify their use of ground
42 water as against the rights the public has in the ground water for domestic use. [D&O II,
43 p. 95, lines 32-36]
44

45 **D. Actual Needs of Field Nos. 115, 116 and 145 (Jefts)**
46

1 134. “Arable land is land that is able to be cultivated but not necessarily in cultivation.
2 Cultivated land goes through the cycle of being plowed, planted, harvested, plowed under
3 and left to rest (with or without cover crop), then plowed and planted, etc. Planted means
4 when the plants are actually present. So you may be planted three or four months a year,
5 but you’re in cultivation continuously throughout the year.” [D&O II at 74]

6
7 135. In Waiāhole II the Court concluded that “(t)he Water Commission’s allocation of
8 2,500 gallons of water per cultivated acre per day appears to be based on the best
9 information currently available.” (105 Haw. at 22)

10
11 136. In Waiāhole II the Court concluded that “Jefts presented sufficient evidence of,
12 and the Water Commission made reasonably clear findings that, Jefts’s actual water need
13 is 2,500 gallons per cultivated acre per day and that Jefts had cultivated or planned to
14 cultivate 188 acres of land in Field Nos. 115, 116, and 145. However...the Water
15 Commission failed to enter any finding that Jefts adduced sufficient evidence to establish
16 that he planned to cultivate all 267 acres of land in Field Nos. 115, 116, and 145.” (105
17 Haw. at 24)

18
19 137. D&O II stated that at the time of the remanded hearings, Jefts had completed
20 clearing the land and putting in the irrigation infrastructure for 188 of the 267 acres, and
21 confirmed the original award of 2,500 gad for 267 acres for Field Nos. 115, 116 and 145,
22 or a total of 0.66 mgd. [D&O II at 137]

23
24 138. In Waiāhole II the Court concluded that, although Jefts implied that he intended
25 to convert all arable lands leased from Campbell Estate into cultivated lands, the Water
26 Commission failed to make any finding that all 267 acres of land were to be cultivated.
27 (105 Haw. at 24)

28
29 139. Mr. Jefts has clarified that he is only cultivating 188 acres **and will not use the**
30 **entire 267 acres.** (Jefts, Transcript, 4/5/05, at 7, line 24 to 8, line 5) [Campbell Estate,
31 FOF 3]

32
33 140. The total needs of Field Nos. 115, 116, and 145 are **therefore** 0.47 mgd (188
34 acres x 2,500 gad) **and not 0.66 mgd (267 acres x 2,500 gad).** (Amended Exhibit B-RD-
35 47) [Campbell Estate, FOF 4]

36
37 **E. Actual Needs of 229 Acres in Field Nos. 146 and 166 (Garst Seeds)**

38
39 141. The Supreme Court has previously affirmed that **Garst’s actual water need is**
40 **1,800 gallons per planted acre and that 115 acres (approximately one-third of the**
41 **total acres) are planted (total actual needs for Field Nos. 146 and 166 (Garst Seeds)**
42 **are based upon the total acreage used in diversified agriculture multiplied by 1,800**
43 **gad).** (105 Haw. at 25, 93 P.3d at 667) [Campbell Estate, FOF5]

44
45 142. In addition to granting 1,800 gad for 115 acres, or 0.21 mgd, the Commission had
46 also granted 2,500 gad for 229 acres, or 0.57 mgd. (D&O II at 137)

1
2 143. **Garst Seed Company originally intended to farm 115 of the 344 acres in**
3 **Field Nos. 146 and 166 for seed crops and use the other 229 acres for diversified**
4 **agriculture. Because its plan to develop diversified agriculture never materialized, it**
5 **is only planting 115 of the total 344 acres for seed crops at a particular time. The**
6 **other 229 acres that is not being used for seed crops will remain part of its crop**
7 **rotation plan. (Mr. Paul Stuart of Garst Seeds testified that Garst Seeds has decided**
8 **not to plant on the additional 229 acres.)** (Stuart, Transcript, 4/5/05, p. 8, line 24 to p.
9 9, line 8; Stuart, written direct testimony, at 2, lines 1-5) [Campbell Estate, FOF 7]

10
11 144. The total needs of Field Nos. 146 and 166 are **therefore** 0.21 mgd (115 acres x
12 1,800 gpd) **and not 0.78 mgd.** (Amended Exhibit B-RD-47) [Campbell Estate, FOF 8]

13
14 **F. ADC's Permit for Systems Losses**

15
16 **1. Water use permit for system losses**

17
18 145. Under the State Water Code: "No person shall make any withdrawal, diversion,
19 impoundment, or consumptive use of water in any designated water management area
20 without first obtaining a permit from the commission (emphasis added)." (Section 174C-
21 48(a))

22
23 146. To obtain a water use permit, it must be established that the proposed use: 1) can
24 be accommodated with the available water source; 2) is a reasonable-beneficial use as
25 defined in section 174C-3; 3) will not interfere with any existing legal use of water; 4) is
26 consistent with the public interest; 5) is consistent with state and county general plans and
27 land use designations; 6) is consistent with county land use plans and policies; and 7) will
28 not interfere with the rights of the department of Hawaiian home lands as provided in
29 section 221 of the Hawaiian Homes Commission Act. (Section 174C-49(a))

30
31 147. The **Waiāhole Ditch** system is comprised of two (2) major parts. The collection
32 **or withdrawal** part of the system consists almost entirely of tunnels starting from
33 Kahana and running through Waiawa. **(This is where the water is collected.)** The
34 delivery **or diversion** part starts from Adit 8, **where the open ditch begins**, and runs
35 downstream to the Leeward plains, **ending at Reservoir 155 in Honouliuli.** [D&O I,
36 FOF 10]

37
38 148. System losses due to leaks are present in any water distribution system. The
39 Waiāhole system was designed to carry flows in excess of 40 mgd. In a large-capacity
40 system with reduced flows, losses will become a more significant factor in the overall
41 flow budget. [D&O II, at 97, lines 16-19]

42
43 149. System losses occur downstream of Adit 8 in the form of evaporation from the
44 open ditch, including from the system's two reservoirs; of leakage from the lined ditches,
45 siphons, pipelines which distribute water to the edges of users' fields, and reservoirs; and
46 of overflow from the two reservoirs. [D&O II, at 97, lines 21-25]

1
2 150. A calculation of “system losses” can be made by taking the amount of water
3 measured at Adit 8, where the tunnel system emerges and the open ditch begins in
4 Waiawa, and subtracting the reported amount of metered usage. Essentially, this
5 calculation of system losses includes any and all flows not actually recorded in the users’
6 meters. [D&O II, at 97, lines 27-30]
7

8 151. Before the three wooden siphons were replaced, a further breakdown of system
9 losses was made by measuring losses from the three wooden siphons, estimating system
10 evaporation from the surface area of the open ditch and reservoirs, and overflow at
11 Reservoir 155 at the end of the system. The remaining losses were collectively
12 categorized as “unmetered flows.” The loss from one of the three siphons was included in
13 the category of unmetered flows, because its losses did not collect in a single location and
14 commingled in a culvert with waters from other sources. [D&O II, at 97, lines 32-39]
15

16 152. At the D&O II hearings, ADC/DOA projected that the 2.02 mgd of system losses
17 it had requested would consist of: 1) no losses from the replaced siphons; 2) 0.45 mgd
18 overflow at Reservoir 155 at the end of the system; 3) 0.07 mgd in evaporation; and 4)
19 1.50 mgd in the residual category, “unmetered losses.” [D&O II, at 98, lines 35-41]
20

21 153. In Waiāhole II, issued June 24, 2004, as to the estimated 1.50 mgd in unmetered
22 losses probably due to leakage and seepage, the Court noted that the Commission found
23 that ADC had “not yet addressed the feasibility and cost of lining the remaining unlined
24 portion of the ditch and/or the two reservoirs.” (105 Haw. at 27) The Court stated that
25 ADC should not have been granted a permit for system losses until the Commission had
26 addressed the feasibility of mitigating the probable 1.50 mgd leakage and seepage, as the
27 Court considered that this was required to show that ADC’s allocation for system losses
28 was a reasonable-beneficial use under §174C-49(a). (105 Haw. at 26-27) [ADC/DOA,
29 FOF 21]
30

31 154. The Commission’s Decision granting ADC a permit for system losses in the
32 amount of 2.0 mgd ordered ADC to address the 1.50 mgd in unmetered losses, thought to
33 be leakage and seepage, through studies as to the probable contribution from unlined
34 portions of the ditch and reservoirs, through feasibility and cost studies, and if
35 appropriate, through subsequent mitigation action. (D&O II at 131-132) [ADC/DOA,
36 FOF 22]
37

38 155. At the 2001 hearing in this case, ADC estimated unmetered losses to be at about
39 1.50 mgd, thought to be mostly seepage and leakage. ADC now believes that this
40 estimate was too low, probably because ADC’s projections were overly optimistic as to
41 the amount of loss reduction that would result from replacing the deteriorated wooden
42 siphons on the system. Losses from one of the three siphons had been included in the
43 category of unmetered flows, because its losses did not collect in a single location
44 and commingled in a culvert with waters from other sources. Unmetered losses
45 stabilized between 1.69 – 1.75 mgd from FY 2002 to FY 2004, as shown in Exhibit L-
46 1109. This 1.69 – 1.75 mgd range is **(the)** probably the baseline unmetered loss for

1 **leakage and seepage in** the system if no major additional mitigative steps are taken.
2 (Lee, Written Direct Testimony, p. 8) [ADC/DOA, FOF 26]

3
4 **2. Section 174C-49(a)(2): reasonable-beneficial use**
5

6 156. The Waiāhole Ditch and tunnel system consists of dikewater development
7 tunnels, surface water intakes, open ditches, gates, flumes, and siphons. The total length
8 of the system is approximately twenty-five (25) miles stretching from Kahana Valley to
9 the Leeward plains. [D&O I, FOF 1,3]

10
11 157. The “North Portal,” at an elevation of approximately 754 feet, is an opening in the
12 *pali* face at ditch level on the windward side and is the last point (near Gate 31) at which
13 ditch waters can be diverted into windward streams (Waiāhole Stream). (D&O II, at 14,
14 lines 19-22; Lee, Written Direct Testimony, 4/5/05, p. 4)

15
16 158. The tunnel system emerges at the south portal Adit 8, at an elevation of
17 approximately 724 feet, where the leeward open ditch system begins. (D&O II, at 14,
18 lines 19-22)

19
20 159. The portion of the tunnel from North Portal to Adit 8 is known as the Main Bore
21 and is approximately 14,500 feet in length. (D&O II, at 14, lines 19-20)

22
23 160. Water collected between North Portal and Adit 8 continues into the leeward ditch
24 system even if the adjustment gate at North Portal is shut down so that no water from the
25 windward tunnels is flowing leeward. The amount of this water is calculated by
26 subtracting the measured North Portal flow from the Adit 8 reading. This amount of
27 water is greatly affected by the leeward Waiawa rainfall, although the increased flow
28 seems to show up several months after the rainy periods. For example, in November
29 2003, the amount of water developed in the Main Bore was about 3.8 mgd, but because
30 of heavy rainfall in the Waiawa area from December to March 2004, the amount of water
31 developed in June 2004 reached a record of 7.55 mgd. (Lee, Written Direct Testimony,
32 4/5/05, pp. 13-14)

33
34 161. ADC has no control of the weather, which determines both the amount of water
35 flowing from Adit 8 and the amount of leeward water usage. (Lee, Written Direct
36 Testimony, 4/5/05, p. 15)

37
38 162. Given the structural design of the **(WWS) ditch system**, ADC cannot stop the
39 flow of **(Waiawa) Main Bore**-developed water from Adit 8 that results in overflow at
40 Reservoir 155 **at the end of the system** during rainy, low-usage periods. (Lee, Written
41 Direct Testimony, 4/5/05, p. 15) [ADC/DOA, FOF 56]

42
43 163. Normally, rainfall in the Kunia area affects overflow at Reservoir 155 more than
44 other factors, as demonstrated in Exhibit L-1114 for the months of October 2002,
45 December 2003, and January 2004. When the soil is sufficiently moistened by rain,

1 farmers tend not to irrigate and Reservoir 155 overflows. (Lee, Written Direct Testimony,
2 4/5/05, p. 14; Exhibit L-1114) [ADC/DOA, FOF 53]

3
4 164. For many months during FY 2004, because of the unusually wet weather in
5 Kunia, the wooden adjustment gate near Gate 31 remained closed and no windward water
6 was diverted to the leeward side. In fact, in calendar year 2004, windward water was sent
7 over for only two days, in July 2004, and the adjustment gate near Gate 31 remained
8 closed for the rest of 2004. From December 2003 to June 2004, water from Adit 8 simply
9 flowed, untouched, into Reservoir 155 and spilled into the ravines at Kunia. (Lee, Written
10 Direct Testimony, 4/5/05, pp. 14-15; Exhibit L-1114) [ADC/DOA, FOF 54]

11
12 165. Compounding the rainy weather in Kunia in FY04 was(is) the unusually high
13 water development between North Portal and Adit 8. ADC saw more frequent and
14 higher-volume overflows at Reservoir 155 in FY 2004 than in the previous several years.
15 As shown in Exhibit L-1109, the average overflow reading at Reservoir 155 for FY 2004,
16 recorded at 1.75 mgd, is more than 7 times the amount recorded in FY 2003. With these
17 kinds of weather conditions, ADC believes it is not possible (**for ADC**) to comply with
18 the 2.0 mgd cap for system losses that was allowed by ADC's permit. (Lee, Written
19 Direct Testimony, 4/5/05, p. 15; Exhs. L-1109, L-1114) [ADC/DOA, FOF 55]

20
21 166. However, while system losses are calculated by measuring the amount of water at
22 Adit 8 and subtracting the reported amount of metered usage, ADC has been reporting
23 system losses as including all overflow from Reservoir 155, which may include runoff
24 from rain that is not part of the water measured at Adit 8. (Exhs. L-1108, L-1109)

25
26 167. ADC has done studies and taken remedial measures in three general areas: 1)
27 quantifiable flows, which are flows where the losses can be seen and at least
28 approximately measured; 2) field observation, which concerns losses that are known to
29 be happening but can't be seen or quantified; and 3) seepage, or the slow loss of water
30 through unlined surfaces into the soil. (Lee, Written Direct Testimony, 4/5/05, p. 2)

31
32 168. As to quantifiable flows, it was determined that replacement of the deteriorated
33 and leaking wooden siphons would eliminate the largest contributing factor to total
34 system losses. In November 2001, the \$1.2 million siphon replacement project that was
35 still ongoing during the 2001 hearing was completed. Average total system losses went
36 down from a peak of 5.5 mgd in FY 2000 to as low as 2.01 mgd in FY 2003. Although it
37 is difficult to quantify exactly how much of the total losses were attributed to the leaks
38 from the three old wooden siphons, it is estimated to be between 2 to 3 mgd. (Lee,
39 Written Direct Testimony, 4/5/05, p. 3)

40
41 169. Another quantifiable flow is the overflow measurement at Reservoir 155 at the
42 end of the system, which is computed by having the overflow go through a 24-inch pipe
43 connected to a flow meter. During heavy rains, the volume of overflow exceeds the
44 capacity of the pipe, so ADC is replacing the pipe with Parshall flumes and data loggers
45 to more accurately measure overflows during heavy rains. (Lee, Written Direct
46 Testimony, 4/5/05, pp. 3-4)

1
2 170. As a mitigation measure to prevent overflow at Reservoir 155, after the 2001
3 hearing, ADC installed an automatic gate opening and closing device at the wooden
4 adjustment gate near Gate 31 **at the North Portal** to allow for quicker adjustments of
5 flows of windward water to the leeward side. When it starts to rain on the leeward side
6 and windward flows are not needed, ADC shuts off the windward flows to the leeward
7 side simply by sending a signal to the adjustment gate near Gate 31. (Lee, Written Direct
8 Testimony, 4/5/05, pp. 4, 14) [ADC/DOA, FOF 12]
9

10 171. ADC daily reviews whether to adjust the adjustment gate near Gate 31, reviewing
11 the projected needs of the day and taking into consideration irrigation schedules and the
12 weather. (2001 Lee, Written Direct Testimony, pp. 12, 16-17) [ADC/DOA, FOF 13]
13

14 172. To reduce the occurrence of overflow, ADC installed a pump at Reservoir 155 to
15 pump water back into the ditch, making the pumped water available for users at the end
16 of the ditch, and began to use Reservoir 225, further up the ditch, to provide capacity for
17 flows that ADC otherwise anticipated would go to Reservoir 155. (Lee, Written Direct
18 Testimony, 4/5/05, pp. 4-5) [ADC/DOA, FOF 14]
19

20 173. Reservoirs 155 and 225 are 3.13 acres and 2.54 acres, respectively, and have
21 usable storage capacities of about 10 mgd each. (Matsuo, Written Direct Testimony,
22 4/5/05, p. 6; Hatton, Written Direct Testimony, Exhibit A-1, at 6, lines 1-3).
23

24 174. ADC's efforts to reduce overflow at Reservoir 155 succeeded in reducing
25 overflow from 0.46 mgd in FY 2001 to 0.24 mgd in FY 2003. (Exhs. L-1108, L-1109)
26 [ADC/DOA, FOF 15]
27

28 175. The second category of remediation, losses that can't actually be seen or
29 measured with reliability (field observation), includes losses due to cracks in the
30 concrete-lined sections of the ditch (leakage), overflow due to silt and mud build-up, and
31 malfunctioning user meters (losses are calculated as the flow at Adit 8 minus metered
32 usage). (Lee, Written Direct Testimony, 4/5/05, pp. 5, 16)
33

34 176. Leakage is different from seepage in an irrigation system like the **(WWS) ditch**.
35 Seepage occurs largely from the percolation of water through the wetted perimeter of the
36 water containment facility, such as an unlined ditch, tunnel, or reservoir, and seepage is
37 governed by the porous makeup of that containment facility and the underlying earthen
38 material, i.e., soil (dirt, sand, lava), grass lining, grouted stone, etc. Leakage, on the other
39 hand, occurs usually from some fault caused either by a failure, normal wear and tear, or
40 physical disturbance such as hairline cracks, shrinkage/washout at joints, tree root
41 intrusions, or aquatic plant growth, that allows water to flow out of its container, whether
42 that container is a ditch, tunnel, siphon, sump, or reservoir, etc. Seepage is more difficult
43 to detect and to eliminate than leakage. (Matsuo, Written Direct Testimony, 4/5/05, pp.
44 2-3) [ADC/DOA, FOF 23]
45

1 177. At the same time as the old wooden siphons were being replaced, ADC started to
2 work on measuring flows at various sections of the ditch to try to pinpoint losses, using
3 standard stream-gauging techniques. ADC concluded that the standard stream gauging
4 method does not work well in the Waiāhole Ditch system due to interruptions by water-
5 user draws and accuracy limitations of the current meter, especially given the small
6 seepage losses it was trying to detect. As a result, ADC relies mainly on visual
7 inspections of the ditch's concrete liners, which have deteriorated over the years. (Lee,
8 Written Direct Testimony, 4/5/05, p. 5)

9
10 178. ADC (**already**) addresses leakage through ongoing visual inspections and makes
11 repairs in concrete ditch liners as defects are discovered. **It noticed that certain**
12 **deteriorated concrete-lined sections, especially below the water lines, had cracks and**
13 **were sources of leakage losses. To reduce this category of losses, ADC focused its**
14 **maintenance efforts on patching and repairing deteriorated concrete linings,**
15 **spending about 300 to 500 man hours annually on this type of repair work from**
16 **2000 to 2003.** (Lee, Written Direct Testimony, 4/5/05, pp. 5-7) [ADC/DOA, FOF 24]

17
18 179. A second item in the category of field observation is silt and mud deposits in
19 certain areas of the ditch bottom, which make the water level higher than usual and can
20 cause water to spill out of the ditch when it is carrying more water than usual, as during
21 rainy weather. At those areas, ADC has removed the silt and mud deposits, resulting in
22 lowering the water level, and has not seen overflow spillage in those particular areas
23 since the work was finished in late 2003. ADC is confident that most of the excess water
24 on rainy days now overflows at the end of the system out of Reservoir 155 and is being
25 accounted for. (Lee, Written Direct Testimony, 4/5/05, p. 6)

26
27 180. The third item in the category of field observation is user meters, which can
28 occasionally malfunction for various reasons, causing them to register lower readings
29 than actual usage. Water used but not accounted for by the meters is counted as part of
30 ADC's system losses. To address this problem, ADC started an annual meter calibration
31 program to randomly check user meters' accuracy. Ten user meters, about 25 percent, are
32 checked annually. ADC informs meter owners when it finds irregularities, and the meters
33 are repaired so that water actually used is not recorded as system losses. (Lee, Written
34 Direct Testimony, 4/5/05, p. 6)

35
36 181. **The third category of remediation is losses due to seepage.** Since the
37 Commission's Decision **in D&O II**, ADC **has** conducted seepage studies involving
38 unlined portions of the **(WWS) ditch**, including the reservoirs. (Lee, Written Direct
39 Testimony, 4/5/05, pp. 5-7) [ADC/DOA, FOF 25]

40
41 182. **(There is substantial evidence in the record that r)Repairs to the Waiāhole**
42 **Ditch, such as lining or enclosing in pipes the still unlined portions of the ditch including**
43 **the supply ditches to Garst Seeds, would significantly reduce(, if not eliminate,) system**
44 **loss due to seepage(, leakage, evaporation and other waste).** (Matsuo, Written Direct
45 Testimony, 4/5/05, pp. 3-4) [Windward Parties, FOF 93]

1 183. Seepage can be assumed to occur at the same rate in all the unlined portions of the
2 **(WWS) ditch.** (Matsuo, Written Direct Testimony, 4/5/05, p. 4) [ADC/DOA, FOF 27]

3
4 184. ADC identified eleven unlined portions of the ditch that were causing seepage
5 losses. (Exhibit L-1112)

6
7 185. **Nine of the portions comprised 28% of the total unlined area, ranging from**
8 **1.0% to 5.2%, while r(R)eservoirs 155 (38.8%) and 225 (33.4%) accounted** for about
9 72% of the unlined surface area in the **(WWS) leeward ditch system** where seepage
10 occurs, so the reservoirs were targeted to be lined first. (Lee, Written Direct Testimony,
11 p. 8; Exhs. L-1111, L-1112) [ADC/DOA, FOF 28]

12
13 186. The most effective method of reducing system loss in the unlined portions of the
14 ditch system would be lining the reservoirs with high-density polyethylene and replacing
15 unlined portions of the waterways with closed conduits; i.e. pipes. Lining the reservoirs
16 would be the most effective, because it would seal off the entire wetted area with an
17 impermeable barrier that would eliminate seepage. Enclosing the 1000 or so feet of
18 unlined open ditch in pipes would eliminate both seepage and evaporation from that
19 portion of the ditch. (Matsuo, Written Direct Testimony, 4/5/05, p. 3)

20
21 187. The Army Corps of Engineers 2002 report to ADC **(also)** recommended that ADC
22 line Reservoirs 155 and 225 and replace the unlined portions of the ditch system with
23 pipes. **The unlined ditch portion is about 1000 feet in length and is a supply ditch to**
24 **Garst Seed's reservoir.** (Matsuo, Written Direct Testimony, 4/5/05, pp. 3-4) [Windward
25 Parties, FOF 101]

26
27 188. In contrast with lining Reservoirs 155 and 225, lining or enclosing in pipe the
28 1000 or so feet of unlined ditch near the end of the ditch will make only a small dent in
29 seepage reduction, as it is a very small portion of the ditch **and only 4.0% of the total**
30 **unlined area.** (Matsuo, Written Direct Testimony, 4/5/05, pp. 3-4; Lee, Transcript,
31 4/5/05, at 71, lines 4-9; Exhs. L-1111, L-1112) [ADC/DOA, FOF 29]

32
33 189. To address seepage in Reservoirs 155 and 225, the Hawaii Department of
34 Agriculture (HDOA), as local sponsor, initiated a project that the Army Corps of
35 Engineers (Corps) is undertaking that will line both reservoirs with high-density
36 polyethylene, a durable, impermeable material that prevents seepage. (Lee, Written
37 Direct Testimony, 4/5/05, p. 9; Matsuo, Written Direct Testimony, 4/5/05, pp. 3, 5)
38 [ADC/DOA, FOF 30]

39
40 190. Through HDOA, state matching funds have been reserved for the Corps?
41 reservoir-lining project, **so the project is feasible. It would not be feasible for ADC to**
42 **implement a project of this scope if relying on state funds alone).** (Lee, Written Direct
43 Testimony, 4/5/05, pp. 9-11; Lee, Transcript, 4/5/05, at 65, lines 15-18) [ADC/DOA,
44 FOF 31]

45

1 191. The total project cost for lining Reservoirs 155 and 225 if ADC were to fund this
2 project by itself is estimated at between \$3.2 to \$4.9 million (**dollars**). (Matsuo, Written
3 Direct Testimony, 4/5/05, pp. 5-6) [ADC/DOA, FOF 32]
4

5 192. The Corps completed a preliminary study for the reservoir-lining project in 2002,
6 has awarded a design contract for this work, and the project should be going out to bid
7 when the design is completed and approved. A Corps project that reaches the design
8 stage like the (**WWS**) reservoir-lining project will go forward as long as the State
9 provides its matching cost share. Those state matching funds have been reserved for this
10 project. (Lee, Written Direct Testimony, 4/5/05, p. 9; Matsuo, Written Direct Testimony,
11 4/5/05, pp. 7-8) [ADC/DOA, FOF 33]
12

13 193. Assuming that the design contract awarded by the Corps is completed by the
14 middle of 2005, as projected, and assuming the usual timelines on a joint federal/state
15 construction project of this type, it is estimated that the reservoir-lining project could be
16 completed sometime between December 2007 and June 2008 (Matsuo, Transcript,
17 4/5/05, at 83, lines1-18; and 85, lines 1-10) [ADC/DOA, FOF 34]
18

19 194. When both Reservoirs 155 and 225 are lined, it is expected that unmetered losses
20 will decrease by 0.398 mgd to 0.759 mgd. (Lee, Written Direct Testimony, 4/5/05, p. 9)
21 [ADC/DOA, FOF 35]
22

23 195. ADC is continuing to seek funding to address system losses due to seepage from
24 other unlined portions of the ditch and has approached a federal agency for project
25 funding that requires 50% state matching funds. (Lee, Written Direct Testimony, p. 10)
26 [ADC/DOA, FOF 37]
27

28 196. In August 2004, ADC submitted a pre-proposal to the U.S. Department of
29 Commerce, Economic Development Agency, for a \$300,000 project for the lining,
30 piping, or repairing of other unlined portions of the ditch, which requires 50% state
31 matching funds. ADC is still awaiting word on its application. (Lee, Written Direct
32 Testimony, 4/5/05, p. 10)
33

34 197. As a state entity, ADC does not have sole control over its finances such that ADC
35 can decide how much of its resources should be invested in mitigating water loss. To
36 fund any substantial mitigation measures, ADC or HDOA must go to the state legislature
37 for funding and compete with many other state purposes that the legislature views as
38 important. The legislature can and has “taken” ADC’s revolving funds for general fund
39 purposes when it was deemed necessary. (Lee, Written Direct Testimony, p. 11)
40 [ADC/DOA, FOF 38]
41

42 198. ADC does not have the option to raise (**WWS**) water rates for leeward users in
43 order to fund mitigation measures. These water rates were established by a 20-year
44 contract with the leeward users’ coop that was signed in 1999 when ADC purchased the
45 (**WWS**) ditch system. The contract provides that rate increases are based on the producer
46 price index. (Lee, Transcript, 4/5/05, at 67, line 24, to 68, line 14) [ADC/DOA, FOF 40]

1
2 199. **As previously described, a(A)**t the 2001 hearing in this case, ADC estimated
3 unmetered losses to be at about 1.50 mgd, thought to be mostly seepage and leakage.
4 ADC now believes that this estimate was too low, probably because ADC's projections
5 were overly optimistic as to the amount of loss reduction that would result from replacing
6 the deteriorated wooden siphons on the system. Unmetered losses stabilized between 1.69
7 – 1.75 mgd from FY 2002 to FY 2004, as shown in Exhibit L-1109. This 1.69 – 1.75 mgd
8 is **(the)** probably the baseline unmetered loss for the system **(if no) before** major
9 additional mitigative steps, **including lining Reservoirs 155 and 225,** are taken. (Lee,
10 Written Direct Testimony, at 8, lines 5-13) [ADC/DOA, FOF 26]
11

12 3. Remaining criteria for a permit under Section 174C-49(a)

13

14 200. **In D&O I, the Commission previously found that i(I)**t is in the public interest
15 to direct water to the area where it is needed. (Exh. L-500, filed 4/3/96, Nakatani, Written
16 Direct Testimony, at 4, lines 6-7) [ADC/DOA, FOF 63]
17

18 201. **In D&O I, the Commission previously found that t(T)**he primary concern of
19 the State is the maintenance and the health, safety, and welfare of the people. The priority
20 of State policy with respect to use of water has always been domestic consumption,
21 followed by the creation of jobs and economic development through agriculture and the
22 preservation of the agricultural land base. (D&O I, FOF 805; Pai, Transcript, 11/28/95, at
23 19, lines 3-8) [ADC/DOA, FOF 60]
24

25 202. **In D&O I, the Commission previously found that t(T)**he use of Waiāhole
26 Ditch water for diversified agriculture on lands designated as priority agricultural lands is
27 reasonable and consistent with state land use plans and policies. (D&O I, FOF 810;
28 Exhibit L-500, filed 4/3/96, Nakatani, Written Direct Testimony, Exhibit L-500, p. 708;
29 Schwind, Transcript, 12/7/95, p. 129; Schwind, Written Direct Testimony, 9/18/95, at 13,
30 lines 4-9) [ADC/DOA, FOF 64]
31

32 203. In its 1997 Decision, **D&O I,** the Commission found all the water use permit
33 applications to be consistent with the Hawaii State Plan and land use classifications, as
34 well as with the County General Plan. (D&O I, FOF, p. 123, paragraph I; FOF 827)
35 [ADC/DOA, FOF 65]
36

37 204. Support of agriculture in Central Oahu is part of the City of Honolulu's General
38 and Development Plans. (D&O I, FOF 836) [ADC/DOA, FOF 66]
39

40 205. In its 1997 Decision, the Commission found that the leeward applicants' existing
41 and proposed agricultural operations are consistent with land use designations for these
42 parcels of land in the City's Ewa and Central Oahu Development Plans. (D&O I, FOF
43 838; Soon, Transcript, 11/14/95, at 72, lines 10-25; 73, lines 1-23) [ADC/DOA, FOF 67]
44

45 206. The Department of Hawaiian Homelands applied for a water reservation for 0.410
46 mgd, but the Commission did not take up any reservation requests in this proceeding and

1 stated its intent to do so after the conclusion of this contested case. (D&O 1, FOF 602;
2 D&O, p. 13) [ADC/DOA, FOF 68]

3
4 207. Moreover, the Hawaiian Homes Commission has a “first call” on water under
5 HHCA Section 221, and all water use permits are subject to the requirements of the
6 Hawaiian Homes Commission Act (D&O I, Conclusions of Law, p. 27; “Standard Water
7 Use Permit Conditions,” #6)

10 **IV. Conclusions of Law**

12 **A. Designation of an IIFS for Certain Windward Streams**

14 The Court in **Waiāhole II** concluded: “If, on remand, the Water Commission is
15 able to support its conclusion with findings quantifying the windward streams’ flows
16 during the 1960s, then the 1960s testimonials would be sufficient to set the IIFS at the
17 levels established in the D&O II, inasmuch as: (1) more water would be added to the
18 streams than that which adequately supported the streams’ ecosystem in the 1960s see
19 D&O II at 104; (2) the increase in stream flow over the 1960s stream flow would be
20 beneficial in light of the Water Commission’s finding that increasing a stream’s flow
21 results in stream habitat improvement, see D&O II at 104; and (3) appurtenant rights,
22 riparian uses, and existing uses would be accounted for by further increases in stream
23 flow, see D&O II at 112. The foregoing would then adequately establish that instream
24 values would be protected to the extent practicable for interim purposes (*footnote*
25 *omitted*.)” (105 Haw. at 12)

27 1. Stream flows are expressed in base (ground-water contribution) and average (the
28 addition of rain and runoff to base flow) flows. The changes to the affected windward
29 streams from construction of the Waiāhole Ditch are determined by examining the base
30 flows of the streams, because construction of the Waiāhole Ditch affected the flows of
31 certain windward streams by decreasing the ground-water contribution to stream flows.
32 [FOF 27-28, 30, 31, 33, 35]

34 2. The post-Ditch base flows of the affected windward streams are as follows: 1)
35 Waiāhole Stream: 3.9 mgd at its confluence with Waianu Stream; 2) Waianu Stream: 0.5
36 mgd at its confluence with Waiāhole Stream; 3) Waikāne Stream: 1.4 mgd at altitude of
37 75 feet; and 4) Kahana Stream: 11.2 mgd at altitude of 15 feet. [FOF 37]

39 3. These were the base flows in the 1960s as well as when the IIFS for windward
40 O’ahu streams were established in May 1992 as “that amount of water flowing in each
41 stream on the effective date of this standard.” (HAR Ch. 13-169, Section 13-169-49.1)
42 Stability in ditch flows started in 1938. Prior to that, there were much higher flows during
43 the time when the stored waters in the dikes pierced by the tunnel system were being
44 depleted. [FOF 17] Because the tunnel system and the dike-impounded reservoirs have

1 been in steady-state conditions since then (except for possible exceptions discussed later),
2 there is no further depletion of ground-water storage in the aquifers. [FOF 18]

3
4 4. In D&O I, the IIFS for Waiāhole Stream was increased by 4 mgd to 7.9 mgd and
5 by 2 mgd to 2.5 mgd for Waianu Stream in December 1997. (D&O I, at page 3 of the
6 Decision and Order) In December 2001, D&O II: 1) amended the increase in the IIFS for
7 Waiāhole Stream from 4.0 mgd to 4.8 mgd for a new IIFS of 8.7 mgd; 2) amended the
8 increase in the IIFS for Waianu Stream from 2 mgd to 3 mgd, for a new IIFS of 3.5 mgd;
9 3) increased the IIFS for Waikāne Stream by 2.1 mgd to 3.5 mgd; and 4) kept the IIFS for
10 Kahana Stream at 11.2 mgd. (D&O II, at 112) In addition, for Waiāhole Stream, the 8.7
11 mgd could be reduced to 6.6 mgd no more than five (5) non-consecutive days a month;
12 and for Waianu Stream, the 3.5 mgd could be reduced to 3.0 mgd no more than five (5)
13 non-consecutive days a month;

14 Thus, the base flows of the streams in the 1960s compared to the increases in
15 flows under the amended IIFS in D&O II are as follows:

	<u>1960s</u>	<u>D&O II</u>	<u>Percent Increase</u>
18 Waiāhole Stream:	3.9 mgd	8.7 mgd	124%
19 Waianu Stream:	0.5 mgd	3.5 mgd	600%
20 Waikāne Stream:	1.4 mgd	3.5 mgd	150%
21 Kahana Stream:	11.2 mgd	11.2 mgd	no change

22
23 For the variable flows, the 6.6 mgd for Waiāhole Stream is still 2.7 mgd (69%)
24 greater than its flow in the 1960s, and the 3.0 mgd for Waianu Stream is still 2.5 mgd
25 (500%) greater than its flow in the 1960s.

26
27 5. Three events have taken place since the mid-1960s that might have impacted base
28 flows, the first of which could have decreased stream flow and the latter two, increased
29 stream flows: 1) extension of the Uwau Tunnel in 1964 by about 270 feet, about 177 feet
30 of which were past the Ko`olau crest into the leeward side [FOF 13]; 2) cessation of
31 pumping in 1982 of 1 to 1.5 mgd of water from Waiāhole Stream at 450 feet elevation
32 into the Ditch [FOF 14]; and 3) installation of a bulkhead in 1992 at the Kahana Tunnel
33 [FOF 15]. However, none of these events would have significantly affected the
34 difference between the 1960s flows and the amended IIFS under D&O II, as explained
35 below.

36
37 6. Approximately 4.8 mgd is developed in the 1964 Uwau Tunnel extension [FOF
38 21], which is 270 feet long, 177 feet of which are into the leeward side of the mountain's
39 crest. [FOF 13] However, extension of the Uwau Tunnel only developed a net of 2.77
40 mgd. Before the extension, the main part of the Uwau Tunnel on the windward side of the
41 Ko`olau crest developed 10.73 mgd. After the extension, the main part developed 8.7
42 mgd and the extension developed 4.8 mgd. Thus, some of the water leeward of the
43 original Uwau Tunnel was already finding its way into the main Uwau development
44 tunnel before the extension was constructed. [FOFs 21-22] Therefore, nearly half of the
45 stored water that flowed windward from the dikes that were pierced by the Uwau Tunnel
46 extension were already flowing windward before the extension was built, and at least

1 some, if not all, of the water further developed by the extension would have flowed
2 leeward before the 1964 extension disrupted the dike systems and diverted this water to
3 the windward side. These findings are compatible with expert opinion that the ground-
4 water divide lies somewhere to the leeward along most of the crest; i.e., somewhere
5 within the 177 feet of the Uwau Tunnel extension that is leeward of the crest. [FOF 13,
6 27] Thus, under natural conditions, little, if any, of the 2.77 mgd further extracted from
7 the Uwau Tunnel extension into the leeward side would have contributed to the base
8 flows of Waianu and Waiāhole Streams (Uwau Stream is a tributary of Waianu Stream,
9 which is in turn a tributary of Waiāhole Stream).

10
11 7. In D&O II, the Commission referred to the net 2.77 mgd developed by the
12 leeward extension of the Uwau Tunnel: “A minimalist approach to restoring stream flows
13 could look to the period of the 1960s and see what stream-flow-related changes occurred
14 during that time that could have contributed to the decline in stream vitality. One such
15 event did occur—extension of the Uwau Tunnel in 1964, which could have reduced flow
16 in Waianu and Waiāhole Streams by 2.8 mgd (emphases added).” (D&O II, at 103, lines
17 6-10) That analysis was not a conclusion by the Commission that the ground-water
18 contribution to Waiāhole and Waianu Streams had been depleted by 2.8 mgd. In that
19 analysis, the Commission only concluded that there was one event that might have been
20 related to the testimony of the loss of stream vitality that was present until the 1960s and
21 identified the Uwau Tunnel extension as that event. But the Commission’s analysis then
22 went further: “But in 1982, pumping from Waiāhole Stream up into the tunnel system of
23 1 to 1.5 mgd (per day) was discontinued. Therefore, under the minimalist approach,
24 either 2.8 mgd would be added to Waiāhole and Waianu Streams, or 1.3 to 1.8 mgd to
25 Waianu Stream (because 1 to 1.5 mgd had been ‘returned’ to Waiāhole Stream by the
26 cessation of pumping).” (D&O II, at 103, lines 10-14) Thus, the analysis in D&O II is not
27 incompatible with the Commission’s conclusion here that it was more likely that the net
28 development of 2.77 mgd in the leeward extension of the Uwau Tunnel was flowing
29 leeward before the dikes were breached and that water was later diverted into the main
30 Uwau Tunnel.

31
32 8. An issue raised by the Court related to COL 6-7, *supra*, is a footnote in **Waiāhole**
33 **II**: “Although the Water Commission refers to a 10 mgd flow measurement taken from
34 Waiāhole stream during 1965 while discussing the contradiction in testimony regarding
35 the extension of the Uwau tunnel, it is unclear whether the measurement itself was a
36 finding of fact by the Water Commission. D&O II at 34. If so, this measurement does not
37 support the Water Commission’s conclusion that the 8.7 mgd allocated to Waiāhole
38 stream is more than in the 1960s. In any event, the Water Commission ‘must make its
39 findings reasonably clear’ because this court ‘should not be left to guess, with respect to
40 any material question of fact...’ **Waiāhole I**, 94 Hawai‘i at 157-58, 9 P3d. at 469-70.”
41 105 Haw. at 10, n.7)

42 The Court was referring to the following discussion in D&O II between two
43 witnesses on whether or not any impact of the Uwau Tunnel extension on Waiāhole
44 Stream’s flow would have been visible: “Hatton, to the contrary, was of the opinion that
45 it would have been hard to see the impact, if any, of the extension of the Uwau tunnel,
46 because of the variability of rainfall. In 1965, after the tunnel was extended, the rainfall at

1 the Waiāhole rain gauging station at elevation 750 feet was 200 inches, almost double the
2 rainfall of 1961, and the stream gage in Waiāhole Stream at elevation 250 feet registered
3 an average of 10 mgd in that year (1965).” [D&O II, at 34, lines 38-43]

4 Hatton was referring to the *average* flow (base flow plus rain and runoff) for only
5 the year 1965, which was a particularly rainy year, and his point was that any impact
6 would have been hard to see, including the stopped pumpage from Waiahole Stream in
7 1982, given the natural variability in flow due to rainfall. (D&O II, at 34, lines 43-46)
8 The long-term average flow for Waiāhole Stream is 6.9 mgd. [FOF 37]) Average flows
9 will vary with rain and runoff, while base flows are the ground-water contribution to
10 stream flows and the basis for establishing the IIFS. The base flow was 3.9 mgd during
11 1965 and was increased by 4.8 mgd under D&O II to 8.7 mgd.

12
13 9. Suppose we do assume that the combined base flows of Waiāhole and Waianu
14 Streams decreased by a maximum of 2.77 mgd because of the Uwau Tunnel extension.¹⁸
15 In relation to the base flows in the 1960s and at the time of the amended IIFS in D&O II,
16 the combined base flows of Waiāhole and Waianu Streams could have decreased by a
17 maximum of 2.77 mgd. In the 1960s, the combined base flows of Waiāhole and Waianu
18 Streams were 4.4 mgd. [COL 4, *supra*] Assuming that their combined base flows
19 decreased by all of the 2.77 mgd from the 1964 Uwau Tunnel extension, their combined
20 base flows at the time of D&O II would have been 1.63 mgd. The amended IIFS of these
21 two streams added a total of 7.8 mgd to their base flows. [COL 4, *supra*] Thus, under the
22 amended IIFS of D&O II, their combined base flows would be 9.43 mgd (1.63 mgd + 7.8
23 mgd), still more than twice their combined base flows of 4.4 mgd in the 1960s.

24
25 10. In 1982, the 1 to 1.5 mgd pumped from Waiāhole Stream at 450 feet altitude
26 (above its confluence with Waianu Stream) was discontinued. [FOF 14] However, the
27 record does not show when pumping was initiated or whether pumping was taking place
28 in the 1960s. Therefore, relative to the time when D&O II added to the base flow of
29 Waiāhole Stream, its base flow in the latter half of the 1960s might have been 1 to 1.5
30 mgd lower, or it might have been the same. D&O II amended the IIFS of Waiāhole
31 Stream by adding 4.8 mgd to the existing base flow. Relative to the flow of Waiāhole
32 Stream in the 1960s, the base flow under the amended IIFS of D&O II is 4.8 mgd greater.
33 [COL 4, *supra*] If 1 to 1.5 mgd were being extracted from the stream prior to and during
34 the 1960s and ceased in 1982, then the amended IIFS under D&O II would be 5.8 to 6.3
35 mgd greater than the base flow in the 1960s.

36
37 11. Installation of the bulkhead in Kahana Tunnel in 1992 reduced Ditch flows from
38 the tunnel by approximately 1.5 mgd by 1993. [FOF 24] Kahana Stream, down-gradient
39 from Kahana Tunnel, lies only partly in the dike complex and mostly in the marginal dike
40 zone, and its flow is about three times the flow of the Kahana Tunnel, in contrast to
41 Waiāhole, Waianu and Waikāne Streams, which are down-gradient from Uwau, Waikāne
42 #1 and Waikāne #2 Tunnels and which lie entirely in the dike complex. [FOF 30] Thus,
43 Kahana Stream was affected relatively less than the other three streams by diversion of

¹⁸ Both Waiāhole Stream and its tributary, Waianu Stream, lie down-gradient from Uwau Tunnel, so any impact of Uwau Tunnel could be on both streams, and there is no way to quantify the separate impacts. See, D&O II at 18, lines 40-43; 34, line 30 to 35, line 4; 103, lines 8-10.

1 ground water by the Ditch, and this is reflected by the amount of water developed in the
2 tunnels: 2.6 mgd by Kahana Tunnel before it was bulk-headed, 5.3 mgd by the two
3 Waikāne Tunnels, and 13.5 mgd by the Uwau Tunnel and its extension. [FOFs 19-21]
4 Therefore, while some of the 1.5 mgd reduction in Ditch flows from bulk-heading
5 Kahana Tunnel may discharge into Kahana Stream, it is likely less than 1.5 mgd.¹⁹ Any
6 impact on Kahana Stream from the bulkheading of Kahana Tunnel would result in an
7 increase in its base flow, and relative to its base flow in the 1960s, its base flow at the
8 time of D&O II would be up to 1.5 mgd greater.²⁰

9
10 12. The Commission concludes that none of the three events analyzed in COL 5-11,
11 *supra*, had a significant impact on the 1960s' base flows of the four windward streams.

12
13 13. Therefore, under D&O II: a) the amended IIFS added more water than that which
14 adequately supported the streams' ecosystem in the 1960s; b) the increase in stream flow
15 over the 1960s' stream flows would be beneficial in light of the Commission's finding
16 that increasing a stream's flow results in stream habitat improvement; and c) appurtenant
17 rights, riparian uses and existing uses would be accounted for by further increases in
18 stream flow, thereby adequately establishing that instream values would be protected to
19 the extent practicable for interim purposes. (105 Haw. at 12)

20 21 22 **B. The 2.2 mgd of Unpermitted Water**

23
24 In Waiāhole II, the Court first restated its conclusion in Waiāhole I: "(T)he
25 Commission should incorporate any allowances for scientific uncertainty into its initial
26 determination of the minimum standard. Any flows in excess of this standard shall
27 remain in the stream until permitted and actually needed for offstream use, in keeping
28 with the policy against waste and in recognition that the standard merely states an
29 absolute minimum required under any circumstances. These unallocated flows, however,
30 will not constitute a distinct category or quantity, but will fluctuate according to
31 variations in supply and demand." (105 Haw. at 13)

32
33 However, the court then went on to state: "On remand, it appears that the 2.2 mgd
34 were not allocated. The Windward Parties argue that by failing to include the unpermitted
35 2.2 mgd in the IIFS, the Water Commission fails to protect instream values to the extent
36 practicable. Although nothing in the record indicates that the Water Commission created
37 a separate and distinct category by not including 2.2 mgd of unpermitted water in the

¹⁹ The 1.5 mgd decrease from the 1992 bulkheading of Kahana Tunnel dates to 1993. The purpose of the bulkheading was to store water in the tunnel, so in 1993, it was likely that storage was not complete and equilibrium had not been reached between recharge and discharge.

²⁰ D&O II considered but made no changes in the IIFS for Kahana Stream, as its base flow is only moderately affected by the Ditch and was estimated at 78% of historical levels. Moreover, no evidence was submitted in support of amending its IIFS. On the first remand, the Court had only ordered that an IIFS be addressed for Waikāne Stream as well as for Waiāhole and Waianu Streams. All of the testimony on stream conditions in the 1960s involved Waiahole, Waianu and Waikane Streams, as well as on similar conditions in Hakipu'u and Punalu'u Streams, which are not affected by the Waiāhole Ditch system. [D&O II, at 29-34]

1 IIFS, the Water Commission, nevertheless, failed to make any findings regarding the 2.2
2 mgd, leaving this court without a means to decide the issue.” (105 Haw. at 13)

3
4 14. Under the amended IIFS of D&O II, 9.9 mgd was added to Waiāhole, Waianu and
5 Waikāne Streams [FOF 46], leaving 17.1 mgd²¹ for offstream uses. [FOF 47] 10.01 mgd
6 were issued for Leeward O`ahu agricultural water use permits [FOF 48], and 3.29 mgd
7 were issued for Leeward O`ahu water use permits, other uses. [FOF 49] Therefore, 3.80
8 mgd remained unpermitted and available for future water use permits. [FOF 50]

9
10 15. The “unpermitted 2.22 mgd” was part of the 3.80 mgd and was not created as a
11 separate and distinct category by the Commission. [FOF54] In Figure 2 of D&O II, the
12 allocation of the 27 mgd in Ditch flows was summarized as consisting of the increase in
13 base flows to Waiāhole, Waianu and Waikāne Streams, permitted agricultural uses,
14 permitted other uses, proposed agricultural reserve, and non-permitted ground water.
15 [D&O II, at 152] However, Figure 2 did not explicitly state that the latter two categories
16 were subcategories of the 3.80 mgd that remained unpermitted and available for future
17 water use permits after the IIFS were amended and water use permits were issued for
18 both agricultural and other offstream uses.

19
20 16. In D&O I, the Commission had recognized “agricultural uses” totaling 12.22
21 mgd, based on past agricultural usage of Waiāhole Ditch system water. [FOF 51]
22 Agricultural water use permits for 10.64 mgd were issued, leaving 1.58 mgd of the 12.22
23 mgd for a proposed “agricultural reserve” that was to be established under future formal
24 rule making procedures. [FOF 52] In D&O I, the unpermitted water equaled 6.97 mgd:
25 1.58 mgd for the proposed agricultural reserve and a remainder of 5.39 mgd. [FOF 53] In
26 D&O II, the amounts of the proposed agricultural reserve and the remaining unpermitted
27 water were incorrectly stated. D&O II issued 10.01 mgd for Leeward O`ahu agricultural
28 water use permits, so the proposed agricultural reserve should have been 2.21 mgd (12.22
29 mgd minus 10.01 mgd) and not 1.58 mgd. [FOF 55] Thus, the corrected amounts that
30 comprised the 3.80 mgd in unpermitted water in D&O II are: 1) 2.21 (and not 1.58) mgd
31 for a proposed agricultural reserve; and 2) a remainder of 1.59 (and not 2.22) mgd for
32 other future offstream uses. [FOF 56]

33
34 17. In both D&O I and II, the Commission stated its intent to reserve part of the
35 unpermitted water for agricultural use water permits, as authorized in the Water Code
36 under HRS Section 174C-49(d) and HAR Section 13-171-60. The Commission did not
37 formally set aside an agricultural reserve in D&O I or II and only stated the reason and
38 amount for such future actions.²² If and when the Commission designates such an

²¹ 3.7 mgd of the 17.1 mgd comes from the leeward portion, between the North Portal crest gauge station and the gauging station at the leeward end of the main bore at Adit 8. [FOF 26]

²² “The 1.58 mgd for the proposed ‘agricultural reserve’ is based on the non-permitted balance of the 12.22 mgd ‘agricultural uses.’ Formal rule making procedures to establish an ‘agricultural reserve’ will be conducted after the contested case proceedings. When established by rule making, the agricultural reserve will be available for any agricultural uses through the water use permitting process. If a contested case hearing is requested during the water use permit process for a reserved amount, standing will be determined mainly among competing agricultural users, thereby limiting the scope, duration, and expense of the proceeding.” (D&O I, Decision and Order, at 7) In D&O II, Figure 2 divided the 3.80 mgd of unpermitted

1 agricultural reserve from the remaining water available for offstream uses, the
2 agricultural reserve may be used only for agricultural purposes, while the remainder may
3 be used for both agricultural and non-agricultural purposes. These delineations are
4 authorized under the Water Code.

5
6 18. The Commission is not compelled to include the remaining unpermitted water in
7 the IIFS. In D&O II, the Commission had treated the unpermitted water in exactly the
8 way that the Court has stated: “Any flows in excess of this standard (the IIFS) shall
9 remain in the stream(s) until permitted and actually needed for offstream use, in keeping
10 with the policy against waste and in recognition that the standard merely states an
11 absolute minimum required under any circumstances. These unallocated flows, however,
12 will not constitute a distinct category or quantity, but will fluctuate according to
13 variations in supply and demand.” (105 Haw. at 13) The identification in Figure 2 of
14 D&O II of the remaining 3.80 mgd of unpermitted water as consisting of a proposed
15 agricultural reserve and water available for other uses only reflected the Commission’s
16 intention to establish an agricultural reserve by formal rulemaking for part of the
17 remaining unpermitted water.

18
19 19. In conclusion, the “unpermitted 2.2 mgd” was not a separate category but the
20 amount the Commission had indicated in D&O I that would be remaining after an
21 agricultural reserve was created in the future. This intent was carried over into D&O II
22 through Figure 2, although: 1) the Decision and Order should have provided a reiteration
23 of the intent in D&O I to create an agricultural reserve; and 2) the correct amount should
24 have been amended to 1.59 mgd, because of reductions in the agricultural water use
25 permits, leaving more for the proposed agricultural reserve and thus less for other future
26 uses.

27
28 **C. Practicability of PMI and Campbell Estate Using Alternative Ground**
29 **Water Sources**

30
31 20. In D&O II, the Commission identified three reasons for its conclusion that PMI
32 and Campbell Estate had no practical alternative to the use of Waiāhole Ditch water for
33 their irrigation needs: 1) both PMI and Campbell Estate had no practicable alternative
34 sources available; 2) the physical impact on the Ditch and the economic impact on the
35 continued operational viability of the Ditch if Campbell Estate is required to use ground-
36 water sources makes such an alternative to use of Waiāhole Ditch water not practical; and
37 3) if water from the Waipahu-Waiawa Management Area of the Pearl Harbor aquifer
38 were to replace Ditch water for Campbell Estate and PMI, water from windward public
39 trust resources that are available for non-trust purposes after measures have been taken to
40 enhance those windward public trust resources, would be given priority over a leeward
41 public trust resource. [FOF 59]
42

water into 2.22 mgd non-permitted ground water and 1.58 mgd proposed agricultural reserve without identifying the combined amounts as the 3.80 mgd in remaining unpermitted water available for offstream uses. (D&O II, Figure 2, at 152)

1 21. The Court in **Waiāhole II** responded as follows: 1) PMI met its burden of
2 establishing the absence of practicable alternative water resource but the Commission
3 entered no FOF or COL as to whether Campbell Estate satisfied its burden of establishing
4 that no practicable alternatives existed;²³ 2) the Commission did not make any finding as
5 to the water flow required to maintain the ditch’s economic and operational viability; and
6 3) considering whether alternative water resources are practicable innately requires
7 prioritizing among public trust resources. [FOF 60]
8

9 22. Even though the Court found that PMI had met its burden of establishing the
10 absence of practicable alternative water resources, the Court concluded that the
11 Commission failed to articulate with reasonable clarity whether it also had relied on the
12 other two criteria in reaching its decision. [FOF 61]
13

14 23. In D&O II, the three criteria were intended by the Commission to be separate and
15 independent of each other, and that if any were to be invalidated by the Court, the status
16 and rationale of the other criteria would not be affected. As the Court in **Waiāhole II**
17 found that this was not articulated with reasonable clarity, the Commission confirms that
18 the three criteria were exclusive of each other, and the absence of practicable alternative
19 water resources, as analyzed in the three ground-water alternatives considered by PMI
20 [FOF 62-65], was the basis for the Commission’s decision to confirm the water use
21 permit for PMI. In the granting of a permit to PMI for 0.75 mgd of ditch water to irrigate
22 its golf course project, there was substantial evidence in the Record that PMI had no
23 practicable alternative ground-water sources. In its incorporation by reference of all prior
24 FOF in this case, for D&O II, the Commission deletes page 90, lines 27-31; and page 95,
25 lines 44 to page 96, line 8.
26

27 24. Given the Court’s analysis and conclusions in **Waiāhole II**, the Commission
28 concludes that it must first analyze whether alternative water resources are reasonably
29 available. If the Commission then concludes that an alternative water resource is
30 reasonably available and if that alternative is also a public trust resource, then the
31 Commission, in determining practicable availability, must prioritize among the public
32 trust resources.²⁴

²³ The Commission did in fact enter FOF and COL for Campbell Estate at D&O II, p. 90, line 38 to p. 94, line 14, and at p. 125, line 4 to p. 126, line 13. These FOF and COL were not numbered. However, the FOF and COL for PMI were also not numbered, yet the Court identified them as such. In referring to the Commission’s findings in D&O II at pp. 94-95, the Court stated: 1) “(i)n its FOFs, the Water Commission found that PMI considered three ground-water alternatives,” 105 Haw. at 17-18; and 2) “(b)ased on the foregoing, PMI adduced sufficient evidence, in the form of written and oral testimony, to meet its burden of establishing the absence of practicable alternatives. Moreover, the Water Commission analyzed each alternative and explained why they were impracticable.” 105 Haw. at 18.

²⁴ The Commission would not have characterized prioritizing among public trust resources as part of a practicability analysis but as a policy issue within the purview of the Commission, as long as its reasons for prioritizing were reasonable and transparent. In retrospect, the Commission in D&O II should have expanded on its interpretation that the Court’s directive that the Commission had to consider leeward ground water as an alternative was a directive to give absolute priority to windward dike-enclosed water that interacted with windward streams over leeward ground water. Under such an interpretation, the Commission should have: 1) extended its analysis to state that it considered water use permits that could be satisfied by more than one public trust resource to be within the policy purview of the Commission to

1
2 25. For PMI, the Commission’s analysis ends at the first step as described in COL 24,
3 *supra*, because there are no reasonable alternatives to ditch water.
4

5 26. Prior to the April 5, 2005 hearings on second remand, the Windward Parties filed
6 a motion to deny PMI’s water use permit application on the grounds that PMI had to
7 again demonstrate its actual water needs in light of PMI’s current usage and the fact that
8 the golf course was not operating. That motion was denied by the Hearing Officer at the
9 April 5, 2005, hearing on the basis that the issues were limited to those on remand by the
10 Court—i.e., whether or not there were practicable alternatives for PMI—and that the
11 subject of the motion would be referred to the Commission and its staff for follow-up and
12 decision. [FOF 67] PMI’s water use permit is as of December 28, 2001, the date D&O II
13 was issued by the Commission. Standard Water Use Permit Condition #15 for that permit
14 states that, under HRS § 174C-58(4), partial or total nonuse, for reasons other than
15 conservation, of the water allowed by the permit for a period of four (4) continuous years
16 or more may result in a permanent revocation as to the amount of water not in use. The
17 Commission and the permittee may enter into a written agreement that, for reasons
18 satisfactory to the Commission, any period of nonuse may not apply toward the four-year
19 period. PMI’s four-year period tolls on December 28, 2005.
20

21 27. For Campbell Estate, the Commission has to first determine whether there are
22 reasonable ground-water alternatives to ditch water [COL 24, *supra*].
23

24 28. The Waipahu-Waiawa Aquifer System, which is of potable water quality, is the
25 potential source of alternative ground water for Campbell Estate. [FOF 68-73] Five
26 potential sources were evaluated by Campbell Estate’s consultants. [FOF 74]
27

28 29. A new well would cost \$0.74 per 1,000 gallons to provide an average of 3.98 mgd
29 and \$0.88 per 1,000 gallons to provide an average of 2.42 mgd. [FOF 75-77)
30

31 30. The combined source of 2.42 mgd from a new well and 1.56 mgd of ditch water
32 would also cost \$0.74 per 1,000 gallons for 3.98 mgd. [FOF 78] These estimates for both
33 a new well and a combined source incorporate an eight percent (8%) cost for borrowing
34 money to construct the improvements. [FOF 79] A five percent cost for borrowing
35 money, which is closer to today’s prime rate, would reduce the cost from \$0.74 to \$63.5
36 per 1,000 gallons for the 3.98 mgd scenarios. [FOF 82]
37

38 31. The eight percent (8%) cost for borrowing money to construct the improvements
39 is a reasonable estimate. Five percent (5%) is near the current prime rate, not the business
40 rate; eight percent represents the average interest rate over a twenty-year period; and
41 interest rates on business loans are renegotiated every three years. Campbell Estate does
42 not qualify for the prime rate. [FOF 80, 81, 83]
43

determine which resource would be permitted; and 2) explained how it would prioritize and apply that process to the case at hand. Then perhaps the Court would have agreed that it was a policy issue instead of finding that prioritizing among public trust resources was “innately” within the practicability analysis.

1 32. The cost for improvements to make EP-5/6 operational would be \$0.95 per 1,000
2 gallons for 3.98 mgd and \$1.16 per 1,000 gallons for 2.42 mgd. [FOF 84-85]

3
4 33. Chloride levels for EP-5/6 are at or very near the 160 MG/L limit for irrigating
5 fields over drinking water aquifers, and if EP-5/6 were used as the irrigating water
6 source, it would most likely increase the chloride levels of EP-15/16 above 160 MG/L.
7 [FOF 86-88]

8
9 34. The cost to establish the WP-2 battery of wells is estimated at \$0.96 per 1,000
10 gallons for 3.98 mgd and \$1.18 per 1,000 gallons for 2.42 mgd. The cost includes
11 estimates of the pipeline across land Campbell Estate does not own but not the cost of
12 obtaining easements over that land. [FOF 90-92]

13
14 35. WP-2 is located very near EP-5/6, and the Campbell Estate consultant believes it
15 should not be used as a ground-water source because it is also makai of the fields
16 irrigated with ditch water and could damage the ground water beneath the fields. [FOF
17 93-94]

18
19 36. EP-15/16 is a Board of Water Supply (BWS) resource that is not yet in service
20 and permitted for municipal services, not specifically for large agricultural usage. [FOF
21 95] Campbell Estate had transferred its permit to BWS, which was found to be lawful by
22 the Court in **Waiāhole II**. (105 Haw. at 14) However, the Court also stated that the
23 absence of a permit alone would not render EP-15/16 impracticable as an alternative
24 water source. (105 Haw. at 15)

25
26 37. “The transfer of Campbell Estate’s permit to BWS complied with the plain
27 language of the law.” (105 Haw. at 14) “(T)he absence of a permit alone will not render
28 an alternative water source impracticable. Thus, Campbell Estate would still be required
29 to establish that EP-15/16 is impracticable as an alternative water source.” (105 Haw. at
30 15)

31
32 38. Campbell Estate’s consultant estimated the cost for water from EP-15/16 at \$1.39
33 per 1,000 gallons, using \$0.99 per 1,000 gallons for water from a potable source from the
34 BWS Rate Schedule and \$0.40 per 1,000 gallons in added costs for delivering the water
35 to Campbell Estate’s fields. [FOF 96] The BWS rate increases from \$0.99 to \$1.12 per
36 1,000 gallons after July 1, 2005, which would increase the cost to \$1.52 per 1,000
37 gallons. [FOF 97-98) Using BWS’s rate for agricultural water, the cost of delivering
38 water from EP-15/16 would be \$1.17 per 1,000 gallons. [FOF 99-100] A witness from
39 BWS also stated that BWS would charge the rate for non-residential usage, which was
40 \$1.98 per 1,000 gallons until July 1, 2005, increasing to \$2.24 per 1,000 gallons after July
41 1, 2005. [FOF 101] This would be reflected in costs of \$2.38 and \$2.64 per 1,000 gallons.
42 [FOF 102-103]

43
44 39. Water System Facilities Charges could also be added by BWS, but the charge is
45 not levied on developers that install a complete water system, including source and

1 transmission and daily storage facilities, and Campbell Estate’s consultant’s estimate
2 included the costs of transmission. [FOF 104-109]

3
4 40. Ditch water is currently being provided to Campbell Estate’s lessees at a rate of
5 \$0.40 per 1,000 gallons, and four of its five lessees have escape clauses that entitle them
6 to terminate their leases if their water rates exceed specified CPI-based levels. All of
7 these levels are below the projected costs of all of the possible alternative ground-water
8 sources. The lowest projected costs among the possible alternatives are for the new well
9 and the combination of a new well and ditch water, at \$0.74 per 1,000 gallons, compared
10 to escape clauses ranging currently from \$0.53+ to \$0.64+ per 1,000 gallons. [FOF 110-
11 116]

12
13 41. Only Larry Jefts, who holds two of the four long-term leases, would be willing to
14 pay additional costs but would have to make a business decision when faced with the
15 actual terms. [FOF 117] One other lessee would consider terminating its lease, while the
16 other stated that his company would not pay for the additional costs of a ground-water
17 alternative. [FOF 118-119] The fifth lessee is on a month-to-month agreement and would
18 probably not be able to continue with the increased costs. [FOF 120]

19
20 42. In the leases, Campbell Estate reserves the right to subsidize water costs to
21 prevent tenants from terminating their leases. [FOF 124] Because lessees currently pay
22 all property taxes and the current agricultural designation could be lost if the lands were
23 not in substantial and continuous agricultural use, Campbell Estate has an incentive to
24 exercise these rights. [FOF 121-123]

25
26 43. Of the five potential alternative ground-water sources, the Commission concludes
27 as follows:

28
29 a) New well and combination with ditch water

30
31 The estimated costs of a new well and a combination of water from a new
32 well and ditch water are both at \$0.74 per 1,000 gallons for 3.98 mgd, so the
33 Commission will only consider the new well as providing the alternative source.

34 Price alone is not a determining factor. The Commission “is not obliged to
35 ensure that any particular user enjoy a subsidy or guaranteed access to less
36 expensive water sources when alternatives are available and public values are at
37 stake.” [94 Haw. at 165]

38 Compared to the estimated \$0.74 per 1,000 gallons, the current price of
39 ditch water is \$0.40 per 1,000 gallons, but four of Campbell Estate’s five lessees,
40 who lease the great majority of the Estate’s lands, cannot break their leases unless
41 water rates exceed specified CPI-based levels, currently at approximately \$0.53+
42 to \$0.64+ per 1,000 gallons. Campbell Estate also reserves the right to subsidize
43 water costs to prevent tenants from terminating their leases, which, if terminated,
44 may expose Campbell Estate’s lands to loss of their agricultural designation and
45 higher property taxes.

1 The approximately \$0.10 to \$0.20 per 1,000 gallons difference between
2 the current lease-breaking points (\$0.53+ to \$0.64+ per 1,000 gallons) and the
3 estimated costs of a new well (\$0.74 per 1,000 gallons) translate to \$242 to \$484
4 per day for 2.42 mgd and \$398 to \$796 per day for 3.98 mgd, if Campbell Estate
5 were to partially subsidize its lessees' water costs to prevent the lessees from
6 breaking the leases. This would translate into approximately \$88,330 to \$176,660
7 and \$145,000 to \$290,000 per year. The estimated amounts would be less than the
8 higher figures, because only one of Jefts's leases has the lower lease-breaking
9 point of \$0.53+ per 1,000 gallons.

10 It is difficult for the Commission to speculate whether such increased
11 costs would result in Campbell Estate's lessees deciding to terminate their leases,
12 and if so, whether Campbell Estate would counter with subsidizing all or part of
13 the increased costs. The Court in **Waiāhole II** rejected the Windward Parties'
14 argument that PMI did not meet its burden of proof when it did not offer evidence
15 regarding its financial condition; but there, PMI had conceded that two of the
16 three alternatives were economically feasible. The Court then went on to state,
17 however, that regardless of PMI's financial condition, it had already concluded in
18 **Waiāhole I** that the Commission "is not obliged to ensure that any particular
19 water user enjoy a subsidy or guaranteed access to less expensive water sources
20 when alternatives are available and public values are at stake." [94 Haw. at 165]
21 While the Commission is "not obliged," neither is it required to ignore costs, and
22 at some point the costs of a water source do factor in the Commission's standard
23 that an alternative source "is available and capable of being utilized after taking
24 consideration cost, existing technology, and logistics in light of the overall water
25 planning process." [D&O II, at 124-125]

26 The analysis of Campbell Estate's consultant concluded that ground water
27 from a new well could be available, given existing technology and logistics.
28 Therefore, the Commission concludes that the costs do not void availability, and a
29 new well is an alternative ground-water source to ditch waters for Campbell
30 Estate's leased lands. But both ditch water and ground water from the Waipahu-
31 Waiawa Aquifer are public trust resources. Thus, whether the new well is a
32 practicable alternative after prioritizing among public trust resources will be
33 addressed after considering the remaining three alternative leeward ground-water
34 sources.

35
36 b) The EP-5/6 well battery

37
38 The cost of ground water from EP-5/6 is estimated at \$0.95 per 1,000
39 gallons for 3.98 mgd and \$1.16 per 1,000 gallons for 2.42 mgd. The impact of
40 these costs on availability need not be analyzed further, because of the following
41 issues.

42 Chloride levels for EP-5/6 are already at or near the limit of 160 MG/L for
43 irrigating over drinking water aquifers, and use of EP-5/6 would also likely
44 increase the chloride levels of EP-15/16 above 160 MG/L.

45 EP-5/6 is the same potential source of ground water that was considered
46 by PMI, not considered a practicable alternative by PMI, found not acceptable by

1 the Commission because of the chloride content, and confirmed by the Court in
2 **Waiāhole II** as not being a practicable alternative. Thus, EP-5/6 is not an
3 alternative ground-water source for the use of ditch waters by Campbell Estate’s
4 lessees.

5
6 c) The WP-2 battery of wells
7

8 The cost of ground water from WP-2 is estimated at \$0.96 per 1,000
9 gallons for 3.98 mgd and \$1.18 per 1,000 gallons for 2.42 mgd. The impact of
10 these costs on availability need not be analyzed further, because of the following
11 issues.

12 WP-2 is very near EP-5/6 and would result in the same problems of
13 chloride content and irrigation over drinking water aquifers and the effect on the
14 chloride levels of EP-15/16 from pumping EP-5/6. Thus, WP-2 is not an
15 alternative ground-water source for the use of ditch waters by Campbell Estate’s
16 lessees.

17
18 d) EP-15/16
19

20 Campbell Estate’s consultant estimated the cost of ground water from EP-
21 15/16 at \$1.39, using BWS’s prevailing rate for irrigation water from a potable
22 source at \$0.99 per 1,000 gallons and an estimated added cost of delivering water
23 of \$0.40. Under various other BWS water rates, including increases over time, the
24 estimated cost varies from \$1.17 per 1,000 gallons to \$2.64 per 1,000 gallons. The
25 highest rates, at \$2.38 and \$2.64 per 1,000 gallons, were based on the BWS’s
26 witness’s statement that BWS would charge the non-residential usage rate. A
27 Water Systems Facilities Charge (WSFC) may also be levied by BWS, but it
28 likely would be waived, as the scenario developed by Campbell Estate’s
29 consultant included the services for which the WSFC would be charged.

30 The water use permit for EP-15/16 was transferred by Campbell Estate to
31 BWS, who subsequently changed the water use from agricultural to urban and
32 stated that it planned to supply Campbell Estate with 11.87 mgd, actions that were
33 found to be legal by the Court in **Waiāhole II**. However, the Court also stated that
34 the absence of a permit did not render EP-15/16 impractical as an alternative
35 water source.

36 If Campbell Estate were to request that it be granted 3.98 mgd from EP-
37 15/16 to replace ditch waters for agricultural irrigation, it would make this request
38 to the BWS and not to the Commission. Under HRS Ch. 174C, § 174C-57,
39 modifications to the terms of a permit are treated as initial permit applications, but
40 county agencies are exempt from these requirements except where the
41 modification involves a change in the quantity of water to be used or where the
42 new use would adversely affect the quality of the water or quantity of use of
43 another permittee. The Campbell Estate request would be to change the use of
44 3.98 mgd from urban to agricultural, so BWS would not have to request a new
45 permit from the Commission.

1 However, the City and County of Honolulu and the BWS are opposed to
2 granting water use permits to either PMI or Campbell Estate merely because there
3 is unallocated permitted ground water available, citing the rights the public has in
4 the ground water for domestic use. (D&O II, at 95, lines 32-42) BWS’s opposition
5 to the use of leeward potable ground water as an alternative to ditch waters is
6 reinforced by the testimony of BWS that it would charge the highest rate
7 possible—non-residential usage—if BWS had to supply Campbell Estate with
8 EP-15/16 potable water that it has designated for urban use.

9 Would the price the BWS representative stated Campbell Estate would be
10 charged—\$2.64 per 1,000 gallons after July 1, 2005, based on non-residential
11 rates—be such a significant increase in costs that it would make water from
12 BWS’s EP-15/16 not practicable? This rate would be more than 6 times the
13 current ditch water rate of \$0.40. If Campbell Estate were to subsidize its farmer
14 lessees for the costs above the lease-breaking point of \$0.64+ per 1,000 gallons,
15 the costs to Campbell Estate would be approximately \$2.00 per 1,000 gallons, or
16 \$4,840 per day, an annual cost of over \$1.7 million for 2.42 mgd, or \$7,960 per
17 day, an annual cost of up to approximately \$2.9 million for 3.98 mgd. This is
18 considerably more than the estimated costs to Campbell Estate to subsidize the
19 increased costs of a new well at \$0.74 per 1,000 gallons. However, the
20 Commission is unwilling to conclude that the estimated cost of \$1.7 million to
21 \$2.9 million per year alone makes the alternative of water from BWS’s EP-15/16
22 not a viable alternative ground water source.

23 Would the refusal of BWS to supply Campbell Estate with water from EP-
24 15/16 for agricultural purposes render this alternative ground water source
25 impractical?

26 The alternative must be practical and not merely feasible. In **Waiāhole II**
27 in confirming the Commission’s conclusion that PMI had no practical
28 alternatives, the Court specifically cited “deed restrictions prohibiting an on-site
29 well,” “(lack of) a long-term pumping agreement,” and “the ease and cost of
30 obtaining an easement” as factors making the use of Waipahu-Waiawa water not
31 practicable for use by PMI. (105 Haw. at 18) The Court, in concluding that the
32 deed restrictions prohibiting an on-site well made the alternative not practical for
33 PMI, recognized that a third party’s actions may render an alternative not
34 practical.

35 As stated earlier, the City and County of Honolulu and the BWS are
36 opposed to granting water use permits to either PMI or Campbell Estate merely
37 because there is unallocated permitted ground water available, citing the rights the
38 public has in the ground water for domestic use. BWS further testified that it
39 would charge the highest rate possible—non-residential usage—if BWS had to
40 supply Campbell Estate with potable water. While the Commission is reluctant to
41 rely on the estimated costs of the non-residential rate to conclude that such costs
42 would be unaffordable, the Commission can rely on such testimony as further
43 evidence that BWS opposes any use of potable ground water to supply Campbell
44 Estate’s irrigation needs, including water it has designated for urban use.

45 The Commission therefore concludes that BWS has the right to refuse to
46 grant Campbell Estate such an allocation from its unallocated permitted water for

1 urban use. Thus, EP-15/16 is not an alternative ground-water source for the use of
2 ditch waters by Campbell Estate’s lessees.
3

4 44. Of the five scenarios, a new well is a reasonable alternative to ditch waters on the
5 basis of cost, existing technology, and logistics.²⁵ However, these considerations must
6 take place “in light of the overall water planning process.” Furthermore, both sources are
7 public trust resources [FOF 126], so the analysis of whether the ground water is a
8 practicable alternative is incomplete without prioritizing among public trust resources. In
9 **Waiāhole I** the Court remanded to the Commission “the practicability of Campbell
10 Estate and PMI using alternative ground water sources.” (94 Haw. at 189) In D&O II, the
11 Commission had concluded that “if water from the Waipahu-Waiawa Management Area
12 of the Pearl Harbor Aquifer were to replace Ditch water for Campbell Estate and PMI,
13 water from windward public trust resources that are available for non-trust purposes after
14 measures have been taken to enhance those windward public trust resources, would be
15 given priority over a leeward public trust resource.” (D&O II, p. 128, lines 39-43) In
16 **Waiāhole II** the Court responded that “the Water Commission’s reasoning, that public
17 trust resources may not be prioritized because public trust uses may not be prioritized, is
18 illogical. Considering whether alternative water resources are practicable innately
19 requires prioritizing among public trust resources (emphases in original).” (104 Haw. at
20 20)
21

22 a) Alternative water source for leeward ground water
23

24 Waiāhole Ditch water has been and is currently being used to irrigate
25 Campbell Estate’s lands. It costs less than all of the possible leeward ground
26 water alternatives and would need no additional technology or logistics for
27 delivery. Thus it is a proven alternative water source to the use of leeward ground
28 water to irrigate these lands.
29

30 b) Availability of water
31

32 Under the State Water Code, the amended IIFS is the method to protect
33 streams and the sustainable yield is the method to protect ground water. Water-
34 use permits issued to irrigate Campbell Estate’s lands must be accommodated
35 either: 1) with the remaining water after ditch waters have been added to the
36 affected windward streams to meet the amended IIFS, or 2) with water within the
37 sustainable yield of the Waipahu-Waiawa Aquifer system. With aquifers,
38 unallocated (unpermitted) water remains in the aquifer, as does any permitted
39 water not actually being used. With the ditch waters, the Commission has ordered
40 that a similar approach be taken: unpermitted waters and any permitted waters not
41 in actual use must be diverted into the windward streams. However, the last
42 diversion point is at the adjustment gate near Gate 31 at the opening at the *pali*
43 face on the windward side above Waiāhole Stream, so the water developed in the

²⁵ The combination of a new well and ditch water was also an alternative, but the estimated costs were the same as for a new well alone, so the Commission has focused on the alternative that would completely replace ditch water.

1 Main Bore, which is leeward of and at a lower elevation than Gate 31, cannot be
2 diverted into the streams and flows leeward, whether or not all of it is used by
3 permittees. The Main Bore develops an average of about 5.0 mgd, of which 3.7
4 mgd is developed in the Waiawa area leeward of the crest of the Ko`olau
5 Mountains. In FYs 2003 and 2004, between 3.8 to 7.55 mgd were actually
6 developed in the Main Bore. [FOF 23, 26, 160-162, 164-165]

7 The relative amount of water available from each resource after measures
8 have been taken to protect the resource is not relevant to prioritizing among these
9 resources. Protective measures for each resource are undertaken by taking into
10 consideration the unique circumstances of each resource. For aquifers, protective
11 measures are focused on the quality and quantity of their waters. The sustainable
12 yield for ground water is “the maximum rate at which water may be withdrawn
13 from a water source without impairing the utility or quality of the water source as
14 determined by the commission.” (HRS Ch. 174C, § 174C-3) For instream flow
15 standards, the protective measures are relative to offstream uses. For Interim
16 Instream Flow Standards, “the commission shall weigh the importance of the
17 present or potential instream values with the importance of the present or potential
18 uses of water for noninstream purposes, including the economic impact of
19 restricting such uses.” (HRS Ch. 174C, § 174C-71(2)(D)) For Instream Flow
20 Standards, “the commission shall weigh the importance of the present or potential
21 uses of water from the stream for noninstream purposes, including the economic
22 impact of restriction of such uses. In order to avoid or minimize the impact on
23 existing uses of preserving, enhancing, or restoring instream values, the
24 commission shall consider physical solutions, including water exchanges,
25 modifications of project operations, changes in points of diversion, changes in
26 time and rate of diversion, uses of water from alternative sources, or any other
27 solution.” (HRS Ch. 174C, § 174C-71(1)(E))

28 Thus, the 3.98 mgd to irrigate Campbell Estate’s lands could be
29 accommodated with currently available water from either the Waiāhole Ditch or
30 the Waipahu-Waiawa Aquifer.

31
32 c) Purposes of the water resources trust

33
34 The Court in **Waiāhole I** and **Waiāhole II** has identified domestic uses of
35 the general public, particularly drinking water, as a purpose of the public water
36 resources trust [FOF 128].

37 Agriculture, while a constitutionally specified public purpose, is not a
38 public trust purposes currently specified by the Court, but can be
39 “accommodated” when it “promotes the best economic and social interests of the
40 people of this state.” [FOF 129]

41
42 d) The Commission’s priorities and its authority to establish such priorities

43
44 In D&O I, the Commission concluded that “Oahu’s remaining ground-
45 water resources must be directed to its highest and best use. There must be an
46 increased emphasis on water conservation, water reclamation and reuse, and

1 system efficiency improvements. One way to stretch Oahu’s remaining resources
2 is to utilize lower quality water for irrigation purposes, replacing the use of higher
3 quality ground water.” [FOF 131]

4 In D&O I, the Commission had imposed a higher standard of review for
5 agricultural versus non-agricultural (e.g., golf courses) uses, and the Court in
6 **Waiāhole I** concluded that “such measures lay squarely within the Commission’s
7 appointed function of weighing and negotiating competing interests in regulating
8 the water resources of this state.” [FOF 130]

9 In **Waiāhole I**, the Court also confirmed that imposing different permit
10 conditions and restrictions on some uses but not others were “squarely within the
11 Commission’s appointed function of weighing and negotiating competing
12 interests in regulating the water resources of this state” as long as those actions
13 were not arbitrary and capricious. (94 Haw. at 168-169)

14 The Commission’s priorities are reflected in its “weighing and negotiating
15 (of) competing interests.” In issuing water use permits for ditch waters, the
16 Commission imposed stricter conditions for golf-course irrigation, because the
17 highest and best use of non-potable ditch water was for agriculture. On the other
18 hand, the highest and best use of potable Waipahu-Waiawa Aquifer water is
19 domestic use of the general public, particularly drinking water. Municipal use
20 does have the substantial purpose of domestic use of the general public,
21 particularly drinking water, but it may also include commercial and industrial
22 purposes, and the Court has yet to delineate the boundaries of “domestic use of
23 the general public.” On a related issue, the Court has applied the doctrine of
24 public use to public entities such as the BWS and in a decision involving the
25 BWS, has commented that “we understand public use to mean the actual
26 consumption of water by the general public.” (**Reppun v Board of Water**
27 **Supply**, 65 Haw. 531, at 560, n. 21 and 22)

28 It is the Commission’s priority that water resources be matched with their
29 highest and best use. When applied by the Commission to water for agriculture
30 uses from a potable versus non-potable water source, the decision must be the use
31 of ditch water and not water from the Waipahu-Waiawa Aquifer to irrigate
32 Campbell Estate’s agricultural lands. Non-potable Waiāhole Ditch water is
33 available for its highest and best use, agricultural irrigation. Agricultural use is not
34 the highest and best use of the Waipahu-Waiawa Aquifer. To use potable
35 Waipahu-Waiawa Aquifer water when a non-potable source is equally and even
36 more available, taking into consideration cost, existing technology and logistics in
37 light of the overall water planning process, would be counter to the priorities of
38 the Commission.

39
40 45. The Court has concluded that “(c)onsidering whether alternative water resources
41 are practicable innately requires prioritizing among public trust resources.” (105 Haw. at
42 20) The Commission’s prioritizing results in the conclusion that the highest use for ditch
43 water is for agricultural uses, while the highest use for Waipahu-Waiawa Aquifer water is
44 for potable purposes. Campbell Estate’s water use permit application was for agriculture
45 use on its lands, which is best met with ditch waters. Thus, after prioritizing among these
46 two public trust resources, the Commission concludes that Waipahu-Waiawa Aquifer

1 water is not a practicable alternative water resource, and a new well using such water, or
2 any well utilizing the same source, is not a practicable alternative to the use of ditch
3 water to irrigate Campbell Estate's lands.²⁶
4
5

6 **D. Actual Needs of Field Nos. 115, 116 and 145 (Jefts)**
7

8 46. Jefts cultivates 188 acres of the 267 acres in Field Nos. 115, 116 and 145 for
9 diversified agriculture and does not farm the entire 267 acres. [FOF 139]
10

11 47. There is sufficient evidence that Jefts's actual water need is 2,500 gad per
12 cultivated acre. [FOF 135-137]
13

14 48. Jefts's actual uses for diversified agriculture on Field Nos. 115, 116 and 145
15 should be adjusted from 0.66 mgd to 0.467 mgd. [FOF 140]
16
17

18 **E. Actual Needs of 229 Acres in Field Nos. 146 and 166 (Garst Seeds)**
19

20 49. Garst Seed Company plants only 115 of the total 344 acres for seed crops at a
21 particular time. The other 229 acres that are not being used for seed crops will remain
22 part of its crop rotation plan. [FOF 143]
23

24 50. Garst's actual water need is 1,800 gad per planted acre. [FOF 141]
25

26 51. Garst's actual uses for its seed crops on Field Nos. 146 and 166 should be
27 adjusted from 0.78 mgd to 0.21 mgd. [FOF 144]
28
29

30 **F. ADC's Permit for Systems Losses**
31

32 52. The State Water Code contains the following provision:
33 "[§ 174C-48] **Permits required.** (a) No person shall make any withdrawal, diversion,
34 impoundment, or consumptive use of water in any designated water management area
35 without first obtaining a permit from the commission. However, no permit shall be
36 required for domestic consumption of water by individual users, and no permit shall be
37 required for the use of a catchment system to gather water. An existing use in newly
38 designated areas may be continued until such time as the commission has acted upon the
39 application subject to compliance with section 164C-51."
40

²⁶ In this decision, the Commission has confirmed its decision in D&O II that PMI had no practicable alternatives, based on its analysis of PMI's three ground-water scenarios and clarifying that this basis for its decision was separate and distinct from the two other reasons originally stated in D&O II that the Court rejected. Had one or more of the alternative scenarios been found reasonable, the Commission would have proceeded to prioritize among the two public trust resources and reached the same conclusions that it has for Campbell Estate.

1 53. Except for two stated exceptions, one for consumption and one for impoundment,
2 any withdrawal, diversion, impoundment or consumption is a use of water that requires a
3 permit. (COL 52, *supra*)
4

5 54. Therefore, water withdrawn from the windward, high-level dike-enclosed waters
6 and diverted to the leeward plains through the Waiāhole ditch system, including any
7 water lost in delivery, requires a water use permit and must meet the conditions of
8 Section 174C-49(a) of the State Water Code:

- 9 (1) Can be accommodated with the available water source;
- 10 (2) Is a reasonable-beneficial use as defined in section 174C-3;
- 11 (3) Will not interfere with any existing legal use of water;
- 12 (4) Is consistent with the public interest;
- 13 (5) Is consistent with state and county general plans and land use designations;
- 14 (6) Is consistent with county land use plans and policies; and
- 15 (7) Will not interfere with the rights of the department of Hawaiian home lands as
16 provided in section 221 of the Hawaiian Homes Commission Act.
17

18 55. In **Waiāhole I**, the Court emphasized that “reasonable-beneficial use” as defined
19 in section 174C-3 allowed use only “in such quantity as is necessary for economic and
20 efficient utilization” and concluded that permit applicants must demonstrate the absence
21 of practicable mitigating measures, including the use of alternative water sources. (94
22 Haw. at 161)
23

24 56. In **Waiāhole II**, the Court, in referring to a permit for system losses, concluded
25 that “the Commission must scrutinize such an allocation as it would any other proposed
26 ‘use,’ pursuant to the permitting process. On remand, the Commission shall consider the
27 permit application for 2.0 mgd to cover system losses and determine whether this request
28 is appropriate given the still uncertain public interest in instream flows, and based on
29 actual need and any practicable mitigating measures, including repairs to the ditch
30 system.” (94 Haw. at 173)
31

32 57. In **Waiāhole II**, after quoting the Commission as finding that ADC “has not yet
33 addressed the feasibility and costs of lining the remaining unlined portion of the ditch
34 and/or the two reservoirs,” the Court, in referring to the 1.5 mgd in projected seepage
35 losses (0.5 mgd of the 2.0 mgd in total losses were from evaporation and overflow at
36 Reservoir 155), concluded that “(w)ithout addressing the feasibility of repairing the leaks
37 that cause the 1.5 mgd loss, it is unclear how the Water Commission could determine that
38 a 1.5 mgd loss complied with HRS § 174C-49(a).” (105 Haw. at 26-27)
39

40 58. The Court in **Waiāhole I** explicitly noted that it meant “feasible” as a “balancing
41 of benefits and costs” and not “capable of achievement.” (94 Haw. at 141, n. 39)
42

43 59. Moreover, the Commission in D&O II stated that “an alternative source is
44 practicable if it is available and capable of being utilized after taking into consideration
45 cost, existing technology, and logistics in light of the overall water planning process”
46 (D&O II, at 124-125), and the Court stated in **Waiāhole II** that the Commission “must

1 determine whether the alternative is available and capable of being utilized after
2 considering cost, technology, and logistics.” (105 Haw. at 19)

3
4 60. Because the water use permit provisions of the Code determine how much to
5 award ADC for system losses: 1) some of the seven conditions under Section 174C-49(a)
6 must primarily be determined by the uses for which water is being delivered through the
7 ditch system and which result in system losses; and 2) the evaluation of practical
8 alternatives cannot look toward another source of water but must be “based on actual
9 need and any practicable mitigating measures, including repairs to the ditch system.” (94
10 Haw. at 173) The seven conditions for a water use permit are addressed as follows.

11
12 61. Can be accommodated with the available water source: The total average flow in
13 the Waiāhole Ditch system is 27 mgd. [FOF 26] Under D&O II, 9.9 mgd were added to
14 the windward streams. ([FOF 38] Under this Decision and Order (discussed later), this
15 amount is increased by 2.1 mgd added to Kahana Stream, for a new total of 12.0 mgd.
16 Under D&O II, 11.30 mgd were issued in water use permits, exclusive of the 2.0 mgd for
17 system losses. Under this Decision and Order (discussed later), the 11.30 mgd is reduced
18 by 0.76 mgd, for a new total of 10.54 mgd issued in water use permits. Therefore, of the
19 27 mgd, there are 4.46 mgd remaining for off-stream use, and the request from
20 ADC/DOA for system losses is 2.00 mgd.

21
22 62. Will not interfere with any existing legal use of water: The amount of ditch water
23 can accommodate the amended IIFS, the water use permits, and the amount requested for
24 system losses. (COL 61, *supra*)

25
26 63. Is consistent with the public interest: System losses occur with the conveyance of
27 water issued under the water use permits, it is in the public interest to direct water to the
28 areas in which it is needed, and permitted waters have met the provisions of the Code.
29 (D&O I and II) [FOF 148, 200-205]

30
31 64. Is consistent with state and county general plans and land use designations: In
32 D&O I, the Commission previously found that the use of Waiāhole Ditch water for
33 diversified agriculture on lands designated as priority agricultural lands is reasonable and
34 consistent with state land use plans and policies. [FOF 202] In D&O I, the Commission
35 found all the water use permit applications to be consistent with the Hawaii State Plan
36 and land use classifications, as well as with the County General Plan. [FOF 203]

37
38 65. Is consistent with county land use plans and policies: Support of agriculture in
39 Central Oahu is part of the City of Honolulu’s General and Development Plans. [FOF
40 204] In D&O I, the Commission found that the leeward applicants’ existing and proposed
41 agricultural operations are consistent with land use designations for these parcels of land
42 in the City’s Ewa and Central Oahu Development Plans. [FOF 205]

43
44 66. Will not interfere with the rights of the department of Hawaiian home lands as
45 provided in section 221 of the Hawaiian Homes Commission Act: The Department of
46 Hawaiian Homelands applied for a water reservation for 0.410 mgd, but the Commission

1 did not take up any reservation requests in this proceeding and stated its intent to do so
2 after the conclusion of this contested case. [FOF 206] Moreover, the Hawaiian Homes
3 Commission has a “first call” on water under HHCA Section 221, and all water use
4 permits are subject to the requirements of the Hawaiian Homes Commission Act. [FOF
5 207]
6

7 67. Is a reasonable-beneficial use as defined in section 174C-3: ADC is requesting
8 2.00 mgd for system losses, the same amount awarded by the Commission in D&O II, but
9 which was remanded after the Court concluded that“(w)ithout addressing the feasibility
10 of repairing the leaks that cause the 1.5 mgd loss, it is unclear how the Water
11 Commission could determine that a 1.5 mgd loss complied with HRS § 174C-49(a).”
12 (105 Haw. at 27)
13

14 a) The Commission concludes that ADC has taken reasonable and
15 practicable mitigating measures to repair the ditch system.
16

17 b) ADC took a reasonable approach to the issue of practicable mitigating
18 measures, including repairs to the ditch system. After replacement of the three wooden
19 siphons, ADC projected that its estimate of 2.02 mgd in system losses would consist of:
20 1) 0.45 mgd overflow at Reservoir 155 at the end of the system; 2) 0.07 mgd in
21 evaporation; and 1.50 mgd in the residual category, “unmetered losses.” (FOF 152) ADC
22 then focused its efforts on the two largest categories of losses: overflow at Reservoir 155
23 and unmetered losses.
24

25 c) After identifying the sources of losses and prioritizing which would be
26 addressed first, ADC was not required to expend funds to estimate the costs of
27 eliminating every source of system losses. ADC operates under a limited budget and must
28 obtain legislative approval for funding. (FOF 197-198) By identifying all sources of
29 system losses and then prioritizing among them to take action and secure funding, ADC
30 took the practicable mitigating measures required by the State Water Code.
31

32 d) ADC was able to reduce overflow at Reservoir 155 from 0.46 mgd in FY
33 2001 to as low as 0.24 mgd in FY 2003. [FOF 174] This was achieved by installing an
34 automatic gate opening and closing device at the wooden adjustment gate near Gate 31 at
35 the North Portal on the windward side to allow for quicker adjustments of flows of
36 windward water to the leeward side. When it starts to rain on the leeward side and the
37 windward flows are not needed, the gate is closed. [FOF 170] ADC also installed a pump
38 at Reservoir 155 to pump water back into the ditch, making the pumped water available
39 for users at the end of the ditch, and began to use Reservoir 225, further up the ditch, to
40 provide capacity for flows that ADC otherwise anticipated would go to Reservoir 155.
41 [FOF 172]
42

43 e) The 0.24 mgd in overflow losses in FY 2003 is not achievable all of the
44 time, because rainfall on the leeward side affects overflow at Reservoir 155 more than
45 other factors, and ADC has no control of the weather, which determines both the amount
46 of water flowing from Adit 8 and the amount of leeward water usage. Given the structural

1 design of the ditch system, the flow from the Main Bore leeward of Gate 31 results in
2 overflow at Reservoir 155 at the end of the system during rainy, low-usage periods.
3 When the soil is sufficiently moistened by rain, farmers tend not to irrigate, rainwater
4 runs into the ditch, and water developed by the Waiawa portion of the tunnel, leeward of
5 Gate 31, continues to flow even when the windward adjustment gate diverts all windward
6 water into the windward streams. Water from the Waiawa portion of the tunnel has varied
7 from 3.8 mgd to 7.55 mgd, with the increased flow showing up several months after the
8 rainy periods. (FOF 160-165)

9
10 f) Enlarging Reservoir 155 does not present a long-term solution. Its
11 capacity is 10 mgd. [FOF 173] If it were doubled in size, the excess capacity would be
12 filled in about forty (40) days in dry weather conditions, at the rate of 0.24 mgd that was
13 achieved in FY 2003; in wet weather conditions, the excess capacity would be filled in
14 less than six (6) days, at the rate of 1.75 mgd in FY 2004. [FOF 165, 174] When no water
15 is being used and the windward adjustment gate is diverting all of the windward ditch
16 waters into the streams, there will still be an average flow of 5 mgd from the Main Bore
17 leeward of the adjustment gate. [FOF 23, 26] About 1.0 mgd would be lost through
18 evaporation and seepage/leakage after Reservoirs 155 and 225 are lined, [FOF 199]
19 leaving 4.0 mgd that would reach Reservoir 155 at the end of the system. Excess capacity
20 would be exceeded in less than three (3) days. For a quadrupling of Reservoir 155 to 40
21 mgd, the comparable rates in which excess capacity would be exceeded would be 160,
22 24, and 10 days, respectively. The actual rates would be somewhere between the
23 extremes, or between three and forty days for doubling the capacity of Reservoir 155, and
24 between 10 and 69 days for quadrupling the capacity.

25
26 g) Enclosing the entire open ditch system, which runs from Waiawa to
27 Honouliuli, to eliminate evaporation and leakage might be feasible, but it is not
28 practicable. The Army Corps of Engineers recommended, in addition to lining Reservoirs
29 155 and 225, enclosing only the 1,000 feet of remaining unlined portion of the ditch at
30 the end of the system with a pipe, and ADC is pursuing funding for that option. [FOF
31 187, 195-196]

32
33 h) The current calculation for system losses is the Adit 8 reading minus
34 metered usage, and consists of evaporation, overflow at Reservoir 155, and the residual
35 category of “unmetered losses.” Essentially, this method includes any and all flows not
36 actually recorded in the users’ meters. (FOF 150, 166) Thus, the portion of “system
37 losses” measured by overflow at Reservoir 155 will, in wet weather, include flows from
38 the Waiawa portion of the development tunnels that cannot be diverted into the windward
39 streams and runoff from rain into the ditch. The amount due to runoff from rain into the
40 ditch is not part of the dike-enclosed waters developed by the tunnels, and ADC has
41 practical limitations on reducing the overflow at Reservoir 155 when use is less than the
42 amount flowing from the Main Bore leeward of the windward adjustment gate.

43
44 i. ADC has taken reasonable and practical steps to reduce “unmetered
45 losses.” It has developed a program to detect and repair leaks in the concrete lining of the
46 ditch, eliminated overflow due to silt and mud build-up in the ditch, and developed a

1 program to improve the accuracy of user meters so that water actually used is not
2 recorded as system losses. [FOF 175-180] Projects to address the major sources of
3 seepage losses, Reservoirs 155 and 225, which are estimated as accounting for 72% of
4 such losses, are fully funded and in progress. [FOF 185-187, 189-193] When this project
5 is completed, losses are expected to decrease by 0.398 mgd to 0.759 mgd. (FOF 194)
6 ADC is also in the process of seeking funding for the lining, piping, or repairing of other
7 unlined portions of the ditch, the other project recommended by the Army Corps of
8 Engineers. [FOF 187, 195-196]

9
10 j) At the D&O II hearings, ADC estimated system losses after replacing the
11 three wooden siphons as 2.02 mgd and consisting of 1.50 mgd in unmetered losses, 0.45
12 mgd in overflow at Reservoir 155, and 0.07 mgd in evaporation. [FOF 152] ADC now
13 believes this estimate was too low, probably because projections of loss reduction from
14 replacing the wooden siphons were overly optimistic. Unmetered losses stabilized
15 between 1.69 mgd to 1.75 mgd (average of 1.72 mgd) from FY 2002 to FY 2004, and
16 ADC now believes this is probably the baseline unmetered loss before the two reservoirs
17 were to be lined. [FOF 155] This would increase the original estimate of total system
18 losses from 2.02 mgd to 2.24 mgd after the three wooden siphons were replaced.

19
20 k) Under dry weather conditions, overflow can be reduced to 0.24 mgd (FY
21 2003). [FOF 174] The revised unmetered losses of 1.69 mgd to 1.75 mgd
22 (average of 1.72 mgd) are estimated to be reduced by 0.398 mgd to 0.759 mgd (average
23 of 0.578 mgd) from lining the two reservoirs, with estimated completion dates between
24 December 2007 and June 2008. [FOF 193-194] Thus, the revised estimates of system
25 losses after lining the reservoirs are as follows: 1) evaporation losses unchanged at 0.07
26 mgd; 2) overflow at Reservoir 155 reduced from 0.45 mgd to 0.24 mgd; and 3)
27 unmetered losses reduced from 1.72 mgd to 1.14 mgd.

28
29 l) Therefore, total system losses prior to lining the two reservoirs would be
30 2.03 mgd, and after the lining, total system losses are estimated to be 1.45 mgd.

31
32 m) The current method of measuring total system losses includes the overflow
33 at Reservoir 155, which averaged as high as 1.75 mgd during FY 2004, a wet year,
34 compared to a low of 0.24 mgd in FY 2003, a dry year. [FOF 165, 174] During wet
35 weather, or when usage otherwise is also significantly lower than the amount of water
36 developed leeward of Gate 31, amounts in excess of use will often exceed the capacity of
37 ADC to manage the overflow at Reservoir 155. [FOF 164-165, 169] Overflow in excess
38 of ADC's capacity to manage it may occur even when Gate 31 is closed and all of the
39 water developed in the windward tunnels are diverted into the windward streams. [FOF
40 164]

41 42 **G. Conclusion**

43
44 For the reasons discussed above, the Commission concludes that the amended
45 interim instream flow standards, the water use permits, and the management of the
46 unpermitted ditch waters and permitted waters not in actual day-to-day use approved and

1 established as modified in this Decision and Order meet the requirements of law as
2 determined by the Court in Waiahole I and Waiahole II.

3
4
5 Caveat: Finally, if any statement denominated a conclusion of law is more
6 properly considered a finding of fact, then it should be treated as a finding of fact; and
7 conversely, if any statement denominated as a statement of fact is more properly
8 considered a conclusion of law, then it should be treated as a conclusion of law.
9

10 11 **V. Decision and Order**

12 13 **A. Introduction**

14
15 This Decision and Order is the third that the Commission has issued in response
16 to the Court's review on appeal, following D&O I (December 24, 1997) and D&O II
17 (December 28, 2001). The current remand by the Court is limited to the following six
18 issues: 1) the designation of an IIFS for windward streams; 2) the 2.2 mgd of unpermitted
19 water; 3) the practicability of Campbell Estate and PMI using alternative ground water
20 sources; 4) the actual needs of Field Nos. 115, 116, and 145 (Jefts); 5) the actual needs of
21 229 acres in Field Nos. 146 and 166 (Garst Seeds); and 6) ADC's permit for systems
22 losses.
23

24 The Findings of Fact for designation of an IIFS for windward streams, the 2.2
25 mgd of unpermitted water, and the practicability of PMI using alternative ground water
26 sources are based on the existing record prior to the April 5, 2005 hearings, at which time
27 further testimony was taken and evidence submitted on the practicability of Campbell
28 Estate using alternative ground water sources, the actual needs of Field Nos. 115, 116 and
29 145 (Jefts), the actual needs of 229 acres in Field Nos. 146 and 166 (Garst Seeds), and
30 ADC's permit for systems losses.
31

32 **B. Designation of an IIFS for Certain Windward Streams**

33
34 The amended IIFS under D&O II resulted in stream flows for Waiāhole, Waianu
35 and Waikāne Streams that were 124%, 600% and 150% greater than their flows in the
36 1960s. [COL 2-4] The IIFS for Kahana Stream remained unchanged from its flow in the
37 1960s. However: 1) Kahana Stream is only moderately affected by the Ditch, with its
38 current flow estimated at 78% of pre-Ditch levels; 2) the Court on its first remand only
39 ordered that an IIFS be addressed for Waikāne Stream in addition to Waiāhole and
40 Waianu Streams; and 3) all of the testimony on stream conditions in the 1960s involved
41 Waiāhole, Waianu and Waikāne Streams, as well as on similar conditions in Hakipu`u
42 and Punalu`u Streams, which are not affected by the Waiāhole Ditch system. [COL 11]
43

44 Three events since the 1960s might have affected the stream flows before Ditch
45 waters were added under D&O I and II. Only one of these events would have reduced the
46 difference between stream flow during the 1960s compared to flow under the amended

1 IIFS of D&O II, and the other two events would have increased the difference. Under all
2 three possibilities, the amended IIFS under D&O II still resulted in greater flows for the
3 affected streams than their flows in the 1960s.
4

5 Extension of Uwau Tunnel in 1964 leeward of the mountain's crest developed an
6 additional 2.77 mgd, but most if not all of this net extraction was probably flowing
7 leeward before the dikes were disrupted and the water diverted into the Ditch system.
8 [COL 8] Even if it is assumed that all of the 2.77 mgd flowed windward before the
9 extension and that the combined flows for Waiāhole Stream and its tributary, Waianu
10 Stream, were reduced by a similar amount, the Ditch waters added to these two streams
11 under D&O II still result in flows that are more than twice their flows in the 1960s. [COL
12 9]
13

14 In 1982, the 1 to 1.5 mgd pumped from Waiāhole Stream above its confluence
15 with Waianu Stream was discontinued. However, the record does not show when
16 pumping was initiated or whether pumping was taking place in the 1960s. If pumping
17 were taking place during the 1960s, the difference between Waiahole Stream's flow in
18 the 1960s and under the amended IIFS in D&O II would not be 4.8 mgd but 5.8 to 6.3
19 mgd. [COL 10]
20

21 Installation of the bulkhead in Kahana Tunnel in 1992 reduced Ditch flows from
22 the tunnel by approximately 1.5 mgd by 1993. A small portion of this reduced flow might
23 find its way into Kahana Stream, thereby increasing its flow compared to the 1960s, even
24 though no Ditch water was added to the stream under D&O II. [COL 11]
25

26 The Commission therefore concludes that under the amended IIFS of D&O II: 1)
27 more water was added than that which adequately supported the streams' ecosystem in
28 the 1960s; 2) the increase in stream flow over the 1960s' stream flows are beneficial in
29 light of the Commission's finding that increasing a stream's flow results in stream habitat
30 improvement; and 3) appurtenant rights, riparian uses and existing uses would be
31 accounted for by further increases in stream flow, thereby adequately establishing that
32 instream values would be protected to the extent practicable for interim purposes. [COL
33 12-13]
34

35 Under D&O II and in response to the Court's charge to develop practicable
36 measures to mitigate the impact of variable offstream demand on the streams, the
37 Commission had developed variable IIFS for Waiāhole and Waianu Streams. [COL 4]
38 The concern had been raised by the use of 12-month moving averages (12-MAV), which
39 could have left insufficient water to meet the IIFS of the windward streams in very dry
40 periods, and the Commission's remedy in D&O II was to: 1) continue to use the 12-
41 MAV; 2) designate the IIFS to allow for variability on a limited, monthly basis; and 3)
42 add water to the streams to meet the amended IIFS before any water could be used by
43 leeward permittees. [D&O II, at 116] The Commission reinforced the last condition by
44 ordering that "regardless of the 12-MAV, the IIFS must be met before leeward offstream
45 uses are accommodated." [D&O II, at 117] The Commission now concludes that this
46 latter requirement makes the variable IIFS—which would have allowed lower flows for

1 part of each month [COL 4]—unnecessary, so the variable IIFS established for Waiāhole
2 and Waianu Streams are hereby rescinded.

3
4 2.1 mgd of Kahana surface water is diverted into the Ditch system and comprises
5 part of the average 27.0 mgd. [FOF 19] While the Commission concludes that the
6 instream values for Kahana Stream is adequately protected without adding more water
7 than was present in the 1960s, in D&O I, the Commission had stated that “(t)he Kahana
8 surface water diversions may also be considered for future restoration to Kahana
9 Stream.” [D&O I, Decision and Order, at 6] The Commission therefore orders that the
10 diversion of 2.1 mgd from Kahana Stream into the Ditch be discontinued and that the
11 IIFS for Kahana Stream be increased by 2.1 mgd from 11.2 mgd to 13.3 mgd.

12
13 Thus, the IIFS for Waikāne Stream established under D&O II is confirmed, and
14 the IIFS for Waiāhole, Waianu and Kahana Streams established under D&O II are
15 amended as described above:

16
17 Waiāhole Stream: 8.7 mgd (no variable IIFS of 6.6 mgd)
18 Waianu Stream: 3.5 mgd (no variable IIFS of 3.0 mgd)
19 Waikāne Stream: 3.5 mgd
20 Kahana Stream: 13.3 mgd (increase from 11.2 mgd)
21

22 In comparison to the 1960s, the amended IIFS are as follows:

	<u>1960s</u>	<u>amended IIFS</u>	<u>% increase</u>
23 Waiāhole Stream:	3.9 mgd	8.7 mgd	124%
24 Waianu Stream:	0.5 mgd	3.5 mgd	600%
25 Waikāne Stream:	1.4 mgd	3.5 mgd	150%
26 Kahana Stream:	11.2 mgd	13.3 mgd	19%

27
28
29

30 **C. The 2.2 mgd of Unpermitted Water**

31
32 “(T)he Commission should incorporate any allowances for scientific uncertainty
33 into its initial determination of the minimum standard. Any flows in excess of this
34 standard shall remain in the stream until permitted and actually needed for offstream use,
35 in keeping with the policy against waste and in recognition that the standard merely states
36 an absolute minimum required under any circumstances. These unallocated flows,
37 however, will not constitute a distinct category or quantity, but will fluctuate according to
38 variations in supply and demand.” (105 Haw. at 13)

39
40 In D&O II, after amending the IIFS for windward streams and issuing water use
41 permits for leeward agricultural and other uses, 3.80 mgd remained unpermitted and
42 available for future water use permits. [COL 14] The “unpermitted 2.2 mgd,” together
43 with a proposed agricultural reserve, was part of the 3.80 mgd. [COL 15] It was not a
44 separate category but the amount the Commission had indicated in D&O I that would be
45 remaining after an agricultural reserve was created in the future from the unpermitted
46 water. This intent was carried over into D&O II through Figure 2, although: 1) the

1 Decision and Order should have provided a reiteration of the intent in D&O I to create an
2 agricultural reserve; and 2) the correct amount should have been amended to 1.59 mgd,
3 because of reductions in the agricultural water use permits, leaving more for the proposed
4 agricultural reserve and thus less for other future uses. [COL 19]

5
6 To avoid similar misunderstandings in this Decision and Order, the Waiahole
7 Ditch flows are first categorized as follows: 1) water added to the windward streams
8 under the amended IIFS; and 2) the remaining water, which is available for offstream use.

9
10 Water added to the windward streams total 12.0 mgd: 1) 4.8 mgd added to
11 Waiahole Stream; 2) 3.0 mgd added to Waianu Stream; 3) 2.1 mgd added to Waikane
12 Stream; and 4) 2.1 mgd added to Kahana Stream. [COL 4; section B of this Decision and
13 Order, *supra*]

14
15 Water available for offstream uses through water use permits therefore equals 15
16 mgd. (There is approximately 27.0 mgd developed in the Ditch system from Kahana to
17 Adit 8, the leeward end of the main bore. [FOF 26])

18
19 The 15 mgd will be further categorized into permitted and unpermitted water, the
20 specific amounts to be identified later in this Decision and Order, because the amounts of
21 permitted water will be modified from D&O II. The unpermitted water will remain in the
22 streams until actually needed and permitted for offstream use. The unpermitted water and
23 any permitted water not needed for day-to-day operations will be released into the
24 windward streams as previously specified in D&O I and II; i.e., 0.9 mgd into Waikāne
25 Stream and the remainder into Waiāhole Stream. (D&O I, Decision and Order, at 3; D&O
26 II, at 139-140)

27
28
29 **D. Practicability of PMI and Campbell Estate Using Alternative Ground Water**
30 **Sources**

31
32 The decision by the Commission in D&O II is confirmed that PMI has no
33 practicable alternatives to the use of Waiāhole Ditch water, for which it was granted a
34 water use permit in the amount of 0.75 mgd. [COL 23]

35
36 The Windward Parties' motion to deny PMI's permit application for failing to
37 establish an actual water need of 0.75 mgd is denied and the allegations cited in that
38 motion are referred to the Water Commission for further investigation.

39
40 For PMI, this remanded hearing was convened specifically to clarify the basis on
41 which the Commission concluded that there were no practicable alternatives for PMI's
42 use of ditch water and not to revisit the merits of the Commission's award of 0.75 mgd to
43 PMI. Furthermore, PMI's current water use permit has an issue date of December 28,
44 2001, the date that D&O II was issued. Standard Water Use Permit Condition #15 under
45 which that permit was issued states:

1 The permittee understands that under HRS § 174C-58(4), (that) partial or
2 total nonuse, for reasons other than conservation, of the water allowed by
3 this permit for a period of four (4) continuous years or more may result in
4 a permanent revocation as to the amount of water not in use. The
5 Commission and the permittee may enter into a written agreement that, for
6 reasons satisfactory to the Commission, any period of nonuse may not
7 apply towards the four-year period. Any period of nonuse which is caused
8 by a declaration of water shortage pursuant to section HRS § 174C-62
9 shall not apply towards the four-year period of forfeiture.

10 The four-year period tolls on December 28, 2005. [COL 26]

11
12 For Campbell Estate, the Commission has concluded that at least one alternative
13 ground water source is economically available, even though more costly than the use of
14 ditch water. [COL 43-a] However, the ground water source is not practically available,
15 because practicable innately requires prioritizing among public trust resources, and the
16 Commission's prioritizing requires the use of non-potable ditch water instead of potable
17 leeward ground water for agricultural irrigation of Campbell Estate's lands. [COL 45]
18 However, the amount of ditch water for which Campbell Estate is issued a water use
19 permit is decreased by 0.76 mgd as explained in the following section, from 4.74 mgd in
20 D&O II to 3.98 mgd in this D&O.

21
22 **E. Actual Needs of Field Nos. 115, 116 and 145 (Jefts)**

23
24 Jefts leases 267 acres from Campbell Estate, of which he is cultivating only 188
25 acres. [COL 46] Jefts's actual water need is 2,500 gad per cultivated acre. [COL 47]
26 Campbell Estate was awarded a water use permit in D&O II for 267 acres, or 0.66 mgd.
27 Campbell Estate's water use permit is therefore reduced from 0.66 mgd to 0.47 mgd for
28 Field Nos. 115, 116 and 145.

29
30 **F. Actual Needs of 229 Acres in Field Nos. 146 and 166 (Garst Seeds)**

31
32 Garst Seeds leases 344 acres from Campbell Estate, of which 115 acres are
33 planted at any particular time, with the remaining 229 acres used as part of its crop
34 rotation plan. [COL 49] Garst's actual water need is 1,800 gad per planted acre. [COL
35 50] Campbell Estate's water use permit is therefore reduced from 0.78 mgd to 0.21 mgd
36 for Field Nos. 146 and 166.

37
38 **G. ADC's Permit for System Losses**

39
40 After taking into consideration costs, existing technology, and logistics in light of
41 the overall water planning process, the Commission finds that ADC has taken practicable
42 mitigating measures, including repairs to the ditch system, and has met the conditions for
43 the issuance of a water use permit for system losses under Section 174C-49(a) of the
44 State Water Code. [COL 67]

1 System losses are measured as the Adit 8 reading minus metered water uses, and
2 system losses are further divided into evaporation, overflow at Reservoir 155, and
3 unmetered losses. [COL 67-h]
4

5 ADC's request in D&O II was for 2.02 mgd, consisting of 0.07 mgd in
6 evaporation losses, 0.45 mgd in overflow at Reservoir 155, and an estimated 1.50 mgd in
7 unmetered losses after the three wooden siphons were replaced. [COL 67-b] Because
8 savings from replacing the wooden siphons were less than projected, the unmetered loss
9 after replacement has stabilized at an average of 1.72 mgd, not the projected 1.50 mgd, or
10 0.22 mgd more than originally projected. [COL 67-j] However, overflow at Reservoir
11 155 in dry weather has been reduced from 0.45 mgd to 0.24 mgd, for a savings of 0.21
12 mgd. [COL 67-d] When lining of Reservoirs 155 and 225 is completed, savings are
13 projected at 0.398 mgd to 0.759 mgd. [COL 67-k] ADC's system losses are therefore
14 2.03 mgd after taking practicable mitigating measures, estimated to decrease to an
15 average of 1.45 mgd when the lining of Reservoirs 155 and 225 is completed between
16 December 2007 and June 2008.
17

18 When the adjustment gate near Gate 31 is closed and all the windward tunnel
19 waters are diverted into the windward streams, water developed in the Main Bore leeward
20 of Gate 31 will continue to flow into the leeward ditch system and, if not used, will also
21 be included in system losses. [COL 67-e] To address the impact of wet weather on
22 ADC's ability to minimize system losses when there is little or no leeward water use,
23 ADC/DOA has requested "(t)hat the Commission revise the method for ADC's
24 calculation of system losses as follows: system losses equals the Adit 8 reading minus
25 metered usage, minus overflow at Reservoir 155 when the adjustment gate near Gate 31
26 is closed." [ADC/DOA, Proposed Decision and Order, #2]
27

28 The Commission is faced with two choices in addressing the variability in ADC's
29 ability to practicably minimize system losses in dry versus wet weather: 1) issue a water
30 use permit for a single quantity of system losses under dry weather conditions and
31 monitor the additional losses that are incurred in wet weather; or 2) issue a variable water
32 use permit that reflects the constraints on ADC's ability to implement practicable
33 mitigating measures under different weather conditions.
34

35 In the first option, a water use permit would be issued for 2.03 mgd, subject to a
36 decrease to an estimated 1.45 mgd when the lining of Reservoirs 155 and 255 are
37 completed between December 2007 and June 2008. The current method would be
38 modified as proposed by ADC:

- 39 1) When the adjustment gate near Gate 31 is open and some windward water is
40 being diverted to the leeward side, system losses would be measured as the
41 Adit 8 reading minus metered water use
- 42 2) When the adjustment gate is closed and no windward water is being diverted
43 leeward, system losses would be measured as the Adit 8 reading minus
44 metered water use and minus the overflow at Reservoir 155. In the latter
45 scenario, 0.24 mgd could be deducted from the overflow (i.e., added to system
46 losses), because that would be the amount included in system losses when the

1 adjustment gate was open. Overflow at Reservoir 155 would be reported to
2 the Commission for monitoring purposes.

3
4 In the second option, a variable water use permit would be issued. System losses
5 would continue to be measured as the Adit 8 reading minus metered water use.

- 6 1) When the adjustment gate is open and some windward water is being diverted
7 to the leeward side, the water use permit would be for 2.03 mgd, subject to a
8 decrease to an estimated 1.45 mgd when the lining of Reservoirs 155 and 255
9 are completed between December 2007 and June 2008.
- 10 2) When the adjustment gate is closed and all windward tunnel waters are being
11 diverted into the windward streams, the water use permit would be for the
12 Adit 8 reading minus metered water use. The overflow at Reservoir 155,
13 which would include runoff into the ditch during rainy periods, would be
14 reported to the Commission only for monitoring purposes. Under this method,
15 if water were not being used, the permit for system losses would be the
16 amount flowing out of Adit 8, and if water were being used, the permit for
17 system losses would decrease by those amounts. Water developed in the Main
18 Bore, between Gate 31 and Adit 8, has varied in recent years between a low of
19 3.8 mgd in November 2003 and 7.55 mgd in June 2004 [COL 67-e]

20
21 The Commission adopts the second option of a variable water use permit. ADC
22 clearly has available different practicable mitigating measures to minimize system losses
23 in dry versus wet weather. Rather than excluding some portion of system losses when
24 changes in physical conditions constrain ADC's ability to minimize losses, the
25 Commission concludes that it is appropriate and required by the Water Code to regulate
26 system losses through a variable water use permit.

27 28 **H. Summary**

29
30 There is on average 27.0 mgd that is developed in the Waiāhole Ditch and Tunnel
31 System. About 5.0 mgd of this amount is developed in the Main Bore, the tunnel that
32 connects the windward collecting tunnels to the leeward distribution ditch. The Main
33 Bore is leeward of and at lower elevation to the last adjustment gate on the windward side
34 that can divert tunnel waters into the windward streams, so a maximum of 22.0 mgd can
35 be diverted into the windward streams.

36
37 Water added to the windward streams under the amended IIFS total 12.0 mgd: 1)
38 4.8 mgd to Waiāhole Stream, 124% greater than its 1960s flow; 2) 3.0 mgd to Waianu
39 Stream, 600% greater than its 1960s flow; 3) 3.0 mgd to Waikāne Stream, 150% greater
40 than its 1960s flow; and 4) 2.1 mgd to Kahana Stream, 19% greater than its 1960s flow.

41
42 Of the 15.00 mgd available for offstream uses, 12.57 mgd has been permitted,
43 including a decrease from 4.74 mgd to 3.98 mgd for Campbell Estate, and 2.03 mgd in
44 system losses for ADC, subject to a decrease to an estimated 1.45 mgd when the linings
45 of Reservoirs 155 and 225 are completed between December 2007 and June 2008.

1 The changes from D&O II are as follows: 1) water added to the windward streams
2 for the amended IIFS increases from 9.9 mgd to 12.0 mgd; 2) water permitted for
3 offstream uses decreases from 13.30 mgd to 12.57 mgd; and 3) water remaining
4 unpermitted, available for future water use permits, and diverted into the streams until
5 permitted, decreases from 3.80 mgd to 2.43 mgd.
6

7 The 2.43 mgd in unpermitted water will be diverted into the windward streams
8 until such time as it is permitted for offstream use. The unpermitted water and any
9 permitted water not needed for day-to-day operations will be diverted into the windward
10 streams as previously specified in D&O I and II; i.e., 0.9 mgd into Waikāne Stream and
11 the remainder into Waiāhole Stream (these amounts are in addition to the 3.0 mgd added
12 to Waikāne and 4.8 mgd added to Waiāhole Streams under the amended IIFS).
13

14 ADC's permit for 2.03 mgd in system losses applies when the windward
15 adjustment gate is open and some windward water is being diverted leeward. When the
16 adjustment gate is closed and all windward tunnel waters are being diverted into the
17 windward streams, the water use permit will be for the Adit 8 reading (where the tunnel
18 emerges into the ditch) minus metered water use. This would be the water developed in
19 the Main Bore, which cannot be prevented from flowing into the leeward ditch system,
20 minus metered water usage. The water use permit for this amount is in effect the flow
21 from the Main Bore when it is rainy or use is otherwise less than the Main Bore flow,
22 minus usage.
23

24 The apportionment of Waiahole Ditch water is summarized in Figure 1. The
25 stream flows in the 1960s and the amended IIFS are summarized in Figure 2 and Table 1.
26 The water use permits are summarized in Tables 2-4.
27

28 The Standard Water Use Permit Conditions are contained in Appendix A.
29

30 The Commission's ruling on the proposed findings of fact submitted by the
31 parties is contained in Appendix B.
32
33
34
35
36

FIGURE 1
APPORTIONMENT OF WAIHAHOLE DITCH WATER

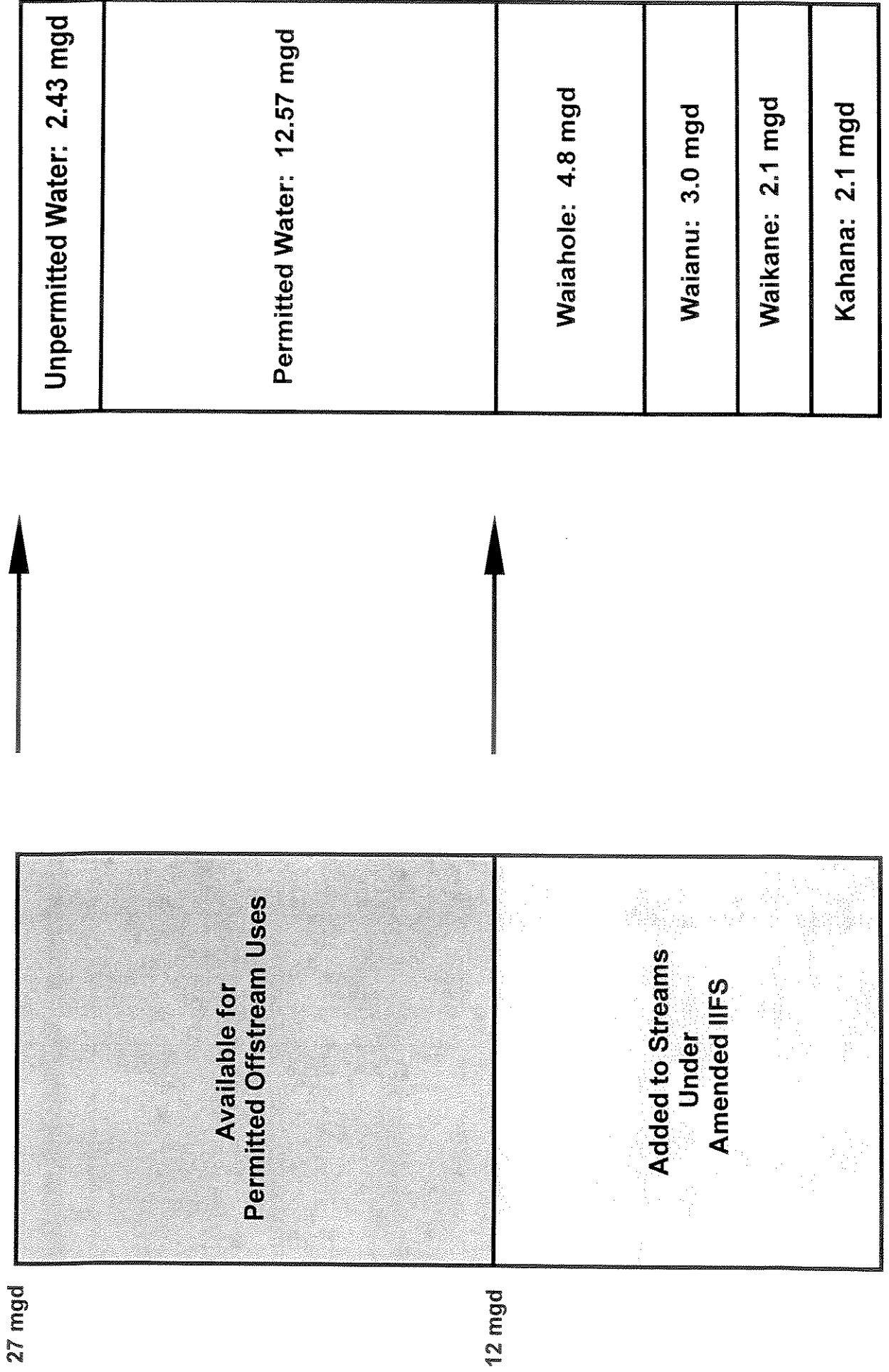


Table 1. Stream Flows

Stream	1960s	Amended IIFS	Percent Increase
Waiahole	3.9 mgd	8.7 mgd	124%
Waianu	0.5 mgd	3.5 mgd	600%
Waikane	1.4 mgd	3.5 mgd	150%
Kahana	11.2 mgd	13.3 mgd	19%

Table 2. Waiahole Ditch System - Leeward Oahu Agricultural Water Use Permits

Landowner	User/Lands	Use	Acreage	Acreage Subtotal	Basis (GAD)	Allocation	Allocation Subtotal
Robinson	Jefts Sou	Div Ag Div Ag	620	995	2500 2500	1.55	2.49
			375			0.94	
Nihonkai	Sou	Div Ag	190	190	2500	0.48	0.48
Campbell	156,140,172 105,110 HARC 146,166 115,116,145 161	Pineapple	803	[2096] 1788	2000	1.60	[4.74] 3.98
		Div Ag	409		2500	1.02	
		Plant Research	65		4000	0.26	
		Seed crops	115		1800	0.21	
		Div Ag	[229] 0		2500	[0.57] 0	
		Div Ag	[267] 188		2500	[0.66] 0.47	
		Pineapple	208		2000	0.42	
Dole/ Castle & Cooke (Robinson)	Dole Fresh Fruit Co. Hawaii Ag Park Pacific Landscape Hawaiian Fertilizer Sales Eiko Nakama	Div Ag	925	1459	904 (requested) 2500	0.84 0.24	2.13
		Div Ag	97		500 (requested) 2500	0.01 0.94	
		Div Ag	22				
		Small plots & long-term crops	375				
		Div Ag	40				
KSBE	Waiawa Nursery HFP	Div Ag	36	69	2500	0.09	0.17
		Div Ag	33		2500	0.08	
TOTAL		DIV AG		4809			[40.04] 9.25

Table 3. Waiahole Ditch System - Leeward Oahu Water Use Permits, Other Uses

Landowner	Use	Acreage	Tax Map Key	Basis (GAD)	Allocation
State of Hawaii (Waiawa Corr. Fac.)	Dom, Irr	210	9-6-5:011 9-6-5:012	requested @ 714	0.15
Mililani Memorial	Cemetery	67	9-4-6:10p 9-4-33:01	requested @ 2085	0.14
Mililani Golf	Golf Course	165	9-5-01:35	requested @ 1500	0.25
Royal Oahu Resort	Golf Course	163	9-2-4:046	N/A	0.00
Puu Makakilo	Golf Course	230	9-2-3:074	requested @ 3261	0.75
Agribusiness Development Corporation	System losses			requested 2.00	2.03 ¹
TOTAL	OTHER USES	835			3.32

¹ Reduced to an estimated 1.45 mgd after lining of Reservoirs 155 and 225 is completed.

Table 4. Summary of Allocations (mgd)

Landowner	Allocation per Original D&O	Allocation on 1 st Remand	Allocation on 2 nd Remand
Robinson	2.49	2.49	2.49
Nihonkai	0.48	0.48	0.48
Campbell	5.28	4.74	3.98
Dole/Castle & Cooke	2.22	2.13	2.13
KSBE	0.17	0.17	0.17
SUB TOTAL	10.64	10.01	9.25
OTHER USES	1.29	1.29	1.29
OPERATIONAL LOSS ALLOWANCE	2.1	-	-
Water Use Permit For System Losses	-	2.0	2.03 ¹
TOTAL	14.03	13.30	12.57

¹ Reduced to an estimated 1.45 mgd after lining of Reservoirs 155 and 225 is completed.

Appendix A

Standard Water Use Permit Conditions

1. **The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described in this Decision and Order. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)**
2. The right to use ground water is a shared use right.
3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:
 - a. Can be accommodated with the available water source;
 - b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
 - c. Will not interfere with any existing legal use of water;
 - d. Is consistent with the public interest;
 - e. Is consistent with State and County general plans and land use designations;
 - f. Is consistent with County land use plans and policies; and
 - g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).
4. The ground-water use here must not interfere with surface or other ground-water rights or reservations.
5. The ground-water use here must not interfere with interim or permanent instream flow standards. If it does, then:
 - a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
 - b. The interim or permanent instream flow standard, as applicable, must be amended.
6. The water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.
7. The water use permit application, as amended, approved by the Commission in its December 24, 1997 Decision and Order, are incorporated into this permit by reference.

8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.
9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
 - a. protect the water sources (quantity or quality);
 - b. meet other legal obligations including other correlative rights;
 - c. insure adequate conservation measures;
 - d. require efficiency of water uses;
 - e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
 - f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
 - g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard.

10. Approved flowmeters must be installed to measure monthly withdrawals and a monthly record of withdrawals must be kept and reported to the Commission on Water Resource Management on a monthly basis.
11. This permit shall be subject to the Commission's periodic review of the Waipahu-Waiawa, Kahana, and Koolaupoko Aquifer System's sustainable yields. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yields of the Waipahu-Waiawa, Kahana, and Koolaupoko Aquifer Systems, or relevant modified aquifer(s), are reduced.
12. A permit may be transferred, in whole or in part, from the permittee to another, if:
 - a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
 - b. The Commission is informed of the transfer within ninety days.

Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.

13. The use(s) authorized by law and by this permit do not constitute ownership rights.

14. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances which will affect the permittee's water use.
15. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservation, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.
16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the Waipahu-Waiawa, Kahana, and Koolaupoko Ground-Water Management Areas.
17. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.
18. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.

Appendix B

RULINGS ON THE PROPOSED FINDINGS OF FACT SUBMITTED BY THE PARTIES

The Commission makes the following rulings on the parties' proposed findings of fact. The findings are placed into two categories.

Category A contains findings that are accepted in their entirety, or accepted with minor modifications or corrections that do not substantially alter the meaning of the original findings.

Category B contains findings that are rejected because they may be: 1) duplicative; 2) not relevant; 3) not material; 4) taken out of context; 5) contrary (in whole or in part) to the found facts; 6) an opinion (in whole or in part); 7) contradicted by other evidence; or 8) contrary to law.

I. CAMPBELL ESTATE

A. ACCEPTED

1-17, 20-22, 24-26, 31, 34, 36-39, 41-57.

B. REJECTED

18-19, 23, 27-30, 32-33, 35, 40, 58.

II. PMI

No findings of fact were submitted, as the Hearing Officer had concluded that no further hearings were necessary because of the sufficiency of evidence in the Record.

III. ADC/DOA

A. ACCEPTED

10-19, 23-40, 43, 45-46, 48-57, 59-68.

B. REJECTED

1-9, 20-22, 41-42, 44, 47, 58.

IV. CITY AND COUNTY OF HONOLULU

The City and County of Honolulu waived its right to file Proposed Findings of Fact, Conclusions of Law, and Decision and Order.

V. WINDWARD PARTIES

A. ACCEPTED

2, 9-12, 15-16, 22, 26-29, 33-34, 38, 48, 50-52, 57-58, 62-63, 66-67, 89-90, 94-96, 98-99, 101.

B. REJECTED

1, 3-8, 13-14, 17-21, 23-25, 30-32, 35-37, 39-47, 49, 53-56, 59-61, 64-65, 68-88, 91-93, 97, 100, 102-103.

VI. HAWAII'S THOUSAND FRIENDS

Hawaii's Thousand Friends joined in the Windward Parties' Proposed Findings of Fact.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

In the Matter of Water)	Case No. CCH-OA95-1
Use Permit Applications,)	
Petitions for Interim)	
Instream Flow Standard)	
Amendments, and Petitions)	
for Water Reservations for)	
the Waiahole Ditch Combined)	
<u>Contested Case Hearing</u>)	

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on this date a copy of the Hearing Officer's Proposed Findings of Fact, Conclusions of Law, and Decision and Order were duly served upon the following parties after notice (September 6, 2005) by pick-up at the Water Commission office and/or by U.S. mail, postage pre-paid or via State Messenger to the following:

Paul H. Achitoff, Esq.
D. Kapua'ala Sproat, Esq.
Earthjustice
223 S. King Street, Suite 400
Honolulu, HI 96813
Attorneys for WAIAHOLE-WAIKANE
COMMUNITY ASSOCIATION,
HAKIPUU OHANA, KAHALUU
NEIGHBORHOOD BOARD, AND KA
LAHUI HAWAII

and

Alan T. Murakami, Esq.
Native Hawaiian Legal Corp.
1164 Bishop Street, Suite 1205
Honolulu, HI 96813
Attorneys for HAKIPUU OHANA

Gilbert D. Butson, Esq.
Reinwald O'Connor & Playdon LLP
Pacific Guardian Center
Makai Tower
733 Bishop Street, Suite 2400
Makai Tower
Honolulu, HI 96813
Attorneys for PUU MAKAKILO, INC.

Mark Bennett, Esq.
Attorney General
Deborah Day Emerson, Esq.
Haunani Burns, Esq.
Deputy Attorneys General
Department of the Attorney General
425 Queen Street, CED Division
Honolulu, HI 96813
Attorneys for STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
AND AGRIBUSINESS
DEVELOPMENT CORPORATION
(via Messenger)

Michael H.Q. Lau, Esq.
Lane T. Ishida, Esq.
Ishikawa Morihara Lau & Fong LLP
400 Davies Pacific Center
841 Bishop Street
Honolulu, HI 96813
Attorneys for THE ESTATE OF
JAMES CAMPBELL

James T. Paul, Esq.
Pamela W. Bunn, Esq.
Paul Johnson Park & Niles
American Savings Bank Tower
1001 Bishop Street, Suite 1300
Honolulu, HI 96813
Attorneys for HAWAII'S THOUSAND
FRIENDS

Carrie S. K. Okinaga, Esq.
Corporation Counsel
Reid M. Yamashiro, Esq.
Duane W. H. Pang, Esq.
Deputies Corporation Counsel
Department of the Corporation
Counsel
530 S. King Street
Honolulu, HI 96813
Attorneys for CITY & COUNTY OF
HONOLULU, PLANNING
DEPARTMENT AND BOARD OF
WATER SUPPLY
(via Messenger)

Colleen I. Wong, Esq.
Dana K. N. Sato, Esq.
Livingston S. M. Wong, Esq.
Kamehameha Schools
567 S. King Street, Suite 310
Honolulu, HI 96813
Attorneys for KAMEHAMEHA
SCHOOLS

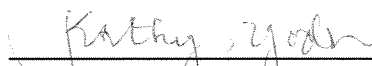
Dr. Jonathan Scheuer
Lance Foster
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, HI 96813
(via Messenger)

David Schulmeister, Esq.
Gino L. Gabrio, Esq.
Kelly G. LaPorte, Esq.
Cades Schutte Fleming & Wright
1000 Bishop Street, Suite 1200
Honolulu, HI 96813
Attorneys for LAND USE RESEARCH
FOUNDATION

Paul J. Schwind, Esq.
Director of Research and Legal Affairs
Land Use Research Foundation of
Hawaii
700 Bishop Street, Suite 1928
Honolulu, HI 96813

Gary M. Slovin, Esq.
Lisa A. Bail, Esq.
Anne T. Horiuchi, Esq.
Goodsill Anderson Quinn & Stifel
1099 Alakea Street, Suite 1800
Honolulu, HI 96813
Attorneys for DOLE/CASTLE AND
COOKE, INC.

DATED: Honolulu, HI SEP - 6 2005


KATHY YODA, Commission on Water Resource Management