Department of Water
County of Kaua'i

Water has no substitute.....Conserve it

December 15, 2006

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Final Environmental Assessment and Finding of No Significant Impact for Stable Tank Reservoir & Pipeline, TMK: 4-3-03:012, Kawaihau District, County of Kaua'i

The County of Kaua'i, Department of Water, has reviewed the comments received on its *Stable Tank Reservoir and Pipeline Draft Environmental Assessment* during the public review period which began on September 8, 2006. Based on our review, we have affirmed our determination that this project will not have significant environmental effects. Consequently, we have issued a Finding of No Significant Impact (FONSI). Please publish this determination in the January 8, 2007 OEQC *Environmental Notice.*

We have enclosed a completed OEQC Publication Form, four copies of the Final EA/FONSI, and the project summary on disk. Please call the project consultants Mr. Perry White or Ms. Melissa White at 808-550-4483 if you have any questions.

Sincerely,

Wynne M. Ushigome
Acting Manager and Chief Engineer

Enclosures:

(1) Final EA/FONSI, 4 copies
(2) OEQC Publication Form
(3) Electronic version of Project Summary on disk

J:KapaaLetters/OEQC

4398 Pua Loke St., P.O. Box 1706, Lihue, HI 96766 Phone: 808-245-5400
Engineering and Fiscal Fax: 808-245-5813, Operations Fax: 808-245-5402, Administration Fax: 808-246-8628

Final Environmental Assessment & Finding of No Significant Impact

STABLE TANK RESERVOIR & PIPELINE

PREPARED FOR:
Department of Water
County of Kaua'i

PREPARED BY:
PLANNING SOLUTIONS

DECEMBER 2006

Final Environmental Assessment &
Finding of No Significant Impact

STABLE TANK RESERVOIR & PIPELINE

PREPARED FOR:
Department of Water
County of Kaua'i

PREPARED BY:
PLANNING SOLUTIONS

DECEMBER 2006

PROJECT SUMMARY

Project:	**Stable Tank Reservoir & Pipeline**
Applicant/Approving Agency	Department of Water (DOW), County of Kaua'i Contact: Keith Fujimoto Phone: (808) 245-5449 P.O. Box 1706 Līhu'e, HI 96766
Location	Kapa'a, Kawaihau District, Island of Kaua'i
Tax Map Key	4-3-03:012 (reservoir site)
Parcel Area	1.854 acres
Project Site Area	Reservoir site = 0.72 acres; Waterline Route = 0.7 acres
State Land Use District	Agriculture
County Zoning	Agriculture
Proposed Action	DOW proposes to construct a 1.0 million gallon (MG) water storage tank with associated controls and two new water pipelines along a portion of Ka'apuni Road. The reservoir would supplement the storage capacity for the Wailua-Kapa'a water area, allowing the two new waterlines to maintain efficient distribution to DOW's 214-foot and 313-foot systems serving Kapa'a.
Actions Requiring Assessment	Proposed use of County land & Federal funds.
Legal Environmental Authorities	National Environmental Policy Act, Hawai'i Revised Statutes Chapter 343 and Hawai'i Administrative Rules §11-200
Consultation	County of Kaua'i Planning Department, State Historic Preservation Division, State Safe Drinking Water Branch, and the parties listed in Table 6.1 were consulted during the preparation of this EA.
Required Permits and Approvals	• Class IV Zoning Permit, Building Permit, Use Permit, Special Permit (Kaua'i County) • NPDES General Permit Coverage for Stormwater, Dewatering, and Hydrotesting, State Dept. of Health • Grading/Grubbing/Stockpiling (Kaua'i County) • Noise Permit (State Dept. of Health)
Determination	Finding of No Significant Impact
Consultant	Planning Solutions, Inc. 210 Ward Avenue, Suite 330, Honolulu, HI 96814 Contact: Perry White (808)-550-4483

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1.0 NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The Kaua'i County Department of Water (DOW) is a semi-autonomous agency consisting of a Board of Water Supply, Manager and Chief Engineer, and support staff. DOW operates municipal water systems in thirteen water system planning areas on the Island of Kaua'i. Because DOW operates based on fees charged for water, it is financially self-sufficient and receives no support from the County or the General Fund. Consequently, the DOW is responsible for setting the budget, developing a financial plan, and establishing water rates. The seven-member Board of Water Supply is responsible for the management, control, and operation of the County of Kaua'i's water system. The Board of Water Supply appoints the Manager and Chief Engineer to be the head of the DOW. The Board may also issue revenue bonds, establish rates and charges, and amend, or make changes to rules and regulations relating to the management, control, operation, and preservation of the water facility.

Water Plan 2020, the latest update of the DOW's long-range plan, covers all of its water systems. It includes a:

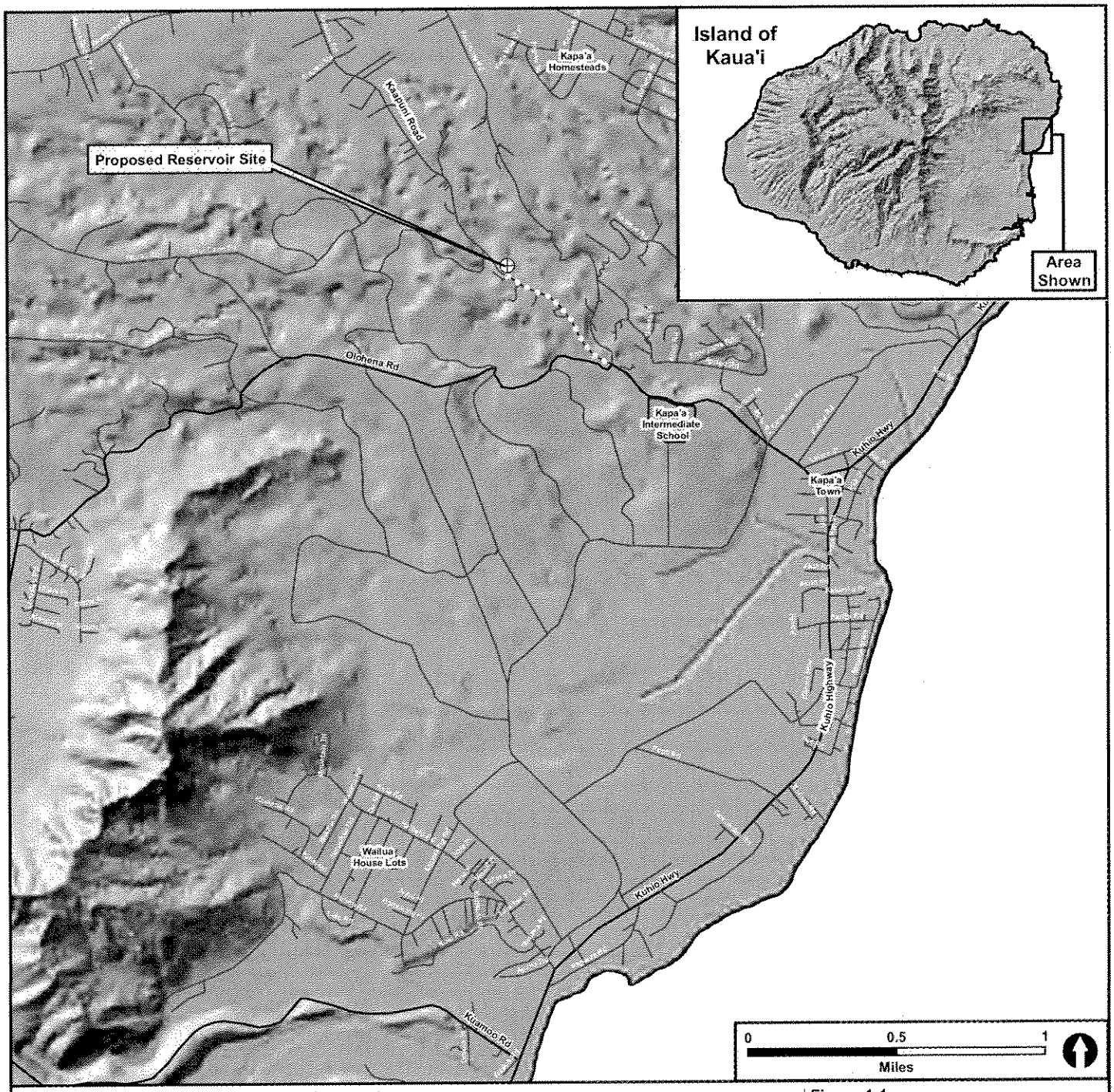
- Capital Improvements Program that identifies facilities needed to address both existing capacity deficiencies and the growth and change in water use patterns;
- Capital Rehabilitation and Capital Replacement Program to repair or replace deteriorating and aging infrastructure.
- Financial Plan that charts the best way to fund CIP and operational expenditures over the next 20 years.

Water Plan 2020 builds upon planning efforts spread over the last 25 years. These plans and their status or current application to the DOW are summarized in Table 1.1.

Table 1.1. Planning Documents Related to *Water Plan 2020.*

Plan/Document	*Status/Current Application*
Water System Standards, State of Hawai'i, 2002	Basis of the DOW water standards, except as modified herein.
Water System Plan, R.M. Towill, 1999	Partial water plan elements, primarily consisting of water system maps. These water system maps were used to build the water system model used for analysis of the distribution system.
A General Plan for Domestic Water/Island of Kauai, Division of Water and Land Development, Department of Land and Natural Resources, State of Hawai'i, 1972.	Previous water system plan. This document was used to develop the history of DOW, existing facilities (pre 1972), and original standards of design for many areas of the water system.
Kaua'i General Plan Update, County of Kaua'i, 2000	Draft population and land use planning document. This work served as the source for population and zoning projections used in *Water Plan 2020*.
Source: *Water Plan 2020*, Table 1.1.	

The proposed action analyzed in this Environmental Assessment (EA) is the construction of a 1.0 million gallon (MG) storage reservoir, two new waterlines, and associated control and monitoring equipment. The project is located in Kaua'i's Kawaihau District, approximately 1 mile west of the community of Kapa'a (see Figure 1.1).



Prepared For:

Department of Water,
County of Kaua'i

Prepared By:

PLANNING SOLUTIONS

Sources:

--State of Hawai'i GIS
--Tom Nance Water Resource Engineering, Inc.

Legend:

Proposed Waterline

Figure 1-1:

Location Map

Stable Tank & Waterline Project

Figure 1-1 (Location Map) 2009-01-05.mxd

The project's intended function is twofold: 1) to provide additional water storage capacity in DOW's Wailua-Kapa'a water system; and 2) to improve the efficiency of water distribution within the 313-foot and 214-foot pressure zones of the Wailua-Kapa'a water system. This will help to reduce existing deficiencies in emergency water storage and improve the distribution of drinking water for DOW customers in the service area.

The remainder of this Chapter is organized as follows:

- Section 1.2 describes the existing DOW island-wide system.
- Section 1.3 presents the island's current and projected water use.
- Section 1.4 describes DOW's Wailua-Kapa'a water system and discusses the need for the enhanced storage and distribution being proposed in this *EA*.
- Section 1.4.3 outlines DOW's objectives for the proposed action.
- Section 1.6 presents the organization of the remainder of this *EA*.

1.2 EXISTING DOW SYSTEMS AND FACILITIES

The facilities that now comprise the unified County water system were initially developed separately in the 1920s as systems serving individual communities. These water systems, several of which were constructed by sugar plantations, eventually were organized as independent County-run systems under the Territorial government; by the late 1930s, nine water systems were providing service to the island's population. In the late 1960s, following two decades of population decreases that resulted from the decline of the sugar industry Kaua'i's population began rising, increasing from about 28,000 in 1965 to more than 50,000 in the early 1990s. The growth resulted in an increase in the water demand for almost all of the island's water systems, and these had to expand accordingly.

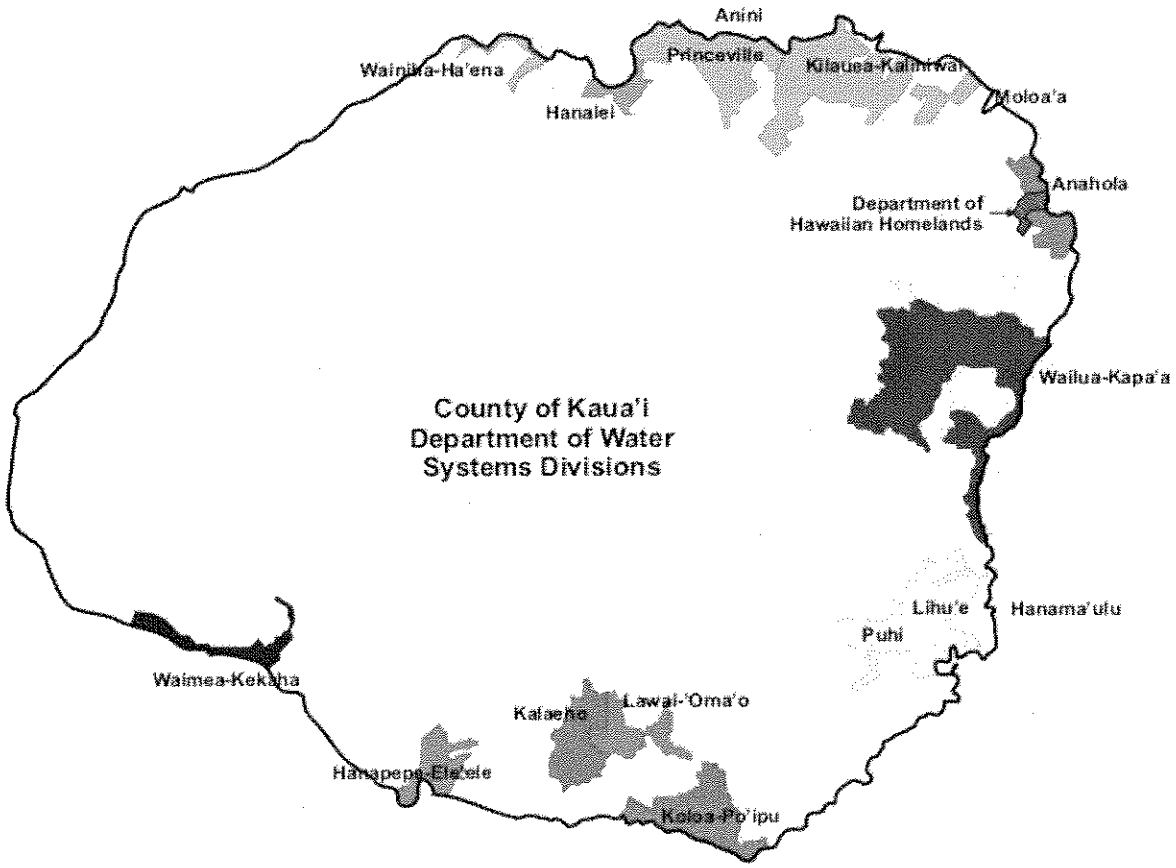
DOW coordinates development effort with County and private developers seeking to connect to DOW-operated water systems in each of its water system planning areas. Private developers provide all needed infrastructure improvements for their developments to be served by a DOW system; once these are in place, they are dedicated to the County and DOW becomes responsible for their operation and maintenance.

Consistent with the *Kauai General Plan (2000)* and for purposes of *Water Plan 2020*, the DOW has defined service areas of the existing water systems as shown in Figure 1.2. The water system service areas were drawn to include the following:

- All existing service areas, including infill areas (e.g., agricultural areas within Wailua Homesteads, other homestead areas).
- Areas which are planned and zoned for future urban development, particularly the three large, master-planned projects of Kukuiula (Kōloa-Pō'ipu), Līhu'e/Puhi Project District (Līhu'e-Puhi), and Līhu'e-Hanamā'ulu Infill (Līhu'e-Puhi). The developers of these projects are obligated under conditions of their zoning to develop water supply infrastructure that meets DOW standards.
- Agricultural subdivisions, which have tentative approval or are in the process of being approved. The developers of agricultural subdivisions are also obligated to develop water supply infrastructure to DOW standards or develop private water systems.

Existing service areas are defined according to the DOW water systems described above. Mapped service areas also include Princeville, a resort community served by a private water utility; and the Anahola Agricultural Lots, which is served by a system belonging to the Department of Hawaiian Homelands. These service areas are listed in Table 1.2.

Figure 1.2. Water Service Areas



Source: Kaua'i County Department of Water

Table 1.2. Existing Service Area Characteristics.

Service Area	Description
Waimea-Kekaha	The service area is comprised of the two small towns of Waimea and Kekaha. Waimea is the civic center of the West Side, home to the high school, hospital, and other community facilities as well as a variety of restaurants and retail stores. Kekaha includes a residential community that supports diversified agricultural and a small industrial area. The Pacific Missile Range Facility and west side State parks are nearby.
Hanapepe-'Ele'ele	The service area includes Kauai's second commercial harbor, Port Allen, the island's major electrical power generating station, and other industrial uses. Across the highway are Hanapepe Town and the residential community of Hanapepe Heights. 'Ele'ele has a small business area and residential communities.
Kalaheo	Kalaheo has small-town commercial uses concentrated along the highway and along Papalina Road.
Lāwa'i-'Ōma'o	The west side has three small-town/rural service areas: Lāwa'i-'Ōma'o, Kalaheo, and Waimea-Kekaha. The areas consist primarily of agricultural homestead lands that have been subdivided and developed at various densities of residential use.
Kōloa-Pō'ipu	The service area consists of a concentration of resorts along the coast, with residential communities clustered near the coast and around Kōloa Town.
Pūhi-Līhu'e-Hanamā'ulu	The area includes Kauai's major airport and commercial harbor, the largest concentration of industrial uses, Wilcox Hospital, hotels, government and business uses, and residential neighborhoods.
Wailua-Kapa'a	The area has hotel, schools, hospitals, residences, and business clustered along the coastal highway, as well as along two major roads (Kuamo'o Road and Kawaihau Road) that extend inland at the north and south ends of the Wailua-Kapa'a basin. The central part of the basin is comprised of old agricultural homesteads that are gradually transitioning to residential use.
Anahola	In Anahola, the major landowner is the Department of Hawaiian Homelands (DHHL), which develops residential lots and agricultural homesteads for lease to native Hawaiians. The Anahola service area also includes privately owned residential and agricultural lots in and around Anahola Valley. Portions of the water system are owned by either the DOW or DHHL. DOW operates the system in partnership with DHHL
Moloa'a	Moloa'a, the DOW's smallest service area, consists of two small clusters of residences. Water is purchased from a state well that is currently operated by a private landowner in the area.
Kilauea-Waipāke-Kalihiwai	The service area is comprised of Kilauea Town and a number of non-contiguous agricultural subdivisions that extend towards the mountains or the coast on either side of the highway. The largest part of the service area consists primarily of low-density residences and small farms.
'Anini	The service area consists of a narrow strip of beach residences. The water is purchased from Princeville Utilities.
Hanalei	The service area consists of residences and small-town business uses.
Wainiha-Ha'ena	The system serves residences along the coast and in Wainiha Valley.
Source: Water Plan 2020	

DOW also supplies potable water at a reduced price to a limited number of agricultural businesses. As of 1998, the DOW had approximately 300 agricultural users islandwide. DOW does not own or operate any of the island's agricultural irrigation systems. As of 1999, the DOW maintained 52 separate groundwater sources comprised of wells, shafts, and tunnels. There are 46 tanks ranging in size from 5,000 gallons to two million gallons, with a total storage capacity of approximately 18.5 million gallons. The DOW also has 16 booster pump stations (Kaua'i General Plan 2000).

1.3 EXISTING AND PROJECTED WATER USE

Water Plan 2020 used population and land use projections developed as part of the *Kaua'i General Plan* (*KGP*) to forecast water use though 2020 and 2050. These forecasts were then used in conjunction with historical water use data to predict demands on a service area. The *KGP* projection of total jobs and resident population on Kaua'i in 2020 is based on the premise that the visitor industry, specifically the average daily visitor census (ADVC) drives employment, which, in turn, influences resident population growth. The high, medium, and low ADVC projections were generated using a simple linear regression model--historic data and relationships and a planned ADVC in 2020 of between 24,000 and 28,000. In addition, the *KGP* assumes strong growth of diversified agriculture and aquaculture over the next two decades. In order to ensure adequate future capital improvements, *Water Plan 2020* projections are based on the high end of the visitor forecast range (i.e., year 2020 ADVC of 28,000). With this ADVC, population and jobs on Kaua'i island-wide are projected to be 68,880 and 44,900 respectively.

Table 1.3 shows population for 2000, 2020, 2050 and build-out within DOW service areas. The year 2050 projections were prepared assuming that the forecasted growth rate from 2010 to 2020 will continue through 2050. The build-out projections are based on the capacity of vacant lands based on a lot survey performed by DOW. The majority of lots have zoning and a few have the appropriate *Kaua'i General Plan* land use designation and/or a State land use designation of Urban. The analysis does not include potential development on existing developed parcels, such as an additional dwelling unit on an existing residence. It is assumed that the vacant sites are built-out to the maximum allowable single dwelling densities.

Future water demands were estimated based on the demographic forecasts presented earlier and shown in Table 1.3. The majority of the water use is concentrated in a few of the service areas. Three of them – Wailua-Kapa'a, Puhi-Līhu'e-Hanamā'ulu and Kōloa-Pō'ipu – comprise approximately 65 percent of the DOW customers' annual average water use. The future demand forecasts are broken down into the water use categories that were correlated to the DOW meter types, for which current water usage rates exist (see Table 1.4).[1] Average daily water use in the service areas varies from a low of 315 gallons per unit to a high of 772 gallons per unit. DOW water use forecasts assume that water usage rates will remain the same over the planning horizon through 2020 for each of the water use categories.[2] The water demand forecast is presented in Table 1.5.

[1] Residential single-family water use comprises the majority of the DOW's consumption with more than 50 percent of the total water use. Average daily water use in the service areas varies from a low of 315 to a high of 772 gallons per unit. The combined multi-family/resort category makes up about one quarter of the water use and the remaining categories of commercial, industrial, agriculture, and government comprise the remaining 25 percent.

[2] A reduction in non-metered water from 25 to 15 percent by 2020 was used. As a result, some service areas that are forecast to have limited growth show decreases in overall water use during the 2000 to 2020 planning period. This anticipated reduction was based on improved metering, expanding the leak detection program, and pipeline replacements.

Table 1.3. 2000, 2020, 2050, and Build-out Population Projections.

District/Water System	*2000*	*2020*	*2050*	*Build-out Populations*
West Side	**9,124**	**11,273**	**14,809**	**17,959**
Waimea-Kekaha	4,827	5,595	6,858	8,550
Hanapepe-'Ele'ele	4,297	5,678	7,951	9,409
Kalaheo-Pō'ipu-Kōloa	**11,467**	**14,733**	**20,071**	**35,563**
Kalaheo	4,889	5,596	6,762	10,790
Lāwa'i-'Ōma'o	3,264	3,795	4,672	6,571
Kōloa	1,666	3,250	5,825	8,109
Pō'ipu	1,649	2,092	2,813	10,092
Līhu'e	**11,446**	**14,606**	**19,770**	**32,372**
Puhi-Līhu'e-Hanamā'ulu	11,446	14,606	19,770	32,372
Wailua-Kapa'a	**17,595**	**21,263**	**25,588**	**35,637**
Wailua-Kapa'a	16,038	18,346	22,151	32,200
Anahola	1,518	2,812	3,240	3,240
Moloa'a	40	106	197	197
North Shore	**5,166**	**7,004**	**9,664**	**11,421**
Kilauea-Waipāke-Kalihiwai	3,066	4,541	6,602	6,602
'Anini	178	211	266	323
Hanalei	933	1,065	1,283	2,217
Wainha-Haena	989	1,187	1,513	2,279
TOTAL	**54,798**	**68,880**	**89,901**	**132,952**

Source: *Water Plan 2020*, Table 4.1.

Table 1.4. Demographic Projection Summary Water Use Categories & Service Connections.

District/Water System	2000						2020					
	Resident	Single-Family	MF/Resort	Commercial	Industrial	Government	Resident	Single Family	MF/ Resort	Commercial	Industrial	Government
	Population	(Units)	(Units)	(Sq. Feet)	(Sq. Feet)	(Capita)	Population	(Units)	(Units)	(Sq. Feet)	(Sq. Feet)	(Capita)
West Side	**9,124**	**2,721**	**129**	**435,007**	**228,306**	**3,119**	**11,273**	**3,353**	**358**	**581,700**	**391,991**	**3,908**
Waimea-Kekaha	4,827	1,450	80	212,763	43,720	2,438	5,595	1,682	280	291,976	95,452	2,980
Hanapepe-'Ele'ele	4,297	1,271	49	222,244	184,586	681	5,678	1,671	78	289,724	296,539	928
Kalaheo-Pō'ipu-Kōloa	**11,467**	**3,386**	**2,514**	**321,860**	**68,870**	**1,225**	**14,733**	**4,275**	**4,111**	**520,728**	**71,101**	1,737
Kalaheo	4,889	1,440	65	106,102	5,488	635	5,596	1,653	67	191,778	5,779	778
Lāwa'i-'Ōma'o	3,264	989	29	18,786	11,435	2	3,795	1,150	29	17,738	11,551	2
Kōloa-Pō'ipu *	3,315	957	2,420	196,972	51,947	588	5,342	1,472	4,015	311,212	53,771	957
Kōloa	1,666	468	305	124,465	51,947	575	3,250	868	913	224,347	53,771	920
Pō'ipu	1,649	489	2,115	72,507	0	14	2,092	604	3,102	86,865	0	37
Līhu'e	**11,446**	**2,892**	**2,296**	**2,130,519**	**1,707,739**	**7,550**	**14,606**	**3,742**	**3,040**	**2,640,479**	**2,086,869**	**9,702**
Puhi-Līhu'e-Hanamā'ulu	11,446	2,892	2,296	2,130,519	1,707,739	7,550	14,606	3,742	3,040	2,640,479	2,086,869	9,702
Wailua-Kapa'a	**17,595**	**5,253**	**1,975**	**808,786**	**122,741**	**4,255**	**21,264**	**6,355**	**2,511**	**888,742**	**196,878**	**5,028**
Wailua-Kapa'a	16,038	4,781	1,955	783,233	109,115	4,128	18,347	5,471	2,491	847,012	183,163	4,844
Anahola	1,518	460	20	25,553	13,626	127	2,812	852	20	41,730	13,715	184
Moloa'a	40	12	0	0	0	0	106	32	0	0	0	0
North Shore	**5,166**	**1,559**	**162**	**180,114**	**96,338**	**793**	**7,004**	**2,116**	**162**	**251,163**	**127,134**	**1,027**
Kilauea-Waipāke-Kalihiwai	3,066	929	30	57,449	92,418	412	4,541	1,376	30	116,611	122,813	565
'Anini	178	54	0	0	0	0	211	64	0	0	0	0
Hanalei	933	279	58	106,542	3,920	379	1,065	319	58	118,352	4,321	458
Wainiha-Haena	989	297	74	16,123	0	2	1,187	357	74	16,200	0	4
TOTAL	**54,798**	**15,811**	**7,076**	**3,876,286**	**2,223,994**	**16,942**	**68,880**	**19,841**	**10,182**	**4,882,812**	**2,873,973**	**21,402**

Note: *Water Plan 2020* was developed for the 13 DOW water systems. Kōloa and Pō'ipu are hydraulically connected and treated as a single service area throughout *Water Plan 2020*, but this service area was divided for demand projections. The subdivision of this water system was developed primarily to account for the high level of resort development within Pō'ipu that is not present in Kōloa. These development patterns create a significant variation in daily use per meter between the two areas and the service area was split into two to permit this distinction to be made in the water demand forecast.

Source: *Water Plan 2020*, Table 4.2.

Table 1.5. Historical and Forecasted 2010 and 2020 Water Use.

Water System	*Historical Water Use (1,000 gallons/day)*				*Forecast Water Use (1,000 gallons/day)*		
	1995-96	*1996-97*	*1997-98*	*1998-99*	*2005*	*2010*	*2020*
Waimea-Kekaha	1,444	1,279	1,457	1,621	1,590	1,701	1,918
Hanapepe-'Ele'ele	1,020	994	1,093	1,071	1,149	1,218	1,361
Kalaheo	702	658	719	666	704	717	746
Lāwa'i-'Ōma'o	441	425	413	415	435	443	458
Kōloa	459	421	413	391	520	614	798
Pō'ipu	1,980	1,917	2,247	2,325	2,454	2,628	2,953
Līhu'e-Puhi-Hanamā'ulu	**3,054**	**3,283**	**3,359**	**3,321**	**3,570**	**3,733**	**4,066**
Wailua-Kapa'a	3,600	3,213	3,194	3,220	3,426	3,501	3,648
Anahola	256	237	264	290	321	367	460
Moloa'a	2	1	5	9	7	9	13
Kilauea-Waipāke-Kalihiwai	663	604	699	718	779	842	969
'Anini	36	44	47	45	40	41	43
Hanalei	168	171	162	161	174	177	181
Wainiha-Haena	157	156	156	154	166	169	179
TOTAL	**13,982**	**13,403**	**14,226**	**14,407**	**15,335**	**16,160**	**17,793**
Note: Historical and forecasted water demands include estimated non-metered water (25% in 1995-1999, 22.5% in 2005, 20% in 2010, 15% in 2020)							
Water Plan 2020, Table 4.5.							

DOW forecast Year 2050 water demands for all service areas based on population forecasts beyond 2020. Because General Plan forecasts are not available for 2050, the forecast for that year was based on the assumption that the water demand growth rate forecast for the 2010 to 2020 period would continue through 2050. Thus, the 2050 forecasts used the 2020 water use projections as a baseline and increased water demand by the percentage in population growth to 2050 for each DOW service area.[3] The forecasts are shown in Table 1.6.

[3] Population growth between 2020 and 2050 has been forecast at 34 percent, which corresponds to an overall 34 percent increase in water use during this period.

Table 1.6. 2020 and 2050 Water Use Projection

District/Water System	*Population*			*Water Use (1,000 gallons/day)*		
	2020	*2050*	*Percent Increase*	*2020*	*2050*	*Percent Increase*
West Side	**11,273**	**14,809**	**31**	**3,278**	**4,307**	**31**
Waimea-Kekaha	5,595	6,858	23	1,918	2,351	23
Hanapepe-'Ele'ele	5,678	7,951	40	1,361	1,905	40
Kalaheo-Pō'ipu-Kōloa	**14,733**	**20,071**	**36**	**4,955**	**6,751**	**36**
Kalaheo	5,596	6,762	21	746	902	21
Lāwa'i-'Ōma'o	3,795	4,672	23	458	564	23
Kōloa	3,250	5,825	79	798	1,430	79
Pō'ipu	2,092	2,813	34	2,953	3,970	34
Līhu'e	**14,606**	**19,770**	**35**	**4,066**	**5,503**	**35**
Līhu'e-Puhi	14,606	19,770	35	4,066	5,503	35
Wailua-Kapa'a	**21,264**	**25,588**	**20**	**4,121**	**4,960**	**20**
Wailua-Kapa'a	18,346	22,151	21	3,648	4,404	21
Anahola	2,812	3,240	15	460	531	15
Moloa'a	106	197	87	13	25	87
North Shore	**7,004**	**9,664**	**38**	**1,372**	**1,894**	**38**
Kilauea-Waipāke Kalihiwai	4,541	6,602	45	969	1,409	45
Mini	211	266	26	43	54	26
Hanalei	1,065	1,283	20	181	219	20
Wainiha-Haena	1,187	1,513	28	179	229	28
TOTAL	**68,879**	**89,901**	**31**	**17,794**	**23,224**	**31**

Notes:
Including non-metered water.
The existing and future water conservation programs are expected to reduce existing and future water demand projections. The *Water Plan 2020* demand projections assume they will reduce non-metered water use by 25-15 percent island wide.

Source: *Water Plan 2020*, Table 4.6.

DOW's *Water Plan 2020* used two planning horizons, 2020 and 2050, to assess the adequacy of the water supply on the island. In conducting its assessment, the DOW used level of service criteria consistent with similarly sized water purveyors throughout the United States.[4] *Water Plan 2020* also took into account the actual location of a water source within each service area in relation to other sources, facilities, and demand. This is important because many service areas span very diverse topography from coastal plains at sea level to ridges and hilltops at several hundred feet elevation. Consequently, a service area may contain adequate supply on an overall basis, but may not include

[4] The level of service criteria for sources requires that a service area be capable of providing Maximum Day Demand (MDD) within a 24-hour period with the largest source out of service.

the pumping or transmission capacity to transfer the water from the sources to the places where it is consumed. To account for this, supply was analyzed for each service area on a pressure zone basis.

Storage Requirements. The storage analysis was based on two level-of-service criteria for storage tanks/reservoirs, with the storage "requirement" based on the larger of the following criteria. The storage sizing criteria are as follows:

- Storage Criteria 1 - Fire Suppression Storage. Provide Maximum Day Demand (MDD) plus fire flow, with the reservoir three-quarters full at the start of the fire. Incoming supply from sources can be credited to this volume with the largest source out of service. This criterion is also referred to as "Fire Flow Storage".
- Criteria 2: Equalizing and Emergency Storage. Provide Maximum Day Demand with the tank full at the beginning of a 24-hour period, not including any sources of supply. This criterion is also referred to as "Maximum Day Storage".

In most pressure zones the second criterion generates a larger storage volume requirement. The exception occurs in zones with low demands, but high fire flow requirements.

Due to the long usable life of storage facilities, the identification of new storage was calculated to take into account the requirements at 2020. Significant increases in storage volume requirements are calculated for a number of pressure zones. DOW sized new storage to meet 2020 criteria.[5]

Transmission and Distribution Requirements. DOW planners and engineers evaluated the transmission and distribution systems relative to the current and future capacity to provide for peak-hour and fire-suppression flows and pressures. They developed and analyzed potential system improvement alternatives using computer models to determine the most appropriate means of eliminating deficiencies. The hydraulic models were run at calculated peak-hour flows in 2000 and in 2020. Nodes with pressures less than 40-psi were identified and the reasons for the inadequate pressures determined. Typically, high elevation (relative to the tank serving the node) was the reason for the less-than-40-psi pressures. The model results were compared with the DOW listing of low service pressure areas and found to match well.[6]

Once the forecast demand and existing system capability had been evaluated, the DOW identified the water system infrastructure improvement needs (i.e., both new facilities and renovation and replacement of existing facilities). The identification of needed capital improvement projects began with the source, storage and transmission evaluations from the water system planning based on the level-of-service criteria. In addition to the planning evaluations, the DOW also obtained input on the actual conditions of current facilities from their staff, primarily with the Operations Division. From those evaluations, the DOW determined the present and likely future deficiencies in source, storage and distribution capacity of the current water systems.

Source and storage needs identified through the level of service source and storage evaluations are shown in Table 1.7 for the various water systems.

[5] In many situations, storage tank projects had been identified by the DOW at specific sizes before *Water Plan 2020* was prepared; these were not modified. In these cases, additional storage was recommended, as needed. Due to limitations in transmission capability or geographically isolated portions of a system, proposing one localized storage facility was not practical in all systems; and tank projects were recommended at two or more locations in order to meet total volume requirements, while ensuring the ability to deliver the water within the system.

[6] As part of the model calibration process, the hydraulic models were run to simulate fire flow demands at a few selected fire hydrants (the number of hydrants varied with the size of the system) within a water system. The fire flow modeling used actual fire flow test data measured during the DOW field tests. Although these runs were primarily for calibration purposes, the results frequently indicated those areas within a water system that may not be able to meet fire flow standards.

Table 1.7. Additional Source and Storage Needs by Water System: Year 2000 and 2020.

Water System	Supply Needed (gpm)		Storage Capacity Needed (gal.)	
	Year 2000	Year 2020	Year 2000	Year 2020
Waimea-Kekaha	0	200	600,000	500,000
Hanapepe- ʻEleʻele	0	0	0	40,000
Kalaheo	0	0	500,000	0
Lāwaʻi-ʻŌmaʻo	0	0	250,000	0
Kōloa-Pōʻipu	0	0	500,000	1,000,000
Puhi-Līhuʻe-Hanamāʻulu	1,730	0	0	0
Wailua-Kapaʻa	700	0	2,150,000	0
Anahola	300	0	0	40,000
Moloaʻa	0	0	15,000	0
Kilauea-Waipāke-Kalihiwai	400	0	650,000	0
ʻAnini	0	0	0	0
Hanalei	200	0	100,000	0
Wainiha-Haena	100	0	210,000	0
Island-wide Total	**3430**	**200**	**4,975,000**	**1,580,000**

Source: *Water Plan 2020.* Tables 6.1 and 6.2.

In addition to the capacity-driven improvements noted above, DOW analyzed the transmission and distribution networks for the following conditions:

- Pipelines installed prior to 1960 (40+ years of age).
- Galvanized steel pipes (most are old, in poor condition and also have limited capacity).
- Polyvinyl Chloride (PVC) pipe installed prior to 1972 – 73 (most are small diameter and thin walled).
- Areas with dead-end mains.
- Pipeline diameters below 6-inch.

Based on these analyses, additional proposed projects were defined in each of the water systems. Once the projects had been identified, they were prioritized within each water system. The major parameters used in prioritizing the proposed improvement projects were the existing condition of the facilities, the extent to which action is needed to maintain public health and safety, and the existing level of service. Table 1.8 lists the project criteria, rating, and definitions that were used in the prioritization.

To accomplish this programming, the DOW started with the scoring associated with each project based on the three prioritization criteria (Condition Assessment, Health and Safety and Level of Service). In addition to the overall scoring that each project received from the prioritization, there were additional Programming Criteria that were used to assign projects into phases of the 20-year program. Based on the prioritization scoring, projects were initially assigned to improvement phases in the following order:

- Rating 27 points +: Must do now:
- Rating 22 to 26 points: Phase 1 (2002 to 2006)
- Rating 18 to 21 points: Phase 2 (2007 to 2011)
- Rating under 18 points: Phase 3 (2012 to 2021)

1.4 NEED FOR IMPROVEMENTS TO THE WAILUA-KAPA'A SYSTEM

The Wailua-Kapa'a System is the largest system on the island. Its service area includes the Wailua River-Waipouli Resort area, Wailua Houselots, Wailua Homesteads, Kapa'a Town and Kapa'a Homesteads. In 1997-98 the system consisted of 5,012 metered services, the largest of any system on the island. The system sold water to its consumers at an average rate of 2.57 million gallons per day; this rate was a close second to only that of the Puhi-Līhu'e-Hanamaulu water system for the same period.

The system is divided into three (3) separate service areas for operational purposes. The Wailua-Waipouli and Kapa'a Town area make up the coastal service level. The higher Wailua Homesteads area and the Kapa'a Homestead area make up the other two service areas.

Table 1.8. Prioritization Criteria, Rating, and Definitions.

Criteria	*Rating*	*Definition*
Condition Assessment	High 8-10	Remaining useful life of 6 or less years (e.g. – Historical water main break history indicate high rate of breaks, Mechanical equipment reaching end of manufacturer's recommended service life) or tank rehab, although the tank itself has useful beyond 6 years, painting, access etc. need to be rehabbed. Note this category will also include Facilities currently in the design and construction stage. DOW has already identified these projects as a high priority.
	Medium 4-7	Remaining useful life of 7 to 20 years (e.g. – Recently repaired facility).
	Low 1-3	Remaining useful life greater than 20 years (e.g. Newly constructed or rehabilitated facility).
	0	Criteria do not apply to proposed project.
Public Health and Safety	High 8-10	Supports significant increased water quality, fire protection, and public health and safety benefits. Regional system benefit is provided as opposed to only local (e.g. Mercury contamination of wells).
	Medium 4-7	Enhances water quality, fire protection, and public health and safety benefits for a specific area or neighborhood provides additional reliability and redundancy (e.g., provide additional fire hydrants).
	Low 1-3	No measurable benefits (e.g. No directly measurable benefit)
	0	Criteria do not apply to proposed project.
Level of Service	High 8-10	Project provides immediate increased water service opportunities for a significant number of customers (e.g., Known area of significant customer complaints or permit denials due to inability to provide required service).
	Medium 4-7	Provides near-term (5 to 10 years) water service demands (e.g. future area of customer complaints and permit denials).
	Low 1-3	Provides long term opportunities to meet future system expansion and capacity improvements (e.g. – Provide regional system benefit or economic development opportunities).
	0	Criteria do not apply to proposed project.

Source: *Water Plan 2020.* Table 6.3.

1.4.1 WATER SUPPLY IN THE WAILUA-KAPA'A SYSTEM

Eight primary pressure zones exist in the Wailua-Kapa'a service area as shown in Figure 1.3. These zones are served by ten sources including; Wailua Homesteads Well A & B, Akulikuli Tunnel, Makaleha Tunnel, Kapa'a Homesteads Wells 1 through 3, Moalepe Tunnel, Nonou Well 9-1B and Nonou Well 9-1C (see Table 1.9). The Pu'upilo Pump Station pumping from the 538' to the 605' Zone is the only booster pump station in the service area. Therefore all other zones are dependent on sources that are located in that zone or by supply fed through pressure reducing valves from higher elevations. The connection between the 538' and 530' Zones is only for emergency use and is considered in operation only when a source is out of service in the 530 Zone. Table 1.10 identifies the existing and forecast supply and demand within Wailua-Kapa'a between the years 2000 and 2020.

An approximately 15 percent increase in water use is expected between 2000 and 2020 in the Wailua-Kapa'a service area. Based on the rehabilitation of the Akulikuli Tunnel at 300-gpm and Kapa'a Homesteads Well #3 of 500 gpm, no new sources will be required within the service area through 2020. Between 2020 and 2050, the service area water use is predicted to increase by an additional 20 percent. New future water sources will be required in the upper pressure zones, specifically the 530 and 538 Zones.

1.4.2 WATER STORAGE IN THE WAILUA-KAPA'A SYSTEM

The eight primary pressure zones that exist within the Wailua-Kapa'a service area exhibit relatively complex interconnectivity, as shown in Figure 1.3. The 100,000 gallon Pu'upilo Steel Tank serves the 605 Zone. The 500,000 gallon Wailua Homesteads Tank provides storage to the 538 Zone. The 1.0 MG Makaleha Tank serves the 530 Zone. No storage exists in the 428, 268 and 233 Zones, which are solely dependent on pressure reducing valves for supply. The 313 Zone is served by the 200,000 gallon Ornellas Tank. The 2.0 MG Nonou Tank provides storage to the large 214 Zone.

As shown in Table 1.11, the Water Plan 2020 found Wailua-Kapa'a deficient in storage in a number of pressure zones and on an overall basis.[7] Of particular note to the present proposal is the deficiency in the 313' Zone, which amounts to 730,000 gallons in 2000 and 770,000 gallons in 2020. As illustrated in Figure 1.3, the 313' Zone also directly serves the 268' and 233' Zones that are deficient by a combined volume of 59,000 gallons in 2000 and 74,000 gallons in 2020, respectively. To meet the need, the plan (page 7-61) calls for construction of a new 900,000-gallon storage facility to help meet the needs of this zone. The proposed project does that by providing storage for portions of the 313' system that it must now serve through pressure relief valves.

[7] All storage deficiencies within Wailua-Kapa'a are based on Maximum Day Demand criteria.

Figure 1.3. Schematic of Transmission Capability within the Kapa'a Pressure Zones.

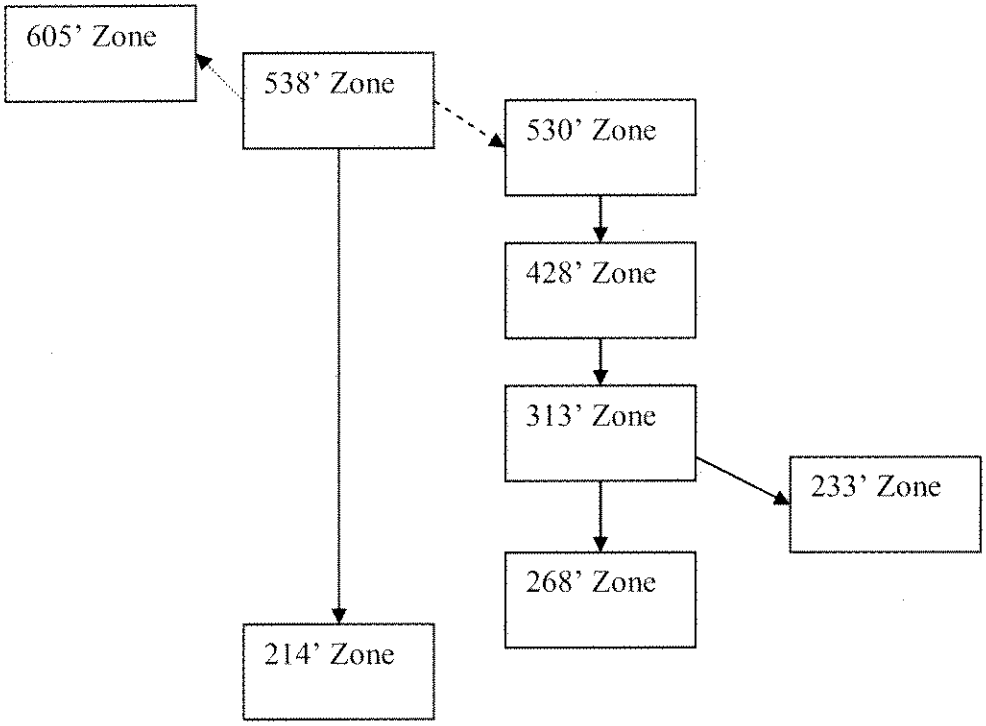


Table 1.9. Existing Facility Inventory: Wailua-Kapa'a Water System.

	Nonou 9-1B	*Nonou 9-1C*	*Akulikuli Tunnel*	*Kapa'a Homesteads Well No. 1 (Makaleha Well "A")*	*Makaleha Tunnel*	*Wailua Homestead Well "A"*	*Wailua Homesteads Well "B"*	*Moalepe Tunnel*	*Kapa'a Homesteads Well #2*	*Kapa'a Artesian*	*Wailua Homesteads Well # 3*	*Kapa'a Homesteads Well # 3*
Rated Head and Flow	500 gpm @ 220'	1,000 gpm @ 245'		1000 gpm	350 gpm	500 gpm	500 gpm	300 gpm	500 gpm			500 gpm
Motor horsepower	75 hp	75 hp		75 hp		100 hp	100 hp					
Land Use	rural forest reserve	rural forest reserve	rural forest reserve	rural forest reserve	rural forest reserve	rural residential	Rural residential	rural forest reserve				
Chlorine System	1-Cl_2 150#	1-Cl_2 150#	1-150# Chlorine	1-Cl_2 150#	2- Cl_2 online (1 to high zone, 1 to tank)	1-Cl_2 150# for Wells A and B						
Backup Power	no emergency hookup available	Hookup		Hookup		Hookup	Hookup					
Notes			Feeds Ornellas Tank.	Pump replaced.	Nearby residences served from tunnel Feeds Makaleha Tank			Feeds Wailua Homesteads Tank.		Artesian well with possible development potential.	Exploratory well tested at 140 gpm	
Notes			Tunnel is clogged with roots, may be able to produce 300 gpm with rehab.	Draw down is an issue at this well	Alt valve tank filled by tunnel, well pumps to tank level				530 Zone	214 Zone	538 Zone	214 Zone
Notes			Tunnel sources not chlorinated		Tunnel sources not chlorinated			Tunnel sources not chlorinated				

Source: *Water Plan 2020.* Table 7.F.1.

Table 1.10. Water Supply and Demand for Wailua-Kapa'a

Source	Existing Capacity (gpm)	2000		2020	
		MDD (gpm)	Surplus/ Deficit (gpm)	MDD (gpm)	Surplus/ Deficit (gpm)
605T Pressure Zone					
Pu'upilo BS 1 & 2 (from 538 Zone)	180 & 200*				
Zone Total	**180**	**127**	**53**	**145**	**35**
538T Pressure Zone					
Wailua Homesteads Well B	500*				
Moelepe Tunnel #7	300				
Demand from 605 Zone		127		145	
538 Zone Demand		853		1,038	
Zone Total	**300**	**980**	**(680)**	**1,183**	**(883)**
530T Pressure Zone					
Makaleha Tunnel	350				
Makaleha Well	1000**				
Demand from 428 Zone		47	116		
Demand from 313 Zone			726		
530 Zone Demand				793	
Zone Total	**350**	**-1,114**		**1,635**	**-1,285**
428P Pressure Zone					
Supply from 530 Zone	47/116				
Zone Total (2000/2020)	**47/116**	**0**		**116**	**0**
313T Pressure Zone					
Supply from 530 Zone	687/726				
Demand to 233 Zone					31
Demand to 268 Zone				• 19	
313 Zone Demand			646		674
Zone Total	**687/726**	**687**	**0**	**726**	**0**
268P Pressure Zone					
Supply from 313 Zone	19/21				
Zone Total	**19/21**	**19**	**0**	**21**	**0**
233P Pressure Zone					
Supply from 313 Zone	22/31				
Zone Total	**22/31**	**22**	**0**	**31**	**0**
2141 Pressure Zone					
Nonou Well #9 –1B	500				
Nonou Well #9 –1C	1,000*				
Zone Total	**500**	**909**	**541**	**981**	**469**
Overall Water System	**2,650**	**3,354**	**246**	**3,800**	**-200**

* Assumes largest source out of service in each pressure zone.

** Largest source in the service area out of service (Makaleha Well) includes non-metered water.

Source: *Water Plan 2020.* Table 7.F.2

Table 1.11. Existing and Future Storage Summary for Wailua-Kapa'a.

Pressure Zone	Available Storage	2000			2020		
		Fire flow criteria	Max-day criteria	Storage Needed	Fire flow criteria	Max-day criteria	Storage Needed
605T Pressure Zone							
Zone Storage	125,000	29,000	-59,000	59,000	27,000	-84,000	84,000
538T Pressure Zone							
Zone Storage	500,000	69,000	-728,000	728,000	46,000	-995,000	995,000
530T Pressure Zone							
Zone Storage	1,000,000	464,000	-52,000	52,000	457,000	-142,000	142,000
428P Pressure Zone							
Zone Storage	0	-18,000	-68,000	68,000	-22,000	-168,000	168,000
313T Pressure Zone							
Zone Storage	200,000	-167,000	-730,000	730,000	-171,000	-770,000	770,000
268P Pressure Zone							
Zone Storage	0	-16,000	-27,000	27,000	-16,000	-30,000	30,000
233P Pressure Zone							
Zone Storage	0	-16,000	-32,000	32,000	-17,000	-44,000	44,000
214T Pressure Zone							
Zone Storage	2,000,000	1,057,000	692,000	None	1,044,000	587,000	None

Note: All units gallons; Negative values indicate deficit.
**Surplus storage is used in lower zones where available.
NA: Not applicable, i.e. no surplus storage is available or required.

Source: *Water Plan 2020.* Table 7.F.4

Source: DOW Water Plan 2020.

1.4.3 WAILUA-KAPA'A WATER DISTRIBUTION SYSTEM

Some of the water mains in the area that would be served by the proposed project are quite old. Although newer pipe has been installed, much of the agricultural/open and rural area is still serviced by undersized and older piping. Many areas in the 214 Zone are serviced with older and undersized pipes. Major pipeline improvements are called for in the in *Water Plan 2020*. These include major pipeline improvements for the 214 Zone. The listed improvements do not include the pipelines along Ka'apuni Road that are part of this project. This is because DOW has determined that the proposed pipelines are necessary in order to provide adequate delivery infrastructure for the extra storage provided by the proposed reservoir, which was not specifically called out in that document. The waterlines will allow water from the proposed reservoir to serve both the 214 zone and the 313 zone instead of being limited to the 313 zone as is presently the case. And finally, the waterlines will improve the water distribution system serving the lower Kapa'a business district.

1.5 OBJECTIVES OF THE PROPOSED ACTION

DOW's overarching mission is to provide "safe, affordable, and sufficient drinking water" to its customers on Kaua'i. DOW's primary intent is to serve activities in urban and rural communities that have health and safety needs for pure water and fire protection.

DOW's objectives specific to the proposed project include the following:

- Enhance the water storage capacity of DOW's Wailua-Kapa'a system.
- Improve the efficiency of the Wailua-Kapa'a water distribution system, specifically the 214 and 313 pressure zones.
- Continue to provide DOW customers in the Wailua-Kapa'a area with an adequate supply of potable water to support current and future projected water use.

1.6 ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT

This EA is divided into the following parts:

- Chapter 2 the proposed water system improvements in detail and outlines the alternatives analyzed in this EA, as well as several other alternatives that DOW considered and rejected during earlier planning phases.
- Chapter 3 describes the existing environment and analyzes the potential for impacts on environmental, cultural, and socioeconomic resources caused by the proposed project and alternatives. It also outlines strategies for minimizing and mitigating unavoidable adverse effects.
- Chapter 4 discusses the consistency of the proposed reservoir and waterline with relevant plans, policies, and controls at local, regional, State, and Federal levels.
- Chapter 5 provides justification for the anticipated determination of a Finding of No Significant Impact (FONSI) by considering each individual significance criterion with respect to the proposed reservoir and waterline.
- Chapters 6 and 7 list the parties consulted and the references cited during preparation of this EA.

2.0 PROPOSED ACTION & ALTERNATIVES

2.1 INTRODUCTION

As described in Chapter 1 of this report, DOW is proposing a new 1.0 MG municipal water reservoir and two new waterlines to improve water storage capacity and delivery to the Wailua-Kapa'a area. This chapter provides detailed information about the design of the proposed facilities, the construction materials and procedures that would be used, and the estimated costs and timetable for the project. It also describes the alternative means that DOW has considered for achieving the objectives outlined in the preceding chapter.

This chapter is organized as follows:

- Section 2.2 describes the proposed action of constructing a new 1.0 MG storage tank and two new waterlines.
- Section 2.3 describes the framework DOW used in considering possible alternatives and eventually selecting the proposed action.
- Section 2.4 describes the alternatives that were selected for analysis in the environmental assessment for the project.
- Section 2.5 describes the alternatives that were eliminated from further analysis and the reasons for their exclusion from the impact analysis.

2.2 DESCRIPTION OF THE PROPOSED ACTION

2.2.1 OVERVIEW

Construction of the project will occur in two concurrent phases:

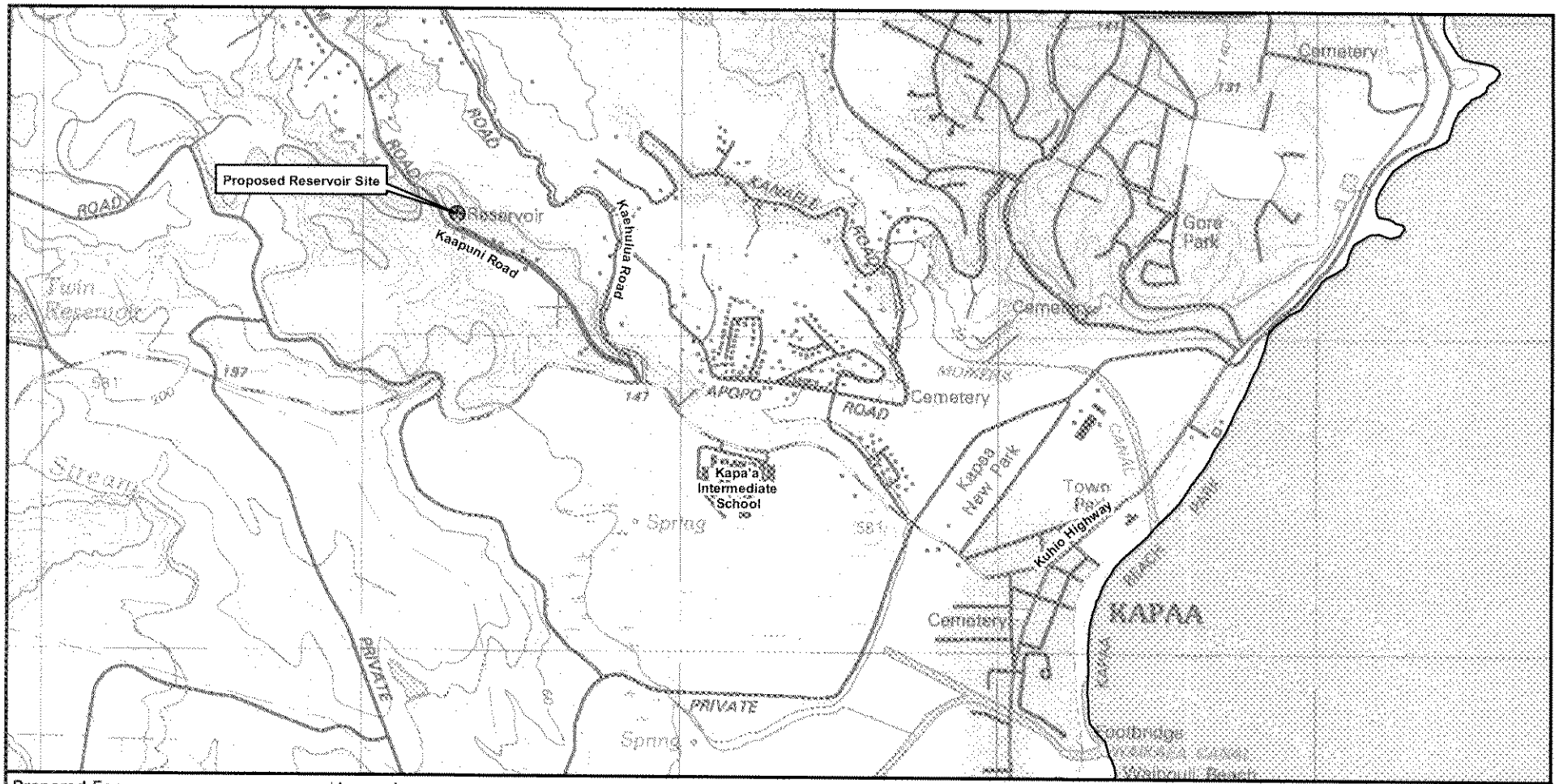
- Phase 1 involves constructing the reservoir and associated on-site controls and infrastructure;
- Phase 2 involves installation of new waterlines within the Ka'apuni Road right-of-way and connecting them to existing DOW infrastructure.

Section 2.2.2 describes the location and existing use of the project site. Section 2.2.3 describes the facilities as they would appear once fully developed. Section 2.2.4 describes the activities that would be undertaken during their construction.

2.2.2 LOCATION AND EXISTING USE OF THE PROPOSED SITE

The project is in the Wailua-Kapa'a District of the Island of Kaua'i. The proposed reservoir site is located within TMK 4-3-03:012, approximately 1 mile *mauka* (west) of the community of Kapa'a along Ka'apuni Road (see Figure 2.1). The ground surface elevation at the reservoir site is about 200 feet above Mean Sea Level (MSL). An abandoned concrete DOW tank exists on the reservoir site; it was previously used for municipal water storage and will be demolished as part of the project. The remainder of the site is overgrown with grass and vegetation. The dirt driveway that previously provided vehicle access to the site has largely been overgrown, but the fencing along the road side of the property and the gate at the driveway entrance remains (see Figure 2.2). The immediately adjacent properties are largely open and vegetated. The nearest residence is approximately 400 feet from the reservoir site, and about 50 feet from the proposed waterline at its closest point.

The new waterlines would be constructed entirely within the 40-foot Ka'apuni Road right-of-way. In general, waterline "A" will be placed under the eastbound lane, while the path of waterline "B" is mostly within the westbound lane. Photographs of the portion of Ka'apuni Road under which the waterlines would run are provided in Figure 2.3.



Prepared For:

Department of Water,
County of Kaua'i

Prepared By:

PLANNING SOLUTIONS

Sources:

--State of Hawai'i GIS
--Topozone.com USGS 7.5' Quad Map Composite

Legend:

Proposed Waterline A

Proposed Waterline B

Waterline Connections to Reservoir

0 2,000 4,000
Feet

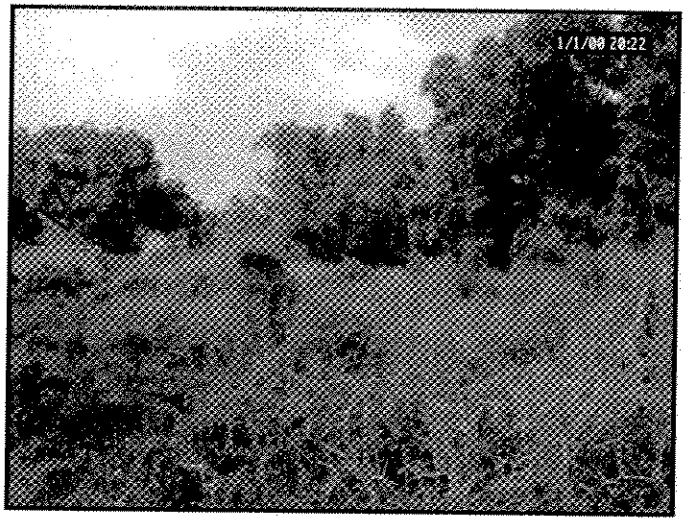
Figure 2-1:

Vicinity Map

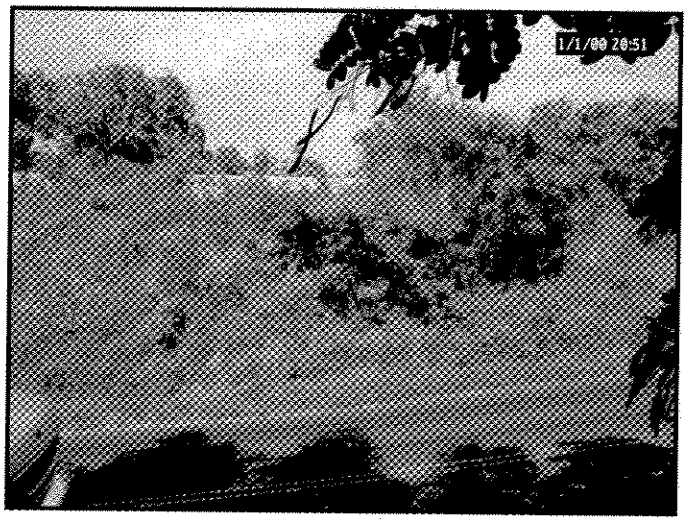
Stable Tank & Waterline Project

Figure 2-1 Vicinity Map 2016-07-05.mxd

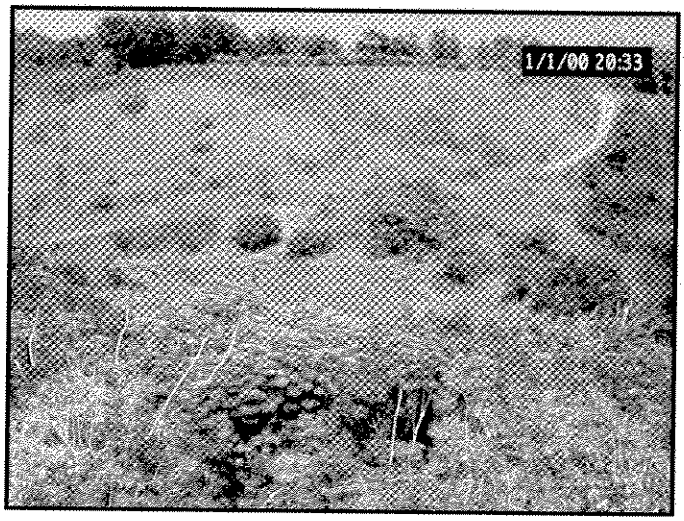
A. Existing concrete tank on site.



B. Typical vegetation at site.



C. View of reservoir site from Kaapuni Road.



D. The gulch north of the reservoir site.

Prepared For:
County of Kaua'i,
Department of Water

Prepared By:
PLANNING SOLUTIONS

Source:
Planning Solutions, Inc.
March 4, 2006

Key to Photo Locations:

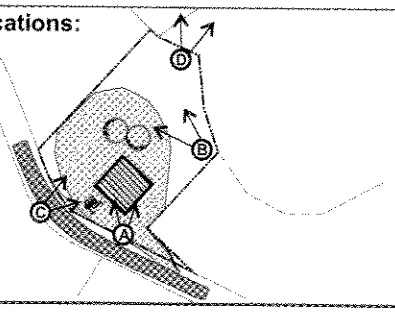
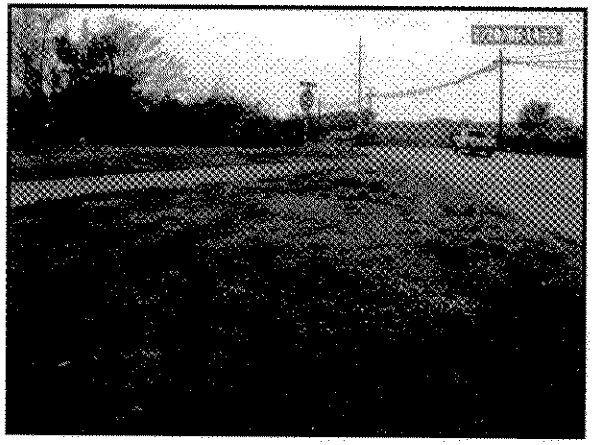


Figure 2-2:

Photographs of Reservoir Site & Vicinity

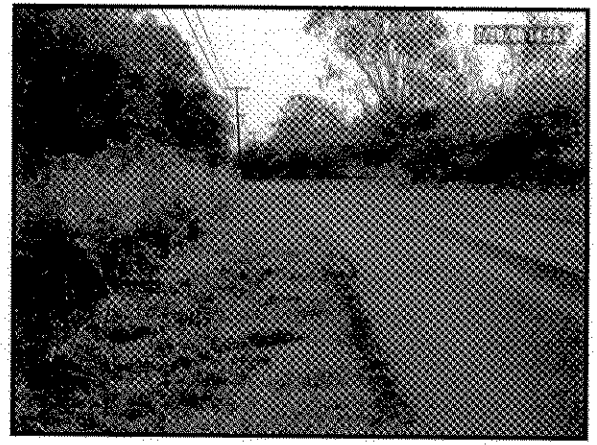
Stable Tank & Waterline Project

Figure 2-2 Photographs of the Reservoir Site 2006-07-05.cdr



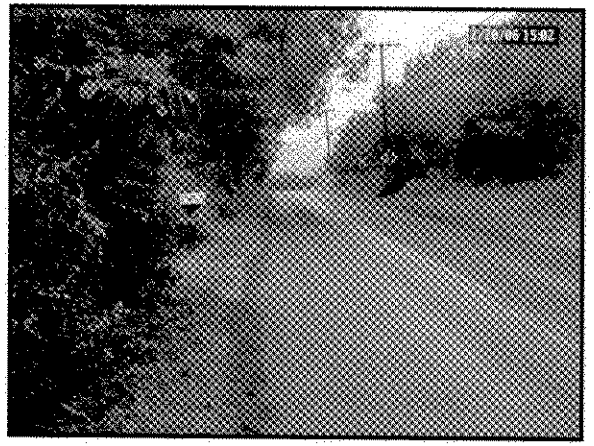
A. Southeast terminus of waterline route.

B. Kaapuni Road looking northwest.

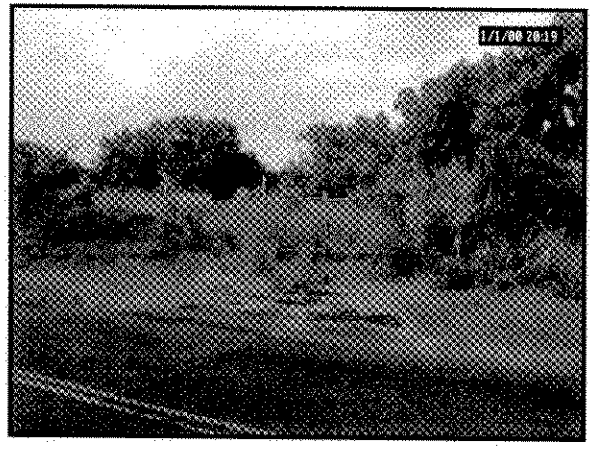


C. Kaapuni Road looking Northwest.

D. Kaapuni Road looking Northwest.



E. Kaapuni Road looking Northwest.



F. Entrance to reservoir site.

Prepared For:
Department of Water,
County of Kaua'i

Prepared By:
PLANNING SOLUTIONS

Source:
Planning Solutions, Inc.
(March 4, 2005)

Key To Photograph Locations:

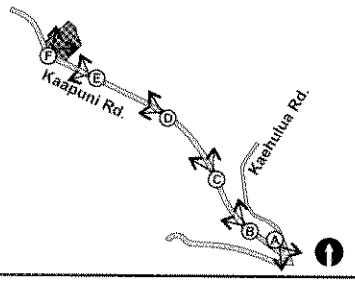


Figure 2-3:

Photographs of the Waterline Route

Stable Tank & Waterline Project

Figure 2-3 Photographs of the Waterline Route 2006-04-12.cdr

2.2.3 DESIGN OF THE PROPOSED FACILITIES

All of the materials and construction methods utilized will comply with the DOW's 2002 *Water System Standards.* The major components of the proposed project are described below.

2.2.3.1 1.0 MG Reservoir & Associated On-Site Infrastructure

2.2.3.1.1 Reservoir

The proposed 1.0 MG reservoir will be a reinforced concrete tank with an inside diameter of approximately 104 feet. The finished grade surrounding the tank will be at about 202.75 feet MSL and the bottom of the tank will be buried to about 4 feet below the finish grade so that it will have an overflow elevation of 214.0 feet MSL and a finished floor elevation of 198.0' MSL. The top of the tank will stand approximately 14 feet above the finished grade.

2.2.3.1.2 Site Access & Security

A short access road from Ka'apuni Road and a service road around the perimeter of the reservoir is planned. Both will be paved with asphalt concrete. A chain link fence will be erected around the entire perimeter of the site for security purposes, and the gate at the entrance to the access drive will be kept locked.

2.2.3.1.3 Tank Control Valve Station

The tank control valve station will be a small underground enclosure surrounding the valve. It will be situated approximately 30 feet southwest of the tank.

2.2.3.1.4 On-Site Pipes

The on-site waterlines that connect to the existing concrete tank will be abandoned in place. As shown on the site plan presented in Figure 2.4, new waterlines will connect the tank to the existing and planned waterlines within the Ka'apuni Road right-of-way: one will connect with Waterline "A" and one with Waterline "B".

2.2.3.1.5 Tank Drain

The tank will be equipped with a drain in case it needs to be emptied for maintenance or cleaning purposes. The drain, which will normally be closed, will consist of a buried 18-inch corrugated pipe with a concrete rubble masonry outlet at the bottom. It will run east of the tank into the adjacent gulch, over which DOW maintains a drainage easement. The contractor will install slope protection over the steeper portions of the pipe alignment.

The tank drain would carry water under only two circumstances:

- In the extremely unlikely event that a failure in the valve system caused the tank to overtop, water would spill over into it until the valve is closed manually.
- If the tank ever needed to be completely emptied, most of the water in it would be drained out into the normal DOW transmission system. However, water in the very bottom of the tank (the last 16 inches, or less than 10 percent of the total) would have to be discharged into the gulch.

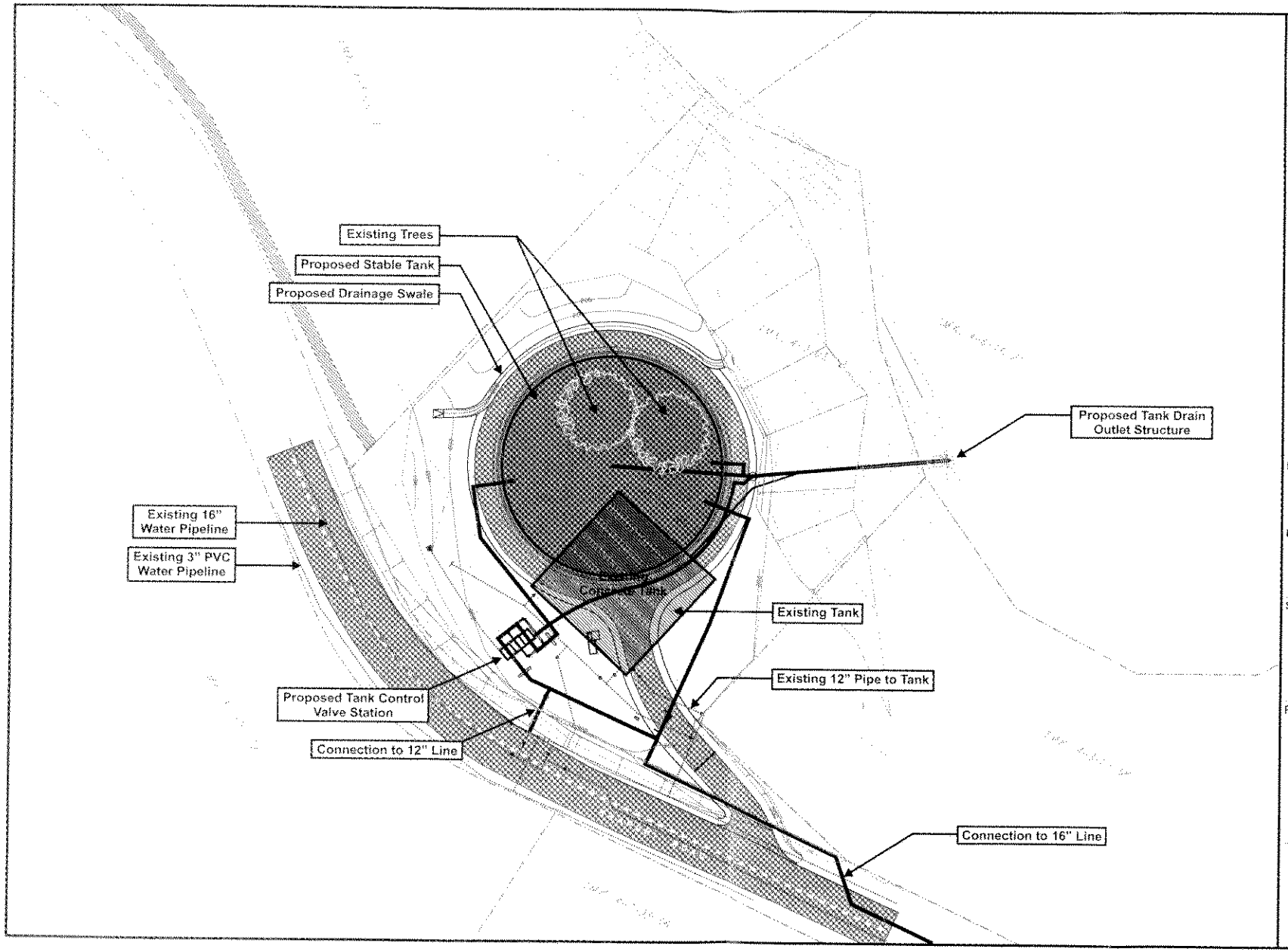
Both of these are very rare circumstances, and the volumes are relatively small.

2.2.3.1.6 Electricity and Communications

Electrical Power. The tank control valve station and the SCADA system (see below) will require single-phase electrical power. Electricity will be delivered to the reservoir site using underground electrical lines owned and maintained by the Kaua'i Island Utility Cooperative (KIUC). Utility metering will conform to KIUC's standards and design requirements.

Communications. DOW will install Supervisory Control and Data Acquisition (SCADA) equipment to monitor and control the reservoir.[8] An antenna would be mounted on a thirty foot pole fastened to the side of the reservoir. When mounted on the pole, the antenna is expected to stand no more than

[8] The DOW is developing a SCADA system that will allow it to control key components of its facilities on Kaua'i.



Prepared For:

County of Kaua'i
Dept. of Water

Prepared By:

PLANNING SOLUTIONS

Source:

Tom Nance Water Resource Engineering

Figure 2-4:

Site Plan of Proposed Reservoir

Stable Tank & Waterline Project

37 feet above finish grade. A small cabinet at the base of the antenna will house the SCADA controls. DOW plans to use radio and unlicensed frequencies for the SCADA telemetry communications if it is determined that the site is accessible by radio. If not, telephone service by Hawaiian Telecom will be provided to the site.

2.2.3.2 New Waterlines and Associated Infrastructure

As mentioned, all of the existing waterlines within Ka'apuni Road currently serve the 313 zone. In order to allow some of the water stored by the proposed tank to be delivered to the 214 zone, DOW is proposing to install waterlines "A" and "B". Waterline "A" will connect to an existing 16-inch waterline where it presently ends, which is just west of the proposed reservoir site. Waterline "B" will connect to the proposed reservoir and to an existing 16-inch line that presently serves the 313 zone. These improvements will allow DOW to maintain its delivery system to the 313 zone while providing additional delivery infrastructure and storage to the 214 zone. The two proposed waterlines are described in further detail below.

2.2.3.2.1 New Waterline "A"

Waterline "A" is a 12-inch diameter line that would connect to an existing 16-inch waterline within the Ka'apuni Road right-of-way. Currently, that 16-inch waterline terminates by interconnecting with an existing 12-inch line just west of the proposed reservoir site. The new waterline "A" will allow water flowing through the existing 16-inch line to continue flowing eastward toward Kapa'a. It will not increase the capacity of the system, but will slightly improve the efficiency of the distribution system serving that zone.

Waterline "A" will be approximately 2,600 feet long and will terminate at the intersection of Ka'apuni Road and Ka'ehulua Road, where it will connect with another existing 12-inch line from the 313-foot service zone. A new pressure release valve (PRV) station will be constructed at the fork of the two roads in order to serve a nearby residential area.[9] Five new fire hydrant connections will be established to Waterline "A" as part of this project as well.

2.2.3.2.2 New Waterline "B"

Waterline "B" would consist of a new 16-inch waterline to serve DOW's 214-foot system. It would connect to the new 16-inch waterline from the new reservoir and would run approximately 610 feet east along Ka'apuni Road, where it would connect with an existing 16-inch waterline that serves DOW's 313-foot system. At the interconnection, all the water from the existing 16-inch line would be re-directed into the 214-foot system.

2.2.4 CONSTRUCTION ACTIVITIES

2.2.4.1 Phase 1: Construction of Reservoir and On-site Infrastructure

After demolishing the existing concrete tank, the contractor will grub the site and perform grading needed for the tank and access drive. Excavation will be required for the tank, which will be buried to about 4 feet below grade. The contractor will place at least 12 inches of select borrow beneath the tank foundations as recommended by the geotechnical study conducted for the project (Geolabs 2005). Trenching will occur concurrently for the new on-site waterlines to the reservoir. The trenches will be backfilled with concrete up to the bottom of the select borrow later underneath the tank, and backfilled with soils from the site above that point. Any remaining connections to existing lines at the site will be sealed. Preliminary estimates are that approximately 4,000 cubic yards of material will be excavated and trucked away to be disposed of at an approved site.

Once the tank and waterlines are in place, the contractor will backfill around the tank perimeter to finish grade. As recommended by the geotechnical study, the finish grades around the tank will be sloped to shed water away from the foundations and slabs and to reduce the potential for ponding. In

[9] The PRV serves to reduce the pressure of the gravity-fed system so that water can be delivered to higher elevation areas at a suitable pressure.

addition, a concrete drainage swale will be provided to drain surface runoff away from slabs and foundations toward adjacent unpaved areas. All grading, grubbing, and stockpiling will be performed in accordance with County of Kaua'i Ordinance No. 808. The contractor will inform the County Engineer of the location of the sediment and erosion control disposal site. All slopes and exposed areas will be covered with sod or replanted with vegetation immediately after grading has been completed.

2.2.4.2 Phase 2: Waterline Installation & Connection to DOW System

Once the on-site waterlines from the reservoir are in place, the contractor will begin trenching within the Ka'apuni Road right-of-way in order to connect them to existing lines there.

A 6-inch deep gravel bed will be placed under the new pipes. The initial backfill will be well-draining fine gravel, to reduce the potential for damaging the pipes from compaction of the backfill. The upper portion of the backfill will consist of the on-site soils. The contractor will repave the portions of the roadway disturbed during construction. All materials in direct contact with potable water (e.g., pipe, pipe lubricants, paints, sealants, etc.) will be approved by the National Sanitation Foundation (NSF). In addition, prior to connecting the new waterlines to existing mains, the new lines will be cleaned, pressure tested, chlorinated, flushed, and sampled in accordance with Division 300, Sections 302.27 to 302.29 of the *Water System Standards.*[10] Connections will be scheduled on Tuesdays through Thursdays only to minimize potential disruptions to DOW's customers. Pumps used to dewater the connection area will be tested by the engineer prior to scheduling the connection.

Trench excavation, backfilling, and repaving will conform to the Hawai'i Standard Specifications for Road, Bridge, and Public Works Construction, 1994, and its amendments.

2.2.5 IMPLEMENTATION SCHEDULE

As indicated in Table 2.1, the DOW expects that constructing the tank and on-site infrastructure will take approximately 12 months. During that period, the contractor will finish grade the site, install the access road and underground piping and utilities, install and set up the SCADA antenna and tank control valve station, and erect the reservoir. The contractor will also install fencing, landscaping, and other minor site improvements. While the reservoir and on-site infrastructure is considered a separate phase from the waterline installation, they shall be constructed concurrently in order to put the reservoir into service. Thus, both phases will be bid together.

[10] Cleaning is done with cylindrical polyurethane foam "pigs" running completely through all pipeline segments during installation, with the exception of fire hydrant branch lines and service laterals. The pipes are then subjected to a hydrostatic pressure test and chlorinated. After the chlorine is flushed out, water samples are taken and submitted to a laboratory for microbiological testing. To pass the disinfection test, the total coliform count must be zero and the total bacteria count must be less than 200 colonies per 100 units. Disinfection is repeated as necessary until this is obtained.

Table 2.1. Preliminary Project Schedule

Task	*Estimated Duration (in months)*
Final Design	1
Design Review	2
Bid Solicitation	2
Award and Notice to Proceed (NTP)	1
Construction of Reservoir and On-site Infrastructure	9
Construction of Waterlines and Associated Connections	12
Commence Operation	12 months from NTP

Source: Tom Nance Water Resource Engineering.

2.2.6 PROJECT COSTS

The County of Kaua'i Department of Water has designated the project as DOW Job No. WK-42 – PHASE I & II. The project may be partly or wholly funded by Federal funds through the State of Hawai'i's Drinking Water State Revolving Fund (DWSRF) program, which would constitute a Federal action and will require the project to meet all of the Hawai'i DWSRF program requirements (see Section 4.1.5 for further discussion). Table 2.2 summarizes the estimated construction cost.

2.3 FRAMEWORK FOR CONSIDERATION OF ALTERNATIVES

Title 11, Chapter 200 of the Hawai'i Administrative Rules (HAR §11-200) contains the Department of Health's Environmental Impact Statement Rules. HAR §11-200-5 deals with "agency actions" such as the one that DOW is proposing. It requires that, for all agency actions that are not exempt (as defined in HAR §11-200-8) the agency must consider environmental factors and available alternatives and disclose these in an environmental assessment or environmental impact statement. HAR §11-200-9 requires the proposing agency to analyze alternatives, in addition to the proposed action in the environmental assessment. HAR §11-200-10 establishes the required contents of environmental assessments. Among the requirements listed, HAR §11-200-10 (6) calls for an identification and summary of impacts and alternatives considered (emphasis added).

In accordance with these requirements, DOW considered a number of alternatives before determining that the proposed project is the preferred course of action. These included "No Action", alternate locations, installing a smaller or larger reservoir, and delayed action. DOW concluded that only two of these alternatives, merit consideration in the impact analysis portion of this EA. They are "No Action" (as required by Chapter 343), and the proposed action of constructing the new reservoir and waterline as currently designed. The other alternatives failed to achieve the project objectives outlined in Section 1.4.3 above. The following two subsections describe the alternatives considered in preparation of this EA and the criteria DOW used to decide whether to include them in the impact analysis presented in Chapter 4.

Table 2.2. Preliminary Project Costs

Item	*Estimated Cost*
Phase I: Reservoir and On-Site Infrastructure	
Reservoir Site Preparation (Grading, Grubbing, Demolition, Paving)	250,000
Installation of On-site Piping and Valves	155,000
Tank Control Valve Station	75,000
1.0 MG Reinforced Concrete Tank	1,520,000
Security Fencing	30,000
Reservoir Drainage System	90,000
SCADA Cabinet and Metering	80,000
KIUC Facility Allowance	5,000
KDOW SCADA System Allowance	35,000
Phase II: Waterline Construction and Connection to DOW System	
Roadway Preparation, Trench Excavation and Backfill	205,000
Installation of Waterlines, Valves, New PRV Station	325,000
Connections to Existing Mains, Testing, & Chlorination	150,000
Pavement Repair, Erosion Control, & Traffic Control	176,000
Total Estimated Construction Cost	3,096,000
Estimated Design Cost	310,000
Estimated Construction Administration Costs	120,000
Total Estimated Project Cost	**$3,526,000**
Source: Tom Nance Water Resource Engineering	

2.4 ALTERNATIVES ADDRESSED IN DETAIL IN THE EA

2.4.1 PROPOSED ACTION: CONSTRUCT NEW RESERVOIR AND WATERLINE

The proposed action stems from DOW's need to ensure that: 1) areas served by its Wailua-Kapa'a system have adequate water storage for emergency situations (e.g., fire, well malfunctions, etc.); and 2) that water in the Wailua-Kapa'a area's 214 and 313 pressure zones continues to be delivered to DOW's customers as efficiently as possible. DOW has concluded that constructing a new reservoir at the selected site and adding waterlines along Ka'apuni Road is the best means of accomplishing the project objectives outlined in Section 1.4.3. The reasons why DOW prefers the selected project site include:

- The reservoir site is easily accessible by an established road, thereby avoiding the need for significant off-site roadway improvements.
- The reservoir site is located upgrade from most of the areas it is intended to serve. This will allow the water stored in the proposed reservoir to be delivered to DOW's customers largely by gravity.
- The proposed reservoir site is already County-owned and has been used by DOW since the existing reservoir was constructed decades ago.
- The reservoir site has been heavily disturbed in the past. Thus the potential for significant adverse environmental effects resulting from the reservoir's construction and operation is minimal.
- The waterline route is within an existing public right-of-way and is easily accessible for construction and repair. No new land acquisition is needed and physical access for all work associated with the project is simplified.

DOW believes that constructing the project as proposed would best allow them to meet all of their stated objectives and thus represents its preferred course of action.

2.4.2 NO ACTION ALTERNATIVE

The "No Action" Alternative consists of not providing for additional water storage or delivery infrastructure to serve DOW's Wailua-Kapa'a system. This option is unacceptable because it would leave the Kapa'a area without adequate water reserves in case of a large fire or the failure of one or more water supply sources. The importance of adding water storage and improving the pipeline system whereby water is delivered to the 214 and 313-foot pressure zones cannot be overstressed. "No Action" would not meet the project objectives and is not, therefore, a viable alternative. It is included in this EA primarily to fulfill the legal requirements of the National Environmental Policy Act (NEPA), Hawai'i Revised Statutes (HRS) Chapter 343, and Hawai'i Administrative Rules (HAR) §11-200. It also provides a baseline against which to measure the environmental impacts of the proposed action.

2.5 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

2.5.1 ALTERNATE LOCATIONS

It is technically feasible to establish the reservoir and connect it to the 214 and 313-foot systems at another location. However, no other locations offer the advantages of the proposed site, which are summarized in Section 2.4.1 above. The area serving the 214 and 313 zones is mostly developed and in residential use. If DOW were to locate the reservoir somewhere else they would in all likelihood have to acquire new property and possibly condemn any existing uses. Alternate locations would also require more extensive new waterline construction in order to connect to both pressure zones. The proposed pipeline route represents the shortest distance between the reservoir and the point at which it can interconnect with other segments of the distribution system and traverses the least challenging

and most highly disturbed ground. Further, establishing the reservoir and needed waterline connections elsewhere would not significantly lessen the environmental impacts associated with the project. Therefore, DOW concluded that the proposed site is the only one that merits consideration in this *Environmental Assessment.*

2.5.2 SMALLER TANK

Because of the Wailua-Kapa'a water system's serious deficiency in available storage, DOW concluded that a smaller tank would not meet all of the objectives of the proposed action; additional storage elsewhere in the system would still be required. Moreover, reducing the size of the tank would not appreciably reduce the environmental impacts associated with the project. For these reasons, DOW decided that installing a smaller reservoir is not an acceptable course of action.

2.5.3 LARGER TANK

A 1.0 MG tank is adequate to meet the water storage needs identified in *Water Plan 2020.* Further, the size and topography of the Stable Tank site makes it impractical to install a larger tank at that location. This led DOW to eliminate that option during the early project planning phases.

2.5.4 DELAYED ACTION

The immediacy of the Wailua-Kapa'a area's need for additional storage capacity and distribution make expedient action on DOW's part important. Delaying development of the reservoir and waterline could negatively affect DOW customers in the Kapa'a area if a problem with storage or transmission mains elsewhere in the system were to leave the area without adequate water reserves. DOW wants to act expeditiously to maintain the safety and adequacy of its system.

3.0 EXISTING ENVIRONMENT, POTENTIAL IMPACTS & MITIGATION MEASURES

This chapter describes existing conditions within the area affected by the project, discusses its potential impacts, and describes measures that the DOW will take to minimize and mitigate those impacts. Where appropriate, the discussion distinguishes between impacts of the construction period vs. the operation period, or between those associated with the proposed reservoir vs. the waterline. In general, no significant lasting or secondary environmental impacts are anticipated from the construction of the project. The reservoir and pipeline will provide long-term public benefits to the Wailua-Kapa'a system by ensuring that customers there have efficient access to an adequate supply of potable water.[11]

3.1 GEOLOGY, TOPOGRAPHY & SOILS

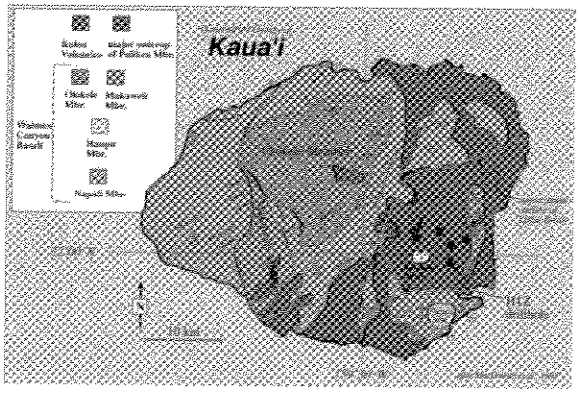
3.1.1 EXISTING CONDITIONS

3.1.1.1 Topography

Kaua'i has a land area of slightly more than 550 square miles. Roughly circular in shape, its most striking physiographic features are a high central plateau topping out at over 5,000 feet at the summits of Wai'ale'ale (5,148 feet) and Kawaikini (5,243 feet); steep cliffs and deeply incised valleys along the northern Nāpali coast; the 3,600 foot deep Waimea Canyon; the broad Līhu'e Basin on the southeastern quadrant of the island; and extensive coastal plains.

The Stable Tank reservoir and Ka'apuni Road waterline are located inland on a broad sloping plateau. Multiple meandering stream channels incise the plateau as they drain towards the ocean to the east. The proposed reservoir site is situated at about 200 feet MSL. Some of it was graded in the past for the existing tank, resulting in nearly level topography across the portion of the site planned for the new reservoir. A small gulch runs just north of the reservoir site, and the northern portion of the reservoir site slopes downward toward it at a slope of about 2:1. The proposed waterline route slopes gently downward as it travels eastward toward Kapa'a. Waterline A terminates at the intersection of Ka'apuni and Olohena Road, which is situated at about 145 feet MSL. The slope of the waterline route is approximately 2%.

3.1.1.2 Geology & Soils



Kaua'i, like the other Hawaiian Islands, was formed by magma that erupted from a hotspot on the earth's crust. Over time, the eruptions formed a typical Hawaiian shield volcano. Kaua'i is thought to have been formed by two or more shield volcanoes. The main mass of Kaua'i is believed to be about 3 to 5 million years old, although there were a few small eruptions on the island as late as about 400,000 years ago. The Figure to the right illustrates the major rock units that are present. The oldest is the Makaweli member of the Waimea Series lavas and is shown in green (Clague & Dalrymple, 1988). The Olokele Member of the Waimea Series (shown in blue) occupies a large area in the center of the island. The Waimea Canyon scarp probably represents a major collapse at the beginning of the post-shield (or declining) stage. Post-shield-building volcanic

[11] Most of the discussion focuses on the environmental characteristics of the proposed reservoir site and waterline route. Where relevant, it expands to include a larger geographical area.

soils of the Olokele Member of the Waimea Canyon Basalt may have in filled a major caldera-like collapse structure to form the present day broad summit area of Mt. Wai'ale'ale and the Alaka'i Swamp. The Makaweli series volcanics fill a graben-like feature in the southern part of the island.[12] The major east-west trending Haupu Mountain ridge, between Po'ipū and Līhu'e, is composed of the Haupu Member of the Waimea Canyon Basalt. This is thought to be a structural remnant of the original shield-building and/or post-shield volcanic stage of the island.

After a long period (probably about 0.5 to 1.5 million years) of no eruptions and great erosion of the Waimea Series lavas, eruptions began again. Lavas from this second period of great eruptive activity formed the Kōloa series volcanics. The surface expression of these lavas (which underlie the project site) is depicted in red on the map. This post-erosional stage of volcanism on Kaua'i is particularly well-developed, especially on the eastern side of the island. Very late stage explosive volcanic vents and cones of the Kōloa Volcanics such as Kilohana Crater, Kīlauea Crater, and 35-40 other smaller but similar features are present throughout the eastern portion of the island. The very steep eastern facing scarp of Wai'ale'ale was formed in part by the collapse of the Līhu'e Basin.

The proposed reservoir site is underlain by weathered soils and basaltic rock belonging to the Koloa Volcanic Series. Near-surface soils consist of stiff clayey and silty residual soils (to 8-15 feet below existing ground surface) underlain by saprolitic clayey silt soils (to about 30 feet below ground surface), derived from the deep in-situ weathering of the Koloa Volcanic Series igneous rocks. In general, the near-surface residual and saprolitic soils typically grade to highly and moderately weathered basalt rock formation with increasing depth. Therefore, occasional hard basaltic rock boulders may be encountered embedded within the deeply weathered soils (Geolabs, Inc. 2005). As mentioned, most of the site is relatively flat except for the northern end, which begins sloping toward a gulch. The land there is classified as "Rough and Broken Land" (rRR). The soil types present on the remainder of the proposed reservoir site are listed in Table 3.1 below.

Table 3.1. Soil Types at the Proposed Reservoir Site.

Type	*Name*	*% Slope*	*Permeability*	*Runoff*	*Erosion Hazard*
HrB	Hanalei silty clay	0-6	Moderate	Very Slow	Slight
LhB	Līhu'e Silty Clay	0-8	Moderately Rapid	Slow	Slight
PnB	Puhi Silty Clay Loam	3-8	Moderately Rapid	Slow	Slight
Source: Foote et al. (1972)					

3.1.2 POTENTIAL IMPACTS & MITIGATION MEASURES

Grubbing, grading and trenching will be necessary for construction of the reservoir, access driveway, and waterlines. The total amount of material moved on the reservoir site will amount to approximately 4,000 cubic yards. However, because most of this will be excavation for the reservoir, there will be little apparent change in the topography. Once the waterlines are installed, the trenches will be backfilled to grade.

Taken together, construction of the new reservoir and waterlines will involve the disturbance of more than an acre of land. Consequently, the work will require coverage under the State of Hawai'i NPDES General Permit program (HAR §11-55, Appendix C). This will require the use of Best Management Practices (BMPs) to minimize erosion of the area disturbed during construction and the

[12] A graben is an elongate block of the earth's crust that is relatively depressed (i.e., that has dropped down) between two fault systems.

installation of permanent erosion control structures to ensure the long-term minimization of erosion at the site. These measures will ensure that there will be no substantial impact on topography and soils from the project.

The proposed reservoir and waterline site are within areas designated as "Prime" on the Agricultural Lands of Importance to the State of Hawai'i (ALISH) Map (see Figure 3.1). However, neither site has been used for agriculture for many years, if ever, nor would the project displace or interfere with existing or future agricultural activities in the project area.

3.2 HYDROLOGY

3.2.1 EXISTING CONDITIONS

3.2.1.1 Rivers and Streams

Most of the streams on Kaua'i radiate out from the Wai'ale'ale-Kawaikini massif in all directions, cutting through intrusive dikes that retard the groundwater movement toward the ocean from high rainfall areas in the interior. In the process they tend to receive large influxes of groundwater throughout their length. Thus, unlike most Hawaiian streams, many of those on Kaua'i actually gain flow as they descend (i.e., they are "gaining streams"). Because of this, in some parts of Kaua'i more than 65 percent of the water falling on the ground appears as streamflow. This proportion is far higher than the 30 percent of mean annual rainfall that the U.S. Geological Survey estimates runs off as streamflow statewide.

A small, intermittent drainageway is located in the gulch immediately north of the proposed reservoir site. It continues downhill parallel to the waterline route, eventually discharging into Moikeha Canal (Stream Code 2-2-5:00).

3.2.1.2 Wetlands

There are no wetlands on or immediately adjacent to the reservoir site or planned waterline route. The State of Hawai'i geographic information system (GIS) indicates the nearest wetland is a small palustrine, open water impounded wetland approximately 900 feet north of the proposed reservoir site in the gulch carved by the above-mentioned stream.

3.2.1.3 Groundwater

The proposed reservoir and waterline are situated over the Anahola Aquifer of the Līhu'e Aquifer system. According to the State Commission on Water Resource Management (CWRM), the sustainable yield of that aquifer is 36 million gallons per day (MGD) and only a small portion of that is now being withdrawn. The nearest well is nearly a mile from the reservoir site. The water table at the reservoir site and along the route traversed by the proposed water line is approximately 100 feet below the ground surface.

The proposed project does not involve any activities that will measurably decrease the recharge to the aquifer. Neither will it increase water use. Potential affects associated with the withdrawal of water that would be stored in the aquifer have been evaluated as the various sources have been developed. Because there is no threat of exceeding sustainable levels of withdrawal from Kaua'i's aquifers, no part of Kaua'i has been declared a Groundwater Management Area by the State Commission on Water Resources Management (CWRM) (Kaua'i General Plan 2000).


Reservoir Site
Olohena Road
Kuhio Hwy
Kuhio Hwy
Kapa'a
0
0.25
0.5
1
Miles
Agricultural Land Code:
Prime Lands
Unique Lands
Other Lands
Legend:
Minor Roads
Major Roads
Prepared For:
County of Kaua'i
Department of Water
Prepared By:
PLANNING SOLUTIONS
Source:
State of Hawaii GIS
Figure 3-1:
Agricultural Lands of Importance to the State of Hawai'i
Stable Tank & Waterline Project
Figure 3-1 Agricultural Lands of Importance 2006-07-05.mxd

3.2.1.4 Surface Runoff

As mentioned, the portions of the reservoir site where the proposed facilities will be constructed are nearly flat. The northern end of the site slopes moderately steeply (2:1) toward a gulch. Currently, most rainfall on the site percolates into the ground. Any that doesn't either sheet flows toward Ka'apuni Road or down an abandoned irrigation ditch toward the gulch to the north. The ditch is no longer being used and is breached in several places. The proposed tank drain would empty into the abandoned ditch and ultimately into the pasture on the adjacent lot, over which DOW maintains a drainage easement.[13] The easement provides for:

> *"Reserving to the Territory of Hawai'i, all waters from the County water tank in Ditch 8-A and Easement N, 15 feet wide and the free flowage of said waters into the stream and over, upon and across Lot 17-B, as set forth in Land Patent Grant No. 13, 293."*

3.2.2 POTENTIAL IMPACTS & MITIGATION MEASURES

3.2.2.1 Construction Period

Construction activities themselves will not substantially alter the quantity of stormwater runoff.[14] However, the soil disturbance that will occur during grading and construction will affect the quality of the stormwater runoff. The contractor will use best management practices as necessary during construction of the reservoir and waterline to prevent eroded soil, construction debris, and other pollutants from leaving the site via runoff. Areas that have been grubbed and/or graded will be stabilized and vegetation will be replanted as quickly as possible to control erosion. Since the combined disturbed area of the reservoir and the water line is more than an acre, NPDES Construction Stormwater general permit coverage[15] will be required for construction activities associated with the project.

3.2.2.2 Operational Period

Construction of the proposed facilities will increase the amount of impermeable surface on the project site and will, therefore, slightly increase the potential for stormwater runoff. Once completed, the on-site grading will generally preserve the existing drainage patterns observed at the site. Most rainfall on flat, unpaved portions of the site will percolate into the ground. As mentioned, the grading around the sides of the reservoir will be sloped to avoid ponding, and a small concrete swale north of the reservoir will collect runoff from paved areas of the facility and divert it toward adjacent unpaved areas to the east and west.

The reservoir site does not contain any hazardous materials and most of the runoff that is not immediately absorbed into the ground would be from paved surfaces that would contribute little to no suspended sediment. There will be virtually no vehicle-traffic or other activity that could add oil, grease, or other common roadway pollutants to the paved areas. Hence, while the quantity of runoff from the reservoir site will be slightly greater than at present once the proposed improvements are completed, the quality will be the same or better.

As discussed in Chapter 1, *Water Plan 2020* estimates that existing County water sources are adequate to serve the needs of the Wailua-Kapa'a system up to at least 2020. The proposed Stable Tank reservoir and waterline will not change the amount of water being drawn from the sources in the system; they will merely help ensure that more is readily available in storage and will allow efficient distribution to the places that need it. In this respect it is worth noting that the combined yield of the

[13] The property containing the easement is TMK 4-6-11:021. The deed containing the provision is Hawai'i Bureau of Conveyances Document No. 2002-008806.

[14] As new facilities with impermeable surfaces are developed they will gradually change the volume, but these are permanent changes and are discussed with the other operational period effects.

[15] National Pollutant Discharge Elimination System administered through the Clean Water Branch of the State Department of Health (Hawai'i Administrative Rules, 11-55, Appendix C).

water sources in the Wailua-Kapa'a system is only a small fraction of CWRM's estimated sustainable yield for the Anahola aquifer. Consequently, no significant effect on groundwater is anticipated to result from the operation of the facilities.

3.3 AIR QUALITY AND MICROCLIMATE

3.3.1 EXISTING CONDITIONS

3.3.1.1 Wind

The northeast trade winds are the most important determinant of Kaua'i's climate. The trade wind zone moves north and south seasonally with the sun, so that it reaches its northernmost position in the summer. Consequently, the trade winds in Hawai'i are strongest and most persistent from May through September, when they prevail 80 to 95 percent of the time. From October through April, when Hawai'i is located to the north of the main trade wind belt, their frequency decreases to about 50 percent (as a monthly average). Kaua'i's topography interacts with the winds to produce large variations in conditions from one locality to another.

3.3.1.2 Rainfall

Rainfall on Kaua'i varies greatly from place-to-place. Average annual rainfall at Waimea on the island's southwestern shore is about 20 inches. Twenty miles away at the summit of Wai'ale'ale, it is more than 450 inches. Mountain slopes and crests within the cloud belt receive water in the form of fog drip or cloud mists as well as outright rainfall. This "fog drip" may contribute two-thirds as much water to vegetation and soil in that area as does rainfall itself – and proportionately more when rainfall is light.

According to the *Climate of Hawai'i* (1967), average annual rainfall in the project area is approximately 50 inches. Precipitation averages for the years 1971-2000 at Līhu'e Station 112, which is situated at approximately the same elevation as the project area, indicate that the wettest months are October through April (when average monthly rainfall is about 4-5 inches). The driest months tend to be May through September (when average monthly rainfall is 2-3 inches).

3.3.1.3 Temperature

The temperature regime is not as variable from place to place as is rainfall but there are substantial geographic differences, chiefly as the result of variations in elevations. Diurnal temperature ranges are smallest in the lowlands, with daytime temperatures commonly in the 70's to 80's and nighttime temperatures in the 60's to 70's. Mean annual temperatures, which range between about 72° and 75° F. near sea level, decrease by about 2.5° - 3° F for each 1,000 feet of elevation. August is the warmest month of the year on Kaua'i, and February is the coolest.

Data from the Līhu'e Airport temperature monitoring station No. 1020, the average monthly temperature for the years 1971-2000 was 75.7 degrees Fahrenheit. The average monthly maximum was 81.1 Fahrenheit and the average monthly minimum was 70.3 Fahrenheit for the same period. Average temperatures at the proposed reservoir and pipeline sites are likely only one or two degrees cooler on average (NOAA 2002).

3.3.1.4 Air Quality

In the year 2004, the State of Hawai'i was in attainment for all federal ambient air quality standards. Air quality on the Kaua'i is generally very good due to the island's mid-ocean location, the persistent regional winds, and the absence of substantial industry. In 2004, 24-hour PM_{10} (10-micron size particulate matter) concentrations at the single State of Hawai'i Department of Health monitoring

station in downtown Līhu'e[16] ranged from a low of 8 microgram per cubic meter to a high of 28 microgram per cubic meter. The average for the entire year was 16 microgram per cubic meter. The highest and second highest values were 28 and 24 microgram per cubic meter, respectively. The highest concentration is less than one-fifth the 150 microgram per cubic meter State Standard for PM_{10} (DOH 2005). Thus, air quality at the proposed reservoir and waterline site is considered to be good.

3.3.2 POTENTIAL IMPACTS ON MICROCLIMATE & AIR QUALITY

3.3.2.1 Construction Period.

Construction of the proposed reservoir and waterline will require grading and excavation, both of which have the potential to generate fugitive dust. Potential adverse effects will be minimized by the dust control measures the contractor will implement in accordance with Hawai'i Administrative Rules Title 11, Chapter 59 and Chapter 60.

The operation of internal combustion engines that power the construction equipment used to excavate the foundation for the tank, grade the surrounding area, transport material and workers to and from the site, and carry out other necessary tasks will add small amounts of pollutants to the atmosphere during the few months that site work is underway. The amounts are small, however, and do not have the potential to affect the local or regional air quality substantially.

3.3.2.2 Operational Period.

Normal operation of the proposed facilities will not produce on-site air emissions. Neither are the planned above-ground structures (i.e., the reservoir and SCADA equipment) sufficiently large to alter airflow or other microclimatic conditions in the vicinity. Operation of the control system will require 110-volt electrical power, but the total used is expected to be less than 400 kilowatt-hours per month. This is less than the amount consumed by a typical single-family home on Kaua'i and represents a very small fraction of total electrical power use on the island. Consequently, the change in gaseous emissions from generating facilities would not have a substantial effect on ambient air quality.

3.4 HAZARDOUS MATERIALS

3.4.1 EXISTING CONDITIONS

No structures using asbestos-containing materials, lead-based paint, or other hazardous materials exist on or near the reservoir site or pipeline route. There is no record of petroleum spills or other contamination along the pipeline route or on the reservoir parcel.

3.4.2 POTENTIAL IMPACTS & MITIGATION MEASURES

Construction and operation of the reservoir, waterline, and supporting facilities will not use or generate any hazardous materials. No vehicle refueling will be done on-site.

As mentioned in Section 2.2.4.2, all construction materials used for the project will be clean and all materials that are to come into direct contact with potable water will conform to NSF standards. The reservoir and pipes will be flushed in accordance with DOW standards before they are placed in service to insure that nothing remains that could enter the potable water supply system.

[16] This monitoring station is located in downtown Lihue at the District Health Office, 3034 Umi Street. This site is in a commercial and residential area with nearby agricultural areas. Established in January 1972, it samples only for samples for PM10.

3.5 BIOTA

3.5.1 EXISTING CONDITIONS

3.5.1.1 Vegetation

Because of its age and relative isolation, the island of Kaua'i has the highest levels of floristic diversity and endemism in Hawai'i, but the native vegetation is threatened by the intentional and inadvertent introduction of non-native plants and animals. The US Fish and Wildlife Service (USFWS) has recently designated nearly 100,000 acres of the island in 15 habitat units as critical habitat for 83 threatened and endangered plant species (Federal Register 2003a, see Figure 3.2). The nearest of these units is approximately 1.5 miles from the project site. The vegetation in areas close to the project site is the result of long-term human use of the area and consists largely of introduced species.

As evidenced by the photos in Figure 2.2, existing vegetation at the proposed reservoir site is dominated by weedy annual grasses, herbs, and shrubs. The thicket at the western end of the property is dominated by strawberry guava (*Psidium cattleianum*). Few native species are present, and no rare, threatened, or endangered plants were observed.

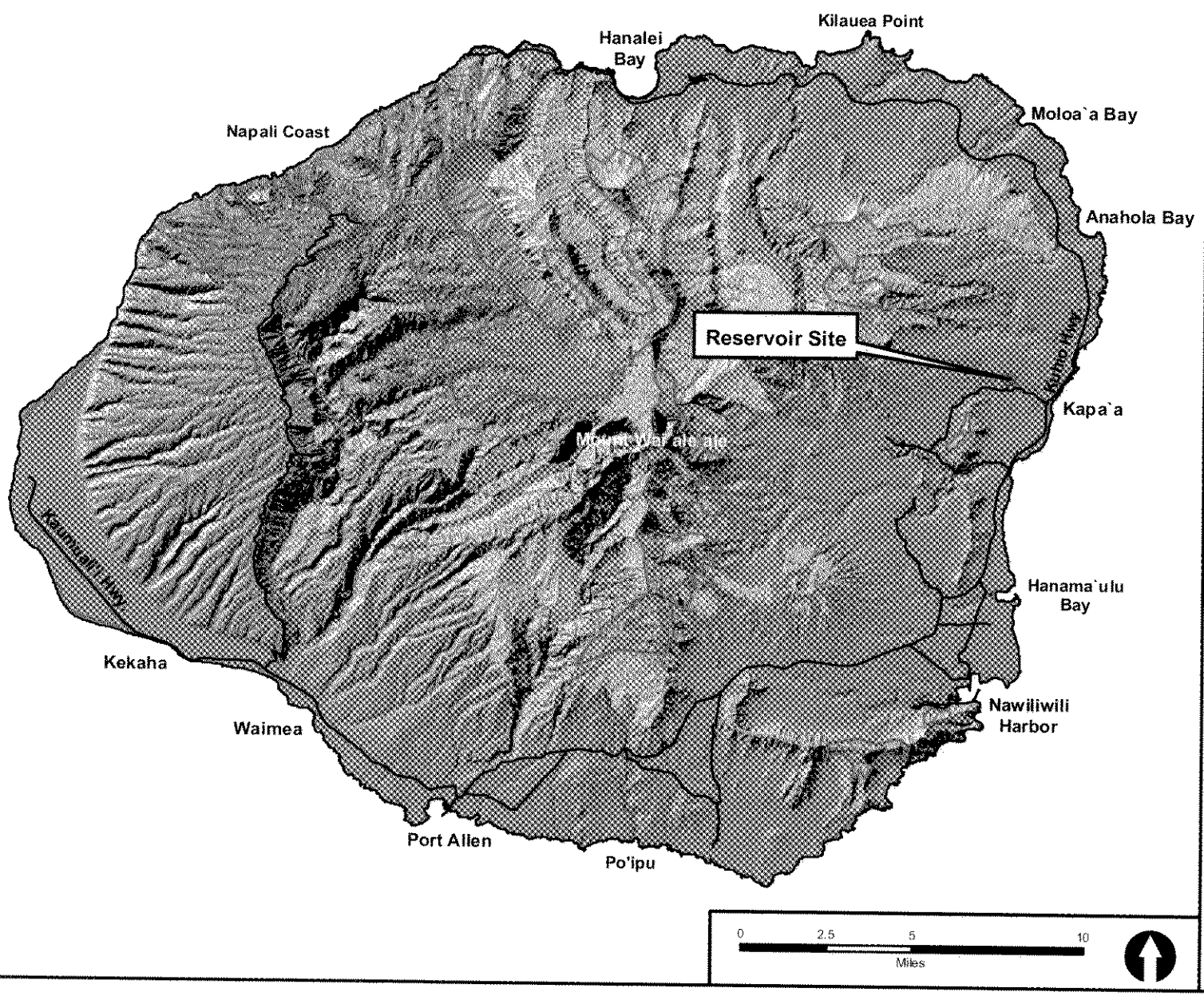
3.5.1.2 Mammals

The only native mammalian species known from the Hawaiian Islands are the Hawaiian monk seal (*Monachus schauinslandi*) and the Hawaiian hoary bat (*Lasiurus cinereus semotus*), both of which are endangered. All other mammalian species on Kaua'i have been introduced, either by the native Hawaiians who first settled the island or by others who arrived in the 19th and 20th centuries.

Introduced mammals present on Kaua'i and likely present in the project area include the Polynesian rat (*Rattus exulans hawaiiensis*), roof rat (*Rattus rattus rattus*), Norwegian rat (*R. norvegicus norvegicus)*, house mouse (*Mus domesticus*), pig (*Sus s. scrofa*), cat (*Felis domesticus*), and dog (*Canis familiaris*). Kaua'i was long believed to be free of mongoose (*Herpestes auropunctatus*). However, after compiling all of the mongoose sightings data beginning with the original one (in 1968) up until the present time, the Kauai Invasive Species Committee (KISC) has concluded that there is credible evidence that a small mongoose population may have become established and that they are not limited to a single part of the island.

3.5.1.3 Avian Fauna

Several bird species of concern occur on Kaua'i. These include: (1) the Hawaiian Petrel *(Pterodroma sandwichensis)*, which is endemic and listed as endangered; and (2) the Newell's Shearwater *(Puffinus auricularis newelli)*, an endemic and threatened species. Both of these species have been confirmed to nest on Kaua'i. These seabirds typically nest in burrows on sheer cliff faces or precipices. As indicated on Figure 3.2, the project site is over a mile from the nearest area identified as potential nesting habitat and almost 5 miles from the nearest known nesting colony.



Legend:

- Fish & Wildlife Service Designated Critical Plant Habitat
- Known Seabird Nesting Colonies
- Potential Nesting Habitat
- Major Roadways

Prepared For:

County of Kaua'i
Department of Water

Prepared By:

PLANNING SOLUTIONS

Source:

--Rana Productions, Inc.
--U.S. Fish & Wildlife Service
--State of Hawaii GIS

Figure 3-2:

Critical Plant Habitat & Seabird Nesting Areas on Kaua'i

Stable Tank & Waterline Project

Figure 3-4 Critical Plant Habitat & Bird Nesting Areas on Kaua'i 2006-04-08.mxd

3.5.2 POTENTIAL IMPACTS & MITIGATION MEASURES

3.5.2.1 Reservoir

Much of the reservoir site was bulldozed, excavated and otherwise altered when the existing facilities were constructed. Construction of the proposed reservoir and on-site infrastructure will occur primarily in areas of the site that are already occupied by the existing tank, are dominated by introduced grasses, or are part of the guava thicket (see Figure 2.2 for photographs). The additional habitat modification that would result from the proposed site improvements would not result in deleterious impacts to any avian, mammalian or botanical species currently listed as endangered, threatened or proposed for listing under either Federal or State of Hawai'i endangered species programs.

Except for minor task lighting for the tank control equipment (which will normally be turned off), there will be no lighting on the reservoir site. The top of the SCADA antenna will extend less than 20 feet above the tops of the existing vegetation, too low to constitute a significant hazard to avian fauna. This will eliminate any potential for adverse effect on Newell's Shearwaters or Hawaiian Petrels that may fly over the area. The project will likewise not affect important habitat for Hawaiian Hoary Bat nesting or foraging.

3.5.2.2 Waterline

Installation of the proposed waterline will disturb existing paved roadway and the adjacent roadside, neither of which provide desirable habitat for flora and fauna. Consequently, no substantial impacts to flora and fauna are expected as a result of the proposed project.

3.6 NOISE

3.6.1 EXISTING CONDITIONS

The primary noise source at the proposed reservoir site and along the waterline route is traffic along Ka'apuni Road. Other noise sources include insects and wind in the foliage. Traffic noise is a function of the number and type of vehicles that are present (passenger vehicles, medium trucks, heavy trucks and buses), the speed at which they travel, and the nature of the road pavement.

- Passenger Vehicles: This category includes normal passenger vehicles, small and regular pickup trucks, small to mid-size sport utility vehicles, mini- and full-size passenger vans. Typical noise levels at a distance of 50 feet for passenger vehicles are 60 to 65 dBA at the speeds most vehicles are traveling on Ka'apuni Road.
- Medium Trucks: This category includes delivery vans, such as UPS and Federal Express trucks, large sport utility vehicles with knobby tires, large diesel engine trucks, some tow-trucks, city transit and school buses with under vehicle exhaust, moving vans (U-haul-type trucks), and other larger trucks with the exhaust located under the vehicle. Typical noise levels for medium trucks are at least 10 dB higher than those for passenger cars.
- Heavy Trucks: This category includes all log-haul tractor-trailers (semi-trucks), large tow trucks, dump trucks, cement mixers, large transit buses, motor homes with exhaust located at top of vehicle, and other vehicles with the exhaust located above the vehicle. Typical noise levels for heavy trucks are a few decibels higher than medium trucks.

No noise measurements were made at these properties, but data from similar sites suggests that background noise levels (i.e., the levels without passing vehicles) probably range from about 40 dBA on a windless night to 50 dBA when strong winds are blowing. While screening vegetation between the road and the few residences located on the southern side of the road probably provide 1 to 2 dBA of sound attenuation, passing trucks and other noisy vehicles are clearly audible in the homes.

3.6.2 CONSTRUCTION PHASE NOISE IMPACTS

Construction will involve the operation of diesel-powered equipment on the reservoir site for a period of 8 to 12 months. Noise from loudest un-muffled equipment of this sort could be as high as 80 to 85 dBA measured at a distance of 50 feet (see Table 3.2). Most of the time it will be much lower. Construction of the pipeline will take somewhat longer than the reservoir itself, but the work will shift along the course of the roadway as each segment of pipeline is completed. Hence, any particular point along the route will be exposed to the most intense construction noise for no more than a month or so.

Hawai'i Administrative Rules (HAR) §11-46 defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to (i) stationary noise sources and (ii) equipment related to agricultural, construction, and industrial activities. These are reproduced in Table 3.3. The noise limit for "Class C Districts" [which §11-46-3(3) defines as "...all areas equivalent to lands zoned agriculture, country, industrial, or similar type."] is 70 dBA at any time. The limits are applicable at the property line.

Construction noise for the reservoir and the pipeline were estimated using the Roadway Construction Noise Model (January 2006) published by U.S. Department of Transportation, Federal Highway Administration (Report FHWA-HEP-05-054/DOT-VNTSC-FHWA-05-01 Prepared by U.S. Department of Transportation Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center, Acoustics Facility, Cambridge, MA FOR U.S. Department of Transportation Federal Highway Administration, Office of Environment and Planning, Washington, DC. Table 3.2 shows noise levels estimated using the model for the nearest noise-sensitive receptor (a residence located on agriculturally zoned land approximately 400 feet from the reservoir site and 50 feet from the nearest pipeline segment).

The results indicate that construction noise associated with installation of the proposed reservoir will be below applicable noise standards. Because some of the pipeline construction will be carried out much closer to the residences along the southern side of Ka'apuni Road, construction noise levels in them will be higher than that associated with the reservoir construction. Hence, a Noise variance may be needed as provided for in HAR §11-46.

Table 3.2. Construction Noise Levels: Single Pieces of Equipment.

Equipment	Usage (%)	Actual Lmax (dBA)	Calculated (dBA)			
			Reservoir		Pipeline	
			Lmax	Leq	Lmax	Leq
Backhoe	40	77.6	52.5	55.5	73	69.1
Crane	16	80.6	62.5	54.5	76	68.1
Concrete Mixer Truck	20	78.8	62.5	55.2	74.3	70.3
Front End Loader	40	79.5	61.0	57.1	71.9	67.9
Warning Horn	5	83.2	65.1	52.1	78.6	65.6
Roller	20	80.0	61.9	54.9	75.5	68.5
Concrete Pump Truck	20	81.4	63.3	56.3	76.9	69.9
Total if All Running	n/a	n/a	65.1	64.0	85.1	82.1
Note: Calculations Made Using *Roadway Construction Noise Model* (January 2006) published by U.S. Department of Transportation, Federal Highway Administration (Report FHWA-HEP-05-054/DOT-VNTSC-FHWA-05-01						
Source: Planning Solutions Inc.						

3.6.3 OPERATIONAL PHASE NOISE IMPACTS

Once the reservoir and pipeline are in operation, they will not generate any noise.

Table 3.3. Maximum Permissible Sounds Levels in dBA (HAR §11-46)

Zoning Districts	*Daytime (7 a.m. to 10 p.m.)*	*Nighttime (10 p.m. to 7a.m.)*
Class A	55	45
Class B	60	50
Class C	70	70

Notes:
(a) The maximum permissible sound levels apply to any excessive noise source emanating within the specified zoning district, and at any point at or beyond (past) the property line.
(b) Noise levels may not exceed the maximum permissible sound levels for more than ten per cent of the time within any twenty-minute period, except by permit or variance issued under sections 11-46-7 and 11-46-8.
(c) For mixed zoning districts, the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level.
(d) Measurements values are for "A" weighting network and "slow" meter response unless otherwise stated. Sound level meters and calibrators must conform to American National Standard, ANSI S1.4-1983, specifications. The maximum permissible sound level for impulsive noise is ten dBA above the maximum permissible sound levels shown and is measured using the "Fast" meter response.
(e) The limits do not apply to the operation of emergency generators, provided the best available control technology is implemented.
(f) For the purpose of the regulations, the following definitions apply:
"*Construction activities*" means any or all activities, including but not limited to those activities necessary or incidental to the erection, demolition, assembling, renovating, installing, or equipping of buildings, public or private highways, roadways, premises, and parks.
"*Construction equipment*" means any device designed and intended for use in construction, including but not limited to any air compressor, pile driver, bulldozer, pneumatic hammer, steam shovel, derrick, crane, tractor, grader, loader, power saw, pump, pneumatic drill, compactor, on-site vehicle, and power hand tool.
"*Construction site*" means any or all areas, necessary or incidental for the purpose of conducting construction activities.
(g) Class A zoning districts include all areas equivalent to lands zoned residential, conservation, preservation, public space, open space, or similar type.
Class B zoning districts include all areas equivalent to lands zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type.
Class C zoning districts include all areas equivalent to lands zoned agriculture, country, industrial, or similar type.

Source: Hawai'i Administrative Rules, Title 11, Department of Health, Chapter 46, Community Noise Control

3.7 TRANSPORTATION

3.7.1 EXISTING CONDITIONS

Access to the site is via Ka'apuni Road, an approximately 9,100-foot-long two-lane paved road that feeds into Olohena Road at the eastern end and intersects Kawaihau Road at its western end. Between Kawaihau Road and the proposed reservoir site (which is the western terminus of the proposed waterlines), there are approximately 75 residences served by Ka'apuni Road and the few small cul-de-sacs that exist there. Several residences (i.e., less than five) exist along the eastern portion of Ka'apuni Road which fronts the proposed reservoir site and waterline.

No commercial or public uses exist along the portion of Ka'apuni Road slated for the proposed waterline. A County park (Kapahi Park) exists farther to the northwest, near the intersection with Kawaihau Road. In contrast, Olohena Road to the south is a main thoroughfare providing access to

Kapa'a Middle School and to Kapa'a town. Most of the vehicles along Ka'apuni Road are probably local residents traveling to and from Kapa'a or the nearby middle school via Olohena Road. While some residents from Kapa'a Homesteads and other inland residential areas may use Ka'apuni Road as a route to Olohena Road, Ka'ehulua Road runs parallel to Ka'apuni Road and is slightly closer to the Kapa'a Homesteads community, so it is likely that many residents elect to take that route to Olohena Road instead.

The Kaua'i County Engineering Division has indicated that there is no quantitative traffic data available for Ka'apuni Road, however observations made during a recent site visit indicate that, during peak hours, the road probably experiences no more than a few hundred vehicles per hour. During most other hours the traffic volume is considerably less.

3.7.2 POTENTIAL IMPACTS & MITIGATION MEASURES

3.7.2.1 Reservoir

Trucks and passenger cars will bring workers, equipment, and building materials to the proposed reservoir site, slightly increasing traffic on Ka'apuni Road. The number will be small, generally less than 10 to 20 vehicle-trips per day; that, together with the relatively low existing traffic volumes means that roadway capacity will be more than adequate to accommodate these movements. Heavy trucks may occasionally slow other vehicles traveling in the same direction, and there is limited room in some areas for vehicles traveling in opposite directions to pass one another. Consequently, the construction traffic will increase the required travel time. However, the short distance over which this will occur, the small number of vehicles that will be affected, and the limited duration of the construction work mean that the adverse affect will be small. Construction of the reservoir and on-site waterlines does not entail work in the existing road right-of-way. Once completed, the reservoir will not require manned operation, but only occasional monitoring and maintenance. Service vehicles will park in on-site and will not interfere with traffic.

3.7.2.2 Waterline

Construction of the two proposed waterlines will require single-lane closures on Ka'apuni Road over a period of approximately 12 months. The public will be notified of lane closures through radio and newspaper at least three days prior to commencing work.

The lane closure will span a distance of no more than a few hundred feet at a time to accommodate the working area. The contractor will enclose the working area and provide flaggers, signs, and lighting needed for traffic control and safety. As mentioned, Waterlines A and B will be installed under the eastbound and westbound lanes of the road, respectively. They will be installed consecutively rather than concurrently to ensure that one lane is kept open at all times.

In general, the low volume of traffic along Ka'apuni Road and the existence of alternate routes to schools and commercial areas means that delays experienced should not be significant. It is likely that they will be on the order of a few minutes at most, except on rare occasions. Once in place, the waterline will not affect traffic.

3.8 ARCHAEOLOGICAL, HISTORIC AND CULTURAL FEATURES

3.8.1 EXISTING CONDITIONS

3.8.1.1 Reservoir

The project area has been extensively modified and developed during historic times, as indicated by (a) the existing modified condition, (b) the present vegetation cover, and (c) the absence of evidence that any potentially significant cultural resources exist on or near the project site. Furthermore, there is no indication of any kind that the project area has resources necessary to or currently being used by either Native Hawaiian cultural practitioners exercising traditional and customary access and use

rights for any purposes or by individuals of any other cultural affiliation for any traditional cultural purposes. The reservoir parcel is fenced and has been under County management for many years.

3.8.1.2 Waterline

The area disturbed by the waterline construction is entirely within the existing road right-of-way. It has already been extensively disturbed during the placement of existing waterlines, and is unlikely to contain culturally significant material.

3.8.2 POTENTIAL IMPACTS & MITIGATION MEASURES

3.8.2.1 Reservoir

SCS Hawai'i conducted an archaeological field inspection of the proposed reservoir site on May 13, 2006. Three historical features were identified, and it was noted that the parcel had undergone intensive agricultural production followed by grubbing and grading when the existing tank was installed in 1930. SCS subsequently conducted a complete archaeological inventory survey in order to document the significance of these three features (see Appendix A). They were ultimately catalogued as two State Inventory of Historic Property (SIHP) sites, as described below:

- SIHP Site No. 50-30-08-3940, which is the existing DOW concrete water tank at the site, and
- SIHP Site No. 50-30-08-3941, which consists of two earthen ditch segments that comprised part of a complex irrigation system created in the early 20th century by Makee and Līhu'e Plantations. This system historically moved water from the eastern slopes of Mount Wai'ale'ale through a series of ditches and reservoirs to the cane fields of Līhu'e, Wailua, Kealia and Kapa'a.

These features were evaluated for significance under the criteria established for the Hawai'i State Register of Historic Places. SCS determined them both to be significant under Criterion D, for informational value, and concluded that the inventory survey was sufficient to document this information. It further concluded that the project could now proceed without endangering significant historic or cultural resources. The State Historic Preservation Division (SHPD) concurred with the findings of this study in a letter dated July 10, 2006. A copy of the letter is included in Appendix A.

The project site has been used only for water supply facilities since 1930, and there is no indication that it has ever been used for traditional cultural purposes.

DOW's construction contract for the work will stipulate that should any artifact or burial site be encountered during construction, all activities would halt and SHPD would be notified. It will provide that work may be resumed only after consultation with the SHPD is completed and a monitoring program is in place.

3.8.2.2 Waterline

Because the waterline route is within a road right-of-way that is heavily disturbed, its construction is unlikely to uncover significant archaeological or cultural resources. DOW's construction contract for the work will stipulate that should any artifact or burial site be encountered during construction, all activities would halt and SHPD would be notified. It will provide that work may be resumed only after consultation with the SHPD is completed and a monitoring program is in place.

3.9 NATURAL HAZARDS VOLCANIC AND SEISMIC HAZARDS

3.9.1 RISK FROM EARTHQUAKES

Unlike the situation on the Island of Hawai'i, which experiences thousands of earthquakes each year (most of them so small that they are measurable only on sensitive instruments), no large earthquakes have been felt on Kaua'i. The Uniform Building Code (UBC) establishes six seismic zones. Areas in Zone 0 are considered to have no chance of severe ground shaking while those in Zone 4 are

considered to have a 10% chance of severe shaking in a 50-year interval. For the purposes of structural design, the UBC classifies the entire Island of Kaua'i as Zone 1 (USGS 1997), the lowest risk category that is assigned throughout the Hawaiian Islands. The proposed reservoir will be built to comply with the Uniform Building Codes for Earthquake Zone 1. Hence, there is little risk that it would suffer damage in the event of an earthquake.

3.9.2 FLOOD AND TSUNAMI HAZARDS

The land on which the reservoir and waterline would be constructed is more than a mile inland and about 200 feet above sea level, well out of the reach of tsunami. The Flood Insurance Rate Map (FIRM) for the area shows that the reservoir site and waterline route are within Flood Zone X, an area with undetermined flood hazards. However, the reservoir's location near a topographic high point and the pipeline's underground placement mean that there is virtually no possibility of flooding even during a record rainfall event.

3.10 SCENIC AND AESTHETIC RESOURCES

3.10.1 EXISTING CONDITIONS

Figure 2.3 contains a photograph of the reservoir site as currently seen by persons in vehicles passing on Ka'apuni Road. The existing concrete tank is largely obscured by the vegetation that has overgrown most of the site. The immediately adjacent parcels are largely undeveloped, with the nearest residence situated several hundred feet away and behind screening vegetation.

3.10.2 POTENTIAL IMPACTS & MITIGATION MEASURES

As noted above, the upper few feet of the proposed reservoir will be visible from cars passing along Ka'apuni Road.[17] The nearest residence is more than 400 feet away and the facilities should not be visible from there. The reservoir may be visible to some residences farther across the gulch to the north, but these are more than a fifth of a mile away, and its presence will not detract from their views. The SCADA antenna will extend about 25 feet above the top of the reservoir, but it is only a few inches in diameter. For these reasons, the project will not have any substantial impacts on scenic and aesthetic resources.

3.11 LAND USE & SOCIOECONOMIC ENVIRONMENT

3.11.1 EXISTING CONDITIONS

3.11.1.1 Land Use

Despite the development that has occurred on Kaua'i over the past 50 years, it remains largely rural in character. Over 56% or the total acreage is classified as Conservation District and has virtually no development (see Table 3.4). Of the roughly 40 percent of the total land area that is in the Agricultural District, much is now fallow. In areas such as Wailua-Kapa'a where the project is located, there is an increasing trend toward re-zoning of Agricultural land for residential and urban uses. The Kapa'a Homesteads is the nearest of the fast-growing residential areas near the project site, and its growth is certainly contributing to the need for additional water storage and distribution. Section 3.11.1.2 below includes a discussion of anticipated residential growth in the Kapa'a Homesteads area.

[17] Because the proposed reservoir is set approximately 5 feet below grade, only 14 feet will be above ground. Most of this will be screened by the vegetation that grows along the road side of the parcel.

Table 3.4. Estimated Kaua'i Acreage by State Land Use District Classification.

Total area (acres)	*Classification by State Land Use District*							
	Urban		*Conservation*		*Agricultural*		*Rural*	
	Acres	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*
353,900	14,550	4.11%	198,769	56.17%	139,328	39.37%	1,253	0.35%

Note: Total acreage, including inland water, as classified by the Hawai'i State Land Use Commission under the provisions of Chapter 205, Hawai'i Revised Statutes, as amended.

Source: Hawai'i State Department of Business, Economic Development & Tourism, Land Use Commission, records.

All of the land along the northern side of the segment of Ka'apuni Road that would be affected by construction of the proposed reservoir and water line is vacant. Several homes are situated on the southern side of the roadway right-of-way in which the new pipelines would be installed. Residents of approximately 75 additional homes situated *mauka* of the proposed work area also use the roadway.

3.11.1.2 Population, Housing, & Employment

Table 3.5 presents summary socioeconomic information for Kaua'i. The Island's Year 2000 resident population of 58,500 was about 14 percent higher than in 1990. The total county population amounted to 4.8 percent of the State's population, making it the smallest of the four counties. The Kapa'a-Wailua basin, where the project is located, is home to a large portion of Kaua'i's population. An urban corridor extends along Kūhiō Highway from Haleilio Road in Wailua to Kawaihau Road, at the northern edge of Kapa'a Town. As mentioned, much of the land in and around the project area is zoned for agriculture and open space uses, but as the area grows, much of the agricultural land is being re-zoned for residential and urban uses.

As of 1998, the combined areas of Kapa'a Homesteads, Wailua Houselots, and Wailua Homesteads had an estimated 4,700 dwelling units, making it the largest residential community on Kaua'i. The General Plan Update Project prepared a detailed "Build-Out Analysis" of the Kapa'a Homesteads-Wailua Houselots-Wailua Homesteads area. The analysis concluded that an additional 4,000 units (or up to 6,000 if lots contain an additional dwelling unit) could be developed if General Plan-designated lands were fully zoned, subdivided, and built out. This would increase the housing units and population of the area by 85 percent. A second Build-Out scenario assumed that all of the Agricultural land would gradually convert to Rural under the State Land Use code and would be granted R-2 zoning, allowing two dwelling units per acre. This would result in an even greater increase in the number of dwelling units.

The proposed reservoir and waterline is located within 2000 Census Tract No. 403 (see

Figure 3.3). In that year, the population of that Census Tract was 7,652, with a median age of 34.7. Table 3.5 compares County-wide Census Data with 2000 Data from Census Tract 403. As shown in the Table, the project area is characterized by slightly higher unemployment and a somewhat lower per capita income than the County average.

3.11.1.3 Economy

The principal driving forces for the economy of Kaua'i County are tourism, agriculture, and defense expenditures. Sugarcane cultivation was the economic mainstay of Kaua'i for more than a century, and the now-abandoned reservoir on the parcel supported that use. Its importance has declined greatly over the past several decades, and it is now only a shadow of its former self. Today, only one plantation remains in business, and despite the efficiency of its operation, it remains on an economically shaky footing. Over 45,000 acres of former sugarcane land have been taken out of

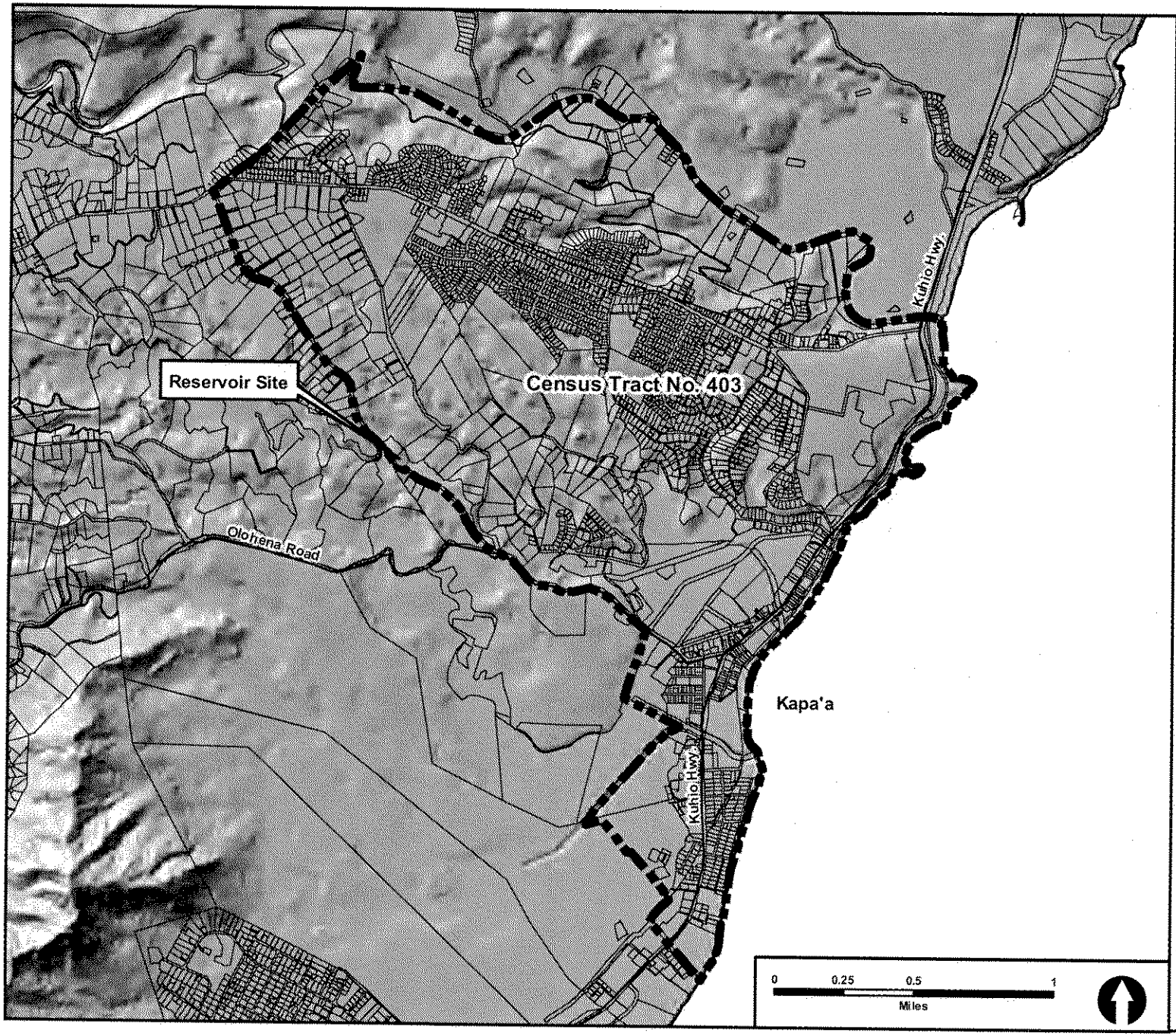
production as the industry has contracted. Due to the contraction in the sugar industry, revenues from agriculture (crops, livestock and aquaculture) declined from $64.4 million in 1990 to $48.5 million in 2000, a decrease of 25 percent. As a result, agriculture is now the smallest of the three major industries in Kaua'i County, with sales representing only 4 percent of visitor expenditures and 34 percent of defense expenditures. This trend is mirrored in the Census Data on employment in the project area.

As shown in Table 3.5, large percentages of Census Tract 403's population work in retail trade and services such as food services, education, and municipal services. Agriculture and manufacturing comprise relatively little of the project area's employment, despite the abundance of agriculture-zoned land there.

Table 3.5. Socioeconomic Profile, County of Kaua'i.

Item	*1990*	*2000*	*Census Tract 403 (2000)*
Resident Population	51,177	58,463	
Kaua'i Island	50,947	58,303	
Census Tract 403			7,652
Visitors			
Annual Visitors	1,286,360	1,074,821	
Average Visitor Census	18,200	18,041	
U.S. Visitors	17,200	16,254	
Foreign Visitors	1,000	1,787	
Income from Major Industries ($ million)			
Visitor Expenditures	$945.8	$1,200.0	
Defense Expenditures	n/a	$144.0	
Agricultural Sales	$64.4	$48.5	
Labor			
Civilian Labor Force	25,750	29,400	3,542
Employed	24,700	27,500	3,288
Unemployment Rate	4.1%	6.5%	7.2 %
Jobs, Wage and Salary Only	25,450	26,350	
Construction, mining	1,450	1,000	239 (7.3%)
Manufacturing	900	500	37 (1.1%)
Transp, communications, utilities	2,400	1,750	231 (7.0%)
Trade (Wholesale/Retail)	7,050	7,450	680 (20.7%)
Finance, insurance, real estate	1,550	1,100	144 (4.4%)
Services and miscellaneous	7,600	9,500	1,696 (50.3%)
Government	3,350	4,100	550 (16.7%)
Agriculture	1,150	950	96 (2.9%)
Personal Income			
Total ($ million)	$965	$1,304-	
Per capita	$18,692	$23,061	$17,002

Source: State of Hawai'i Department of Business, Economic Development & Tourism. *2003 State Data Book.*



Legend:

Prepared For:

County of Kaua'i
Department of Water

Prepared By:

PLANNING SOLUTIONS

Source:

–State of Hawaii GIS
–US Census Bureau

Figure 3-3:

Census Tract No. 403

Stable Tank & Waterline Project

Figure 3-3 Census Tract 2006-07-05.mxd

3.11.2 POTENTIAL IMPACTS & MITIGATION MEASURES

The project area is within the State Agricultural District. The surrounding community is rural. As noted above, the reservoir site is mostly overgrown and has fallen out of use since the old reservoir there was abandoned. There are no existing agricultural activities at the reservoir site that would be displaced by the proposed facility.

Since a DOW reservoir already exists at the site, the proposed new tank does not represent a significant change in use of the site. Moreover, it is a use that is not incompatible with the surrounding landscape. As discussed in other sections, the project will not create significant visual impacts, traffic, or noise, and is well away from sensitive land uses. The project will also not affect recreational activities in the area.

The proposed reservoir and waterline will increase DOW's storage and delivery capacity for its customers in Kapa'a. This will allow the Department to meet current system demands and provide adequate storage for peak use hours and emergencies. Aside from the temporary construction employment and expenditures that it would create, the project will not in and of itself stimulate or otherwise promote population growth or economic activity.

3.12 PUBLIC INFRASTRUCTURE AND SERVICES

3.12.1 EXISTING CONDITIONS

Electricity, communications, and water delivery infrastructure are all in place along Ka'apuni Road. KIUC and Hawaiian Telcom own and maintain electrical and telephone lines along existing poles in the road right-of-way, and DOW owns and operates several existing waterlines.

3.12.2 POTENTIAL IMPACTS & MITIGATION MEASURES

As discussed in Chapter 2 of this report, the project will require the electrical service to be extended a short distance to the reservoir site. No service upgrading is required, and the amount of electricity required for the tank control valve station and limited lighting planned for the site will be very small. DOW plans to use radio and unlicensed frequencies for the SCADA telemetry communications if it is determined that the site is accessible by radio. If not, telephone service by Hawaiian Telecom will be provided to the site on the same poles as the planned electrical wires. The proposed new waterlines will connect to some of the existing DOW waterlines along Ka'apuni Road, and portions of existing waterlines there will be abandoned in place. Overall, the new waterlines are expected to improve the efficiency of the DOW system.

3.13 LAND OWNERSHIP

The parcel containing the proposed reservoir site is already County-owned. It has not been in use since the existing tank at the site was abandoned years ago. The waterline route is also entirely within a County-owned road right-of-way. The County already owns the drainage easement needed for the water discharge pipe that runs to the bottom of the adjoining slope. Therefore, construction of the project will not require special permissions and will not result in a transfer of ownership.

4.0 RELATIONSHIPS TO RELEVANT PLANS, POLICIES & CONTROLS

4.1 COUNTY AND STATE REGULATIONS

4.1.1 COUNTY OF KAUA'I GENERAL PLAN

The *Kaua'i General Plan*, which was finalized in 2000, fulfills legal mandates of State law and the Charter of the County of Kaua'i (Hawai'i Revised Statutes §46-4). It provides guidance for land use regulations, the location and character of new development and facilities, and planning for County and State facilities and services. The *Kaua'i General Plan* states the County's 20-year vision for Kaua'i and sets policies for achieving that vision. The General Plan is a direction-setting, policy document rather than a regulatory document. Several policies outlined in the *Kaua'i General Plan* are relevant to the proposed project. These are reproduced below, followed by a discussion of the project's consistency with them.

4.1.1.1 Applicable Goals, Policies, and Recommended Actions

Section 7.4 of the *Kaua'i General Plan* contains goals and policies concerning the development and operation of essential water supply facilities. The *General Plan* recognizes that water supply facilities are needed to support the patterns of development which the *General Plan* seeks to achieve. It makes planning for the location of utility facilities such as wells, reservoirs, and pumping stations an integral part of the land planning process.

The *Kaua'i General Plan* makes it the policy of the County to address the following water supply issues:

> *(a) Develop a long-range plan to guide expansion, improvement, and rehabilitation of County water systems.*
>
> *(b) Coordinate planning of future water system development and rate structures with General Plan policies and guidelines.*
>
> *(c) Support compact development by giving priority to water supply improvements for existing and planned Urban Center, Residential Community, and Resort areas, while also supporting development in already-established Agricultural Communities.*

The General Plan also identifies a number of general actions to implement these policies. Several of these are relevant to the proposed project. Specifically, it directs DOW to:

> *(a) Develop and update a long-range water systems plan to guide decisions on the Capital Improvement Program, improvement financing, and water rates.*
>
> *(b) Establish water service area boundaries and criteria to limit expansion of service outside of areas zoned for urban use or agricultural community use.*
>
> *(c) Establish criteria for funding CIP projects that give priority to system expansion and improvement in areas designated as Urban Center, Residential Community and Resort, while also supporting development in already-established Agricultural Communities.*

With regards to the water needs of the Kawaihau District, where the project is located, the *Kaua'i General Plan* notes the following:

> *The vast basin between the Wailua River and the Kapa'a Homesteads continues its transition from agricultural to residential use. Home-building continues to increase, as small holdings are divided up. Conversion of land from Agricultural zoning to Residential zoning, the subdivision of agricultural lots, and the building of Additional Dwelling Units (ADUs) have all contributed to increasing the population of this area. Local roads and water systems were not designed to support residential uses and, in many cases, are overburdened. Fire protection is a problem because of poor road access and lack of fire-flow capacity in the water systems. Traffic, water, fire protection and drainage problems will compound as the number of residences continues to grow.*

As discussed in Section 3.11.1 above, the General Plan Update projected substantial growth in the Kapa'a Wailua area. In response to the estimated buildout scenarios, DOW projected a need for approximately ten new wells and four new storage tanks to provide adequate water supply for the build-out scenario. DOW commented as follows:

> *"The distribution of units in the agricultural designation will require water system infrastructure improvements that are spread out over a large area. Longer pipelines that service fewer customers would result. Per residence located in the agricultural subdivision, there would be a higher capital and long-term operational, maintenance and replacement cost for the water system."*[18]

4.1.1.2 Conformance with the Kaua'i County General Plan

The proposed improvements are being carried out in accordance with DOW's long range plan for the County. They will improve storage and delivery capability to Kapa'a, an area slated for future urban and residential growth that has been identified as needing improved water supply infrastructure. Thus, the project is consistent with the objectives of the *General Plan*.

4.1.2 COUNTY OF KAUA'I ZONING ORDINANCE

The purpose of the Comprehensive Zoning Ordinance is to provide regulations and standards for development of land uses and the construction of structures. The CZO establishes various zoning districts and overlay districts, delineates uses and development standards for each district, establishes permits and permit processes, and establishes criteria for granting permits.

The proposed reservoir site and water pipeline are in the County Agriculture (A) district. As discussed below, the proposed project is consistent with the permitted uses and development standards for that district.

4.1.2.1 Consistency with Permitted Uses of the Agriculture District

Article 7 of the Kauai County Zoning Ordinance establishes the permitted uses and approval procedures for areas that are within the County Agriculture Zoning District (A). It states that the purpose of the A classification is:

- To protect the agricultural potential of lands within the County of Kaua'i to insure a resource base adequate to meet the needs and activities of the present and future.
- To assure a reasonable relationship between the availability of agricultural lands for various agricultural uses and the feasibility of those uses.
- To limit and control the dispersal of residential and urban use within agricultural lands.

Section 8-7.2 identifies the generally permitted uses and structures. They include aquaculture, diversified agriculture, forestry, grazing, historic sites, intensive agriculture, most livestock, orchards

[18] Letter dated September 21, 1999, from Ernest Y.W. Lau, Manager & Chief Engineer, DOW to Dee M. Crowell, Director, Planning Department.

and nurseries, outdoor recreation, public parks and monuments, resource management, single family detached dwellings, specialized agriculture, undeveloped campgrounds, warehousing, storage and packing of plant products, and wildlife management. Section 8.7.3 of the code lists "utility installations" such as the proposed reservoir among those that require a Use Permit if they are located in the Agriculture District.

4.1.2.2 Consistency with Development Standards for the Agriculture District

Section 8.7.6 of the CZO establishes development standards for construction and use within the Agriculture District. It provides that subject to the density, parcel and other requirements of Sections 8-7.4 and 8-7.5, the development standards applicable in the Agriculture District are the same as those established in Sections 8-3.5 and 8-3.7, except that:

(1) The minimum average lot width is 150 feet.

(2) The average length of any lot cannot exceed 4 times its width.

(3) The maximum height of any building, other than one intended primarily for residential use, 50 feet.

(4) The Planning Commission may require the dedication of adequate public access-ways to publicly-owned land or waters and may require the preservation of all historic and archaeological sites, known or discovered on the parcel subject to development.

DOW's proposal for the development of the reservoir and waterline complies with these requirements.

Section 8.7.7 of the CZO requires a valid zoning permit for construction or other development for which standards are established. Because the proposed Stable Tank reservoir does not qualify for a Class I, Class II, or Class III Permit, a Class IV Permit is required.

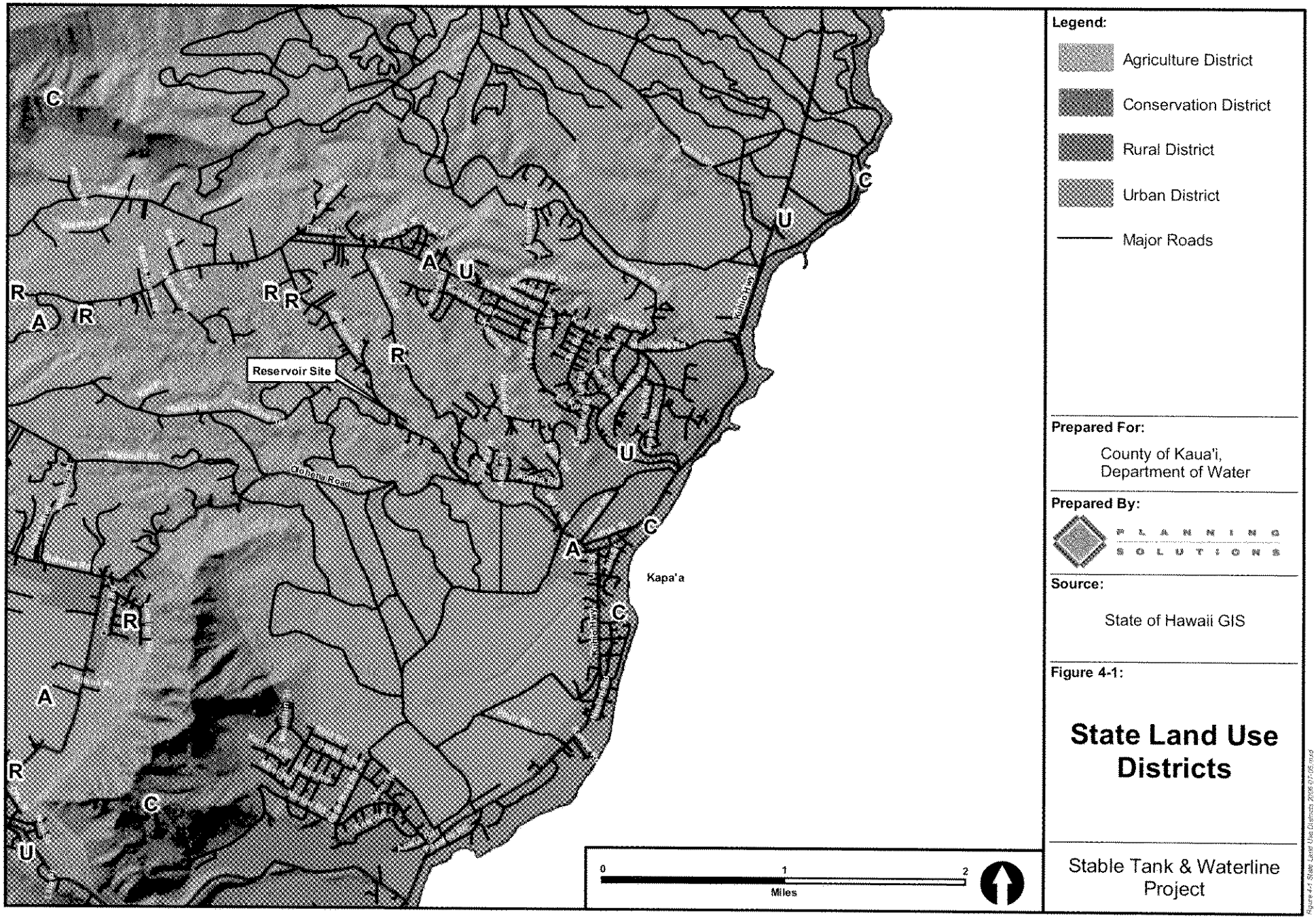
4.1.3 HAWAI'I STATE WATER CODE

The Hawai'i Water Plan serves as the guide for developing and implementing the State's water resource management policies, which are outlined in the State Water Code (Chapter 174C-2). The plan consists of five component parts: 1) Water Resources Protection Plan (WRPP); 2) Water Quality Plan (WQP); 3) State Water Projects Plan (SWPP); 4) State Agriculture Water Use and Development Plan (AWUDP) (Per modification of Section174-31, HRS, Act 101); and the 5) Water Use and Development Plans (WUDP) for each County. The State Water Code outlines the required content for each County WUDP. DOW's *Water Plan 2020* serves as the County of Kaua'i's WUDP. The proposed project is being conducted in accordance with water supply needs identified in that document, and therefore it is compatible with the State Water Code.

4.1.4 STATE OF HAWAI'I LAND USE LAW

The parcel containing the proposed reservoir site is in the State Agriculture District, as is the roadway where the waterline would be placed. HRS Chapter 205 §205-4.5 (7) lists public utility facilities such as the proposed reservoir and waterline as permissible uses within the State Agricultural District.

HRS §205-6 states that a Special Permit may be issued for a use other than those identified as permissible within the Agricultural State Land Use District, provided that the use would promote the effectiveness and objectives of HRS Chapter 205. The proposed SCADA communications antenna is not a permitted use, and thus it requires DOW to obtain a Special Permit. Because the antenna is ancillary to the reservoir, will occupy a small portion of the reservoir site, and will not adversely impact agricultural activities on nearby lands, it conforms with the intent of HRS Chapter 205.


Legend:
Agriculture District
Conservation District
Rural District
Urban District
Major Roads
Reservoir Site
Kuhio Hwy
Golf Course Road
Kapa'a
0
1
2
Miles
Prepared For:
County of Kaua'i,
Department of Water
Prepared By:
PLANNING SOLUTIONS
Source:
State of Hawaii GIS
Figure 4-1:
State Land Use Districts
Stable Tank & Waterline Project

4.1.5 DRINKING WATER STATE REVOLVING FUND (DWSRF)

This project may be funded in part or in whole by Federal funds through the State of Hawai'i's Drinking Water State Revolving Fund (DWSRF) program, which would constitute a federal action and will require the project to meet all Hawai'i DWSRF program requirements. The U.S. Congress established the DWSRF program as a new section 1452 of the Safe Drinking Water Act (SDWA), 33 U.S.C. 300j-12, by the SDWA Amendments of 1996, Public Law 104-182. The intent of the DWSRF is to assist water systems in constructing the infrastructure needed to maintain or improve compliance with the SDWA. This document includes all of the environmental information required for compliance with the DWSRF program.

4.2 CROSS-CUTTING FEDERAL ENVIRONMENTAL AUTHORITIES

4.2.1 ARCHEOLOGICAL AND HISTORIC PRESERVATION ACT (16 U.S.C. §461) & NATIONAL HISTORIC PRESERVATION ACT (16 U.S.C. § 470)

The project is fully compliant with the Archaeological and Historic Preservation Act and National Historic Preservation Act, as discussed in detail in Section 3.8.2 and Appendix A. DOW will instruct its contractors to halt activity and notify SHPD in the event that any artifact or burial site is encountered during construction.

4.2.2 CLEAN AIR ACT (42 U.S.C. § 7401)

As discussed in Section 3.3.1.4, air quality in the project area is good. It is in an air quality attainment area as defined by the State of Hawai'i Department of Health in its EPA-approved air quality program (DOH 2005). Measures will be taken to control fugitive dust during construction in accordance with Hawai'i Administrative Rules Title 11, Chapters 59 and 60. Normal operation of the proposed reservoir and waterline will not produce on-site air emissions, will not alter airflow in the vicinity, and will have no other measurable effect on the area's microclimate.

4.2.3 COASTAL BARRIER RESOURCES ACT (16 U.S.C. §3501)

Coastal Barrier Resources Act (CBRA), Public Law 97-348 (96 Stat. 1653; 16 U.S.C. 3501 et seq.), enacted October 18, 1982, designated various undeveloped coastal barrier islands, depicted by specific maps, for inclusion in the Coastal Barrier Resources System (System). Areas so designated were made ineligible for direct or indirect Federal financial assistance that might support development, including flood insurance, except for emergency life-saving activities. Exceptions for certain activities, such as fish and wildlife research, are provided, and National Wildlife Refuges and other, otherwise protected areas are excluded from the System. The proposed project will not affect any areas protected by this Act.

4.2.4 COASTAL ZONE MANAGEMENT ACT (16 U.S.C. § 1451)

Enacted as Chapter 205A, HRS, the Hawai'i Coastal Zone Management (CZM) Program was promulgated in 1977 in response to the Federal Coastal Zone Management Act of 1972. The CZM area encompasses the entire state, including all marine waters seaward to the extent of the state's police power and management authority, including the 12-mile U.S. territorial sea and all archipelagic waters.

The Hawai'i Coastal Zone Management Program focuses on ten policy objectives:

- Recreational Resources. To provide coastal recreational opportunities accessible to the public and protect coastal resources uniquely suited for recreational activities that cannot be provided elsewhere.
- Historic Resources. To protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
- Scenic and Open Space Resources. To protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.
- Coastal Ecosystems. To protect valuable coastal ecosystems, including reefs, from disruption and to minimize adverse impacts on all coastal ecosystems.
- Economic Uses. To provide public or private facilities and improvements important to the state's economy in suitable locations; and ensure that coastal dependent development such as harbors and ports, energy facilities, and visitor facilities, are located, designed, and constructed to minimize adverse impacts in the coastal zone area.
- Coastal Hazards. To reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
- Managing Development. To improve the development review process, communication, and public participation in the management of coastal resources and hazards.
- Public Participation. To stimulate public awareness, education, and participation in coastal management; and maintain a public advisory body to identify coastal management problems and provide policy advice and assistance to the CZM program.
- Beach Protection. To protect beaches for public use and recreation; locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion.
- Marine Resources. To implement the state's ocean resources management plan.

Other key areas of the CZM program include: a permit system to control development within a Special Management Area (SMA) managed by the Counties and the Office of Planning; a Shoreline Setback Area which serves as a buffer against coastal hazards and erosion, and protects view-planes; and the Marine and Coastal Affairs. Finally, a Federal Consistency provision requires that Federal activities, permits and financial assistance be consistent with the Hawai'i CZM program.

The proposed Stable Tank Reservoir and Pipeline project is located over a mile from the ocean. It does not involve the placement, erection, or removal of materials near the coastline. As documented in this environmental assessment, the type and scale of the activities that it involves do not have the potential to affect coastal resources significantly. Finally, it is consistent with the CZM objectives that are relevant to a project of this sort.

4.2.5 ENDANGERED SPECIES ACT (16 U.S.C. 1531)

The Endangered Species Act (16 U.S.C. §§ 1531-1544, December 28, 1973, as amended 1976-1982, 1984 and 1988) provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the U.S. or elsewhere. The Act mandates that Federal agencies seek to conserve endangered and threatened species and use their authorities in furtherance of the Act's purposes. It provides for listing species, as well as for recovery plans and the designation of critical habitat for listed species. The Act outlines procedures for Federal agencies to follow when taking actions that may jeopardize listed species, and contains exceptions and exemptions.

Section 3.5 of this EA discusses existing biota on and near the project site. The discussion documents the fact that there are no known rare or endangered species on or immediately adjacent to the project site, and that the project would not affect habitat necessary to their survival.

4.2.6 ENVIRONMENTAL JUSTICE (EXECUTIVE ORDER 12898)

The Environmental Justice Executive Order was issued in 1994 for the purpose of protecting low-income and minority residents of the United States from disproportionate exposure to environmental and health hazards. Section 1-101 of the Executive Order States:

> *To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.*

As discussed in Section 3.11, the Wailua-Kapa'a area where the proposed project is located is one of the largest and fastest-growing urban areas on Kaua'i. The average per capita income is slightly less than the County average but the area as a whole is not considered a low-income population. The purpose of the proposed project is to continue to provide Wailua-Kapa'a residents with adequate, reliable and affordable drinking water that conforms to State and Federal standards. The project will not have adverse secondary environmental, economic, or social impacts, as discussed in detail in Chapter 4. Thus, the proposed Stable Tank Reservoir and Pipeline project complies with this Executive Order.

4.2.7 FLOODPLAIN MANAGEMENT (EXECUTIVE ORDER 12148)

The site proposed for the Stable Tank reservoir and waterline lies outside a defined floodplain. The project does not involve property acquisition, management, or construction within a 100-year flood plain (Zones A or V), and it does not involve a "critical action" within a 500-year flood plain. Consequently, it is consistent with applicable regulations and guidance relating to floodplain management.

4.2.8 PROTECTION OF WETLANDS (EXECUTIVE ORDER 11990)

As noted in Section 3.2.1.2, there are no wetlands on or near the site. Neither are there food resources on the site that are important to wildlife that use wetlands elsewhere on the island. Copies of the *Draft EA* were sent to the administrator of the Pacific Island Eco-Region, U.S. Fish & Wildlife Service, and to the State Department of Land and Natural Resources to ensure adequate consideration of this topic in the environmental review for this project.

4.2.9 FARMLAND PROTECTION POLICY ACT (7 U.S.C. § 4201)

The U.S. Congress adopted the Farmland Protection Policy Act (FPPA) (Public Law 97-98) on December 22, 1981). The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has national leadership for administering the FPPA. The effective date of the FPPA rule (part 658 of Title 7 of the Code of Federal Regulations) is August 6, 1984.

The stated purposes of the FPPA are to:

- Minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.
- Assure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland.

"Farmland", as used in the FPPA, includes prime farmland, unique farmland, and land of statewide or local importance. "Farmland" subject to FPPA requirements does not have to be currently used for

cropland. As discussed in Section 3.1, The proposed reservoir and waterline site are within areas designated as "Prime" on the Agricultural Lands of Importance to the State of Hawai'i (ALISH) Map (see Figure 3.1). However, both areas are already used for public facilities (the roadway and the existing reservoir) and have not been used for agriculture for many years; hence, the project will not displace or interfere with existing or future agricultural activities in the project area. As such, the proposed project is consistent with the intent of the FPPA.

4.2.10 FISH AND WILDLIFE COORDINATION ACT (16 U.S.C. § 661)

The Federal Fish and Wildlife Coordination Act, as amended, authorizes the Secretaries of Agriculture and Commerce to require consultation with the U.S. Fish and Wildlife Service and the fish and wildlife agencies of States where the *"waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified"* by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of *"preventing loss of and damage to wildlife resources."*

As documented in this report, the proposed project will not result in the diversion of any water body and will not result in impacts on fish or wildlife resources. The U.S. Fish and Wildlife Service and the State Department of Land and Natural Resources were provided copies of the *Draft EA*.

4.2.11 SAFE DRINKING WATER ACT (40 CFR § 149(A))

The Safe Drinking Water Act (SDWA) is the principal federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The SDWA requires that all public water systems meet stringent water quality standards. These standards cover a long list of potential chemical, radiological and biological contaminants.

The proposed Stable Tank Reservoir and Pipeline project will not establish a new potable water source or affect the quality of existing sources. Its intent is to provide storage and delivery infrastructure to support existing water sources. As discussed in Section 2.2.3, all materials used in constructing the reservoir and waterlines will comply with DOW and NSF standards and the water lines will be cleaned, pressure tested, chlorinated, flushed, and sampled in accordance with Division 300, Sections 302.27 to 302.29 of the *Water System Standards*.

The SDWA also provides the impetus behind the development of regulatory protection of principal or sole source aquifers. Part C of this Law pertains specifically to the protection of underground sources of drinking water, including the establishment of regulations on the injection of materials into subsurface aquifers in those areas of the United States where only one aquifer (principal or sole source aquifer) exists. Section 1424(e) of PL 93-523 states:

> *(e) If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of the determination in the Federal Register. After the publication of any such notice, no commitment for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for Federal financial assistance may, if authorized under another Provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.*

As identified by the U.S. Environmental Protection Agency, Region IX Groundwater Office (http://www.epa.gov/OGWDW/swp/ssa/reg9.html), there are only two Sole Source Aquifers in Hawai'i. They are the Southern O'ahu Basal Aquifer on the Island of O'ahu and the Moloka'i

Aquifer on the island of Moloka'i. There are no sole source aquifers on the Island of Kaua'i where the proposed project is located.

4.2.12 WILD AND SCENIC RIVERS ACT (16 U.S.C. 1271)

The purpose of this act, as stated in Section (b) of its preamble is as follows:

> *It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.*

As discussed in Section 3.2.1.1, no perennial streams or major fresh water bodies exist near the proposed reservoir and water line. Consequently, the proposed project does not have the potential to affect the hydrology, water quality, or aquatic resources in any streams and therefore is consistent with the provisions of the Wild and Scenic Rivers Act.

5.0 DETERMINATION

5.1 SIGNIFICANCE CRITERIA

Hawai'i Administrative Rules §11-200-11.2 establishes procedures for determining if an environmental impact statement (EIS) should be prepared or if a finding of no significant impact is warranted. §11-200-11.2 (1) provides that proposing agencies should issue an environmental impact statement preparation notice (EISPN) for actions that it determines may have a significant effect on the environment. Hawai'i Administrative Rules §11-200-12 lists the following criteria to be used in making that determination:

In most instances, an action shall be determined to have a significant effect on the environment if it:

1. *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;*
2. *Curtails the range of beneficial uses of the environment;*
3. *Conflicts with the State's long-term environmental policies or goals as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;*
4. *Substantially affects the economic or social welfare of the community or State;*
5. *Substantially affects public health;*
6. *Involves substantial secondary impacts, such as population changes or effects on public facilities;*
7. *Involves a substantial degradation of environmental quality;*
8. *Is individually limited but cumulatively has considerable effect on the environment or involves a commitment for larger actions;*
9. *Substantially affects a rare, threatened, or endangered species, or its habitat;*
10. *Detrimentally affects air or water quality or ambient noise levels;*
11. *Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;*
12. *Substantially affects scenic vistas and view planes identified in county or state plans or studies; or,*
13. *Requires substantial energy consumption.*

5.2 FINDINGS

The potential effects of the proposed project described earlier in this document were evaluated using these significance criteria. The findings with respect to each criterion are summarized below:

5.2.1 IRREVOCABLE LOSS OR DESTRUCTION OF VALUABLE RESOURCE

The proposed project would be constructed on previously disturbed land that is under County jurisdiction. It does not involve the loss of any significant cultural or natural resources.

5.2.2 CURTAILS BENEFICIAL USES

Construction and operation of the reservoir and waterline would not curtail beneficial uses of the area. No existing agricultural or other activities would be affected or displaced. The reservoir site has been County-owned and out of use for years, therefore the project would significantly enhance the utility of the reservoir site for the County and for customers of DOW.

5.2.3 CONFLICTS WITH LONG-TERM ENVIRONMENTAL POLICIES OR GOALS

The proposed project is consistent with the County of Kaua'i General Plan (see Section 4.1.1.2) and with the State's long-term environmental policies and goals as expressed in Chapter 344, Hawai'i Revised statutes and elsewhere in State law.

5.2.4 SUBSTANTIALLY AFFECTS ECONOMIC OR SOCIAL WELFARE

The proposed reservoir and waterline is intended to enhance the water storage and delivery capabilities of DOW's Wailua-Kapa'a system. It will allow DOW to assure its customers that they have access to adequate water supply during emergencies and that water is being delivered in the most efficient possible manner, consistent with the maintenance of environmental quality.

5.2.5 PUBLIC HEALTH EFFECTS

The proposed project will not adversely affect air or water quality. Neither will it generate solid waste or produce other emissions that will have a significant adverse effect on public health.

5.2.6 PRODUCE SUBSTANTIAL SECONDARY IMPACTS

The proposed project will not produce significant secondary impacts. It is not designed to foster population growth or to promote economic development. Instead, it is intended to meet existing needs for additional water storage and distribution infrastructure in the Wailua-Kapa'a system.

5.2.7 SUBSTANTIALLY DEGRADE ENVIRONMENTAL QUALITY

The proposed project will not have substantial long-term environmental effects. Ground disturbance noise, and minor traffic delays during the construction period are the only impacts of note, and they will be of limited duration. So long as adequate measures are taken to control the intensity of the construction noise and the time of day during which it will occur, any effects on nearby residents can be managed.

5.2.8 CUMULATIVE EFFECTS OR COMMITMENT TO A LARGER ACTION

Development of the proposed reservoir and waterline is not a commitment to a larger action and is not intended to facilitate substantial population growth. It will provide adequate water storage and delivery capacity to accommodate the existing needs identified for the Wailua-Kapa'a system.

5.2.9 EFFECTS ON RARE, THREATENED, OR ENDANGERED SPECIES

The proposed project will be constructed on disturbed land that is primarily colonized by invasive species. It will not utilize a resource needed for the protection of rare, threatened, or endangered species.

5.2.10 AFFECTS AIR OR WATER QUALITY OR AMBIENT NOISE LEVELS

Construction and operation of the proposed reservoir and waterline will not have a measurable effect on air or water quality. Neither will it have a long-term effect on noise levels, as discussed in Section 3.6.

5.2.11 ENVIRONMENTALLY SENSITIVE AREAS

There are no environmentally sensitive areas or resources near the proposed project. The project site is above the tsunami evacuation zone and is situated on high ground above floodplains. The structures built will be consistent with the Hawai'i Uniform Building Code for Seismic Zone 1.

5.2.12 AFFECTS SCENIC VISTAS AND VIEWPLANES

The proposed new facilities are not within a designated scenic area. They will not significantly detract from the visual character of the site or obstruct views from surrounding properties.

5.2.13 REQUIRES SUBSTANTIAL ENERGY CONSUMPTION

Operation of the tank controls and the SCADA system will require small amounts of electricity, although these are very minor compared to the island's overall energy usage and would not make a noticeable contribution to it.

5.3 DETERMINATION

In view of the foregoing, DOW concludes that the proposed project will not have a significant adverse impact on the environment. Consequently, it is issuing a Finding of No Significant Impact for the proposed action.

6.0 CONSULTATION & DISTRIBUTION

6.1 PARTIES CONSULTED

In the development of the *Draft EA* DOW consulted with the Kaua'i County Department of Planning, the Kaua'i County Engineering Division, the State Safe Drinking Water Branch, and the State Historic Preservation Division.

6.2 DRAFT EA DISTRIBUTION

This DEA was distributed to the individuals and organizations listed in Table 6.1. The written comments received are reproduced, along with DOW's responses, at the end of this Section.

Table 6.1. Draft EA Distribution List

Federal Agencies	
Environmental Protection Agency, Pacific Islands Contact Office	District Engineer, U.S. Army Engineer District, Honolulu
U.S. Department of Agriculture, Natural Resources Conservation Service	U.S. Fish & Wildlife Service, Pacific Island Eco-Region
State Agencies	
Office of Environmental Quality Control	Department of Business and Economic Development & Tourism, Office of Planning
Department of Defense	Department of Health, Environmental Planning Office
Department of Hawaiian Home Lands	Department of Health, Safe Drinking Water Branch
Office of Hawaiian Affairs	Department of Health, Clean Water Branch
Department of Accounting and General Services	DLNR Historic Preservation Division
Department of Transportation	Department of Education
Department of Agriculture	Department of Land and Natural Resources (DLNR) (5 copies)
Commission on Water Resource Management	Civil Defense Department
County of Kaua'i	
Department of Planning	Fire Department
Dept of Public Works Roads & Highways Division	Police Department
Department of Public Works Engineering Division	Kaua'i Civil Defense Agency
Utilities	
Kaua'i Island Utility Cooperative	Hawaiian Telcom
Other Organizations & Individuals	
Water Resources Center, University of Hawai'i	Environmental Center, University of Hawai'i
Cheryl Lovell-Obatake	
Libraries and Depositories	
Hawai'i State Library Hawai'i Documents Center	Līhu'e Regional Library
Kaua'i Community College Library	Kapa'a Public Library

6.3 COMMENTS & RESPONSES ON THE DRAFT EA

The comment period for the Draft EA ended on October 23, 2006. Table 6.2 below lists the parties that submitted written comments on the project. Their comments and DOW's responses to them are reproduced at the end of this section.

Table 6.2. Written Comments Received on the Draft EA

No.	*Name & Title of Commenter*	*Organization*
1	Denis R. Lau, P.E., Chief	Clean Water Branch, State Department of Health
2	Ernest Y.W. Lau, Public Works Administrator	State Department of Accounting and General Services
3	Wallace Kudo, P.E., Chief	Kaua'i County Engineering Division
4	Patricia Hamamoto, Superintendent	State Department of Education
5	Rodney K. Haraga, Director of Transportation	State Department of Transportation
6	Melanie Chinen, Administrator	State Historic Preservation Division
7	Clyde W. Nāmu'o, Administrator	Office of Hawaiian Affairs, State of Hawai'i
8	Kelvin H. Sunada, Manager	Environmental Planning Office, State Department of Health
9	Dean Nakano, Acting Deputy Director	State Commission on Water Resource Management
10	Genevieve Salmonson, Director	State Office of Environmental Quality Control
11	Ms. Cheryl Lovell-Obatake	Individual (recommended as a cultural resources contact by the Office of Hawaiian Affairs)
12	Micah A. Kane, Chairman	State Department of Hawaiian Homelands

Source: Compiled by Planning Solutions, Inc. (2006).

LINDA LINGLE
GOVERNOR OF HAWAII

#1

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EMD / CWB

09054PKP.06

September 20, 2006

Mr. Perry J. White
Planning Solutions
210 Ward Avenue, Suite 330
Honolulu, Hawaii 96814-4012

Dear Mr. White:

Subject: Stable Tank Reservoir and Waterline, Kawaihau District, County of Kauai
Draft Environmental Assessment/Anticipated Finding of No Significant Impact

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated September 8, 2006, and associated documents. The CWB has reviewed the limited information contained in the subject document and offers the following comments:

1. The Army Corps of Engineers should be contacted at (808) 438-9258 for this project. Pursuant to Federal Water Pollution Control Act (commonly known as the "Clean Water Act" (CWA) Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters ..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40, Code of Federal Regulations (CFR), Section 122.2; and Hawaii Administrative Rules (HAR), Chapter 11-54.

2. In accordance with HAR, Sections 11-55-04 and 11-55-34.05, the Director of Health may require the submittal of an individual permit application or a Notice of Intent (NOI) for general permit coverage authorized under the National Pollutant Discharge Elimination System (NPDES).

   a. An application for an NPDES individual permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

   b. An NOI to be covered by an NPDES general permit is to be submitted at least 30 days before the commencement of the respective activity. A separate NOI is needed for coverage under each NPDES general permit. The NOI forms may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

      i. Storm water associated with industrial activities, as defined in Title 40, CFR, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi). [HAR, Chapter 11-55, Appendix B]

      ii. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the commencement of the construction activities.** [HAR, Chapter 11-55, Appendix C]

      iii. Discharges of treated effluent from leaking underground storage tank remedial activities. [HAR, Chapter 11-55, Appendix D]

      iv. Discharges of once through cooling water less than one (1) million gallons per day. [HAR, Chapter 11-55, Appendix E]

      v. Discharges of hydrotesting water. [HAR, Chapter 11-55, Appendix F]

      vi. Discharges of construction dewatering effluent. [HAR, Chapter 11-55, Appendix G]

      vii. Discharges of treated effluent from petroleum bulk stations and terminals. [HAR, Chapter 11-55, Appendix H]

      viii. Discharges of treated effluent from well drilling activities. [HAR, Chapter 11-55, Appendix I]

      ix. Discharges of treated effluent from recycled water distribution systems. [HAR, Chapter 11-55, Appendix J]

      x. Discharges of storm water from a small municipal separate storm sewer system. [HAR, Chapter 11-55, Appendix K]

      xi. Discharges of circulation water from decorative ponds or tanks. [HAR, Chapter 11-55, Appendix L]

3. In accordance with HAR, Section 11-55-38, the applicant for an NPDES permit is required to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. If applicable, please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

4. Any discharges related to project construction or operation activities, with or without a Section 401 WQC or NPDES permit coverage, shall comply with the applicable State Water Quality Standards as specified in HAR, Chapter 11-54.

The Hawaii Revised Statutes, Subsection 342D-50(a), requires that "[n]o person, including any public body, shall discharge any water pollutants into state waters, or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this Chapter, or a permit or variance issued by the director."

If you have any questions, please contact Mr. Alec Wong, Supervisor of the Engineering Section, CWB, at 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:np

PLANNING SOLUTIONS

October 2, 2006
2005-0012-001

Mr. Denis R. Lau, Chief
Clean Water Branch
Department of Health
State of Hawai'i
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Mr. Lau:

Thank you for your September 20, 2006 letter commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment (DEA): Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

Item-by-item responses to your comments are provided below. The comments are reproduced for your convenience in italics before each response.

Comment 1:

The Army Corps of Engineers should be contacted at (808) 438-9258 for this project. Pursuant to Federal Water Pollution Control Act (commonly known as the "Clean Water Act" (CWA) Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters ..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40, Code of Federal Regulations (CFR), Section 122.2; and Hawaii Administrative Rules (HAR), Chapter 11-54.

Response: No discharges into navigable waters are anticipated as part of the proposed project. We sent the U.S. Army Corps of Engineers a copy of the *Draft Environmental Assessment* and will reproduce their comments, if any, in the *Final Environmental Assessment.* If the Corps indicates that such approvals will be required, we will revise the Final EA to reflect this determination.

Comment 2:

In accordance with HAR, Sections 11-55-04 and 11-55-34.05, the Director of Health may require the submittal of an individual permit application or a Notice of Intent (NOI) for general permit coverage authorized under the National Pollutant Discharge Elimination System (NPDES).

a. An application for an NPDES individual permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

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Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

b. An NOI to be covered by an NPDES general permit is to be submitted at least 30 days before the commencement of the respective activity. A separate NOI is needed for coverage under each NPDES general permit. The NOI forms may be picked up at our office or downloaded from our website at:

http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl -index.html

i. Storm water associated with industrial activities, as defined in Title 40, CFR, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi). [HAR, Chapter 11-55, Appendix B]

ii. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the commencement of the construction activities. [HAR, Chapter 11-55, Appendix C]

Iii. Discharges of treated effluent from leaking underground storage tank remedial activities. [HAR, Chapter 11-55, Appendix D]

iv. Discharges of once through cooling water less than one (1) million gallons per day. [HAR, Chapter 11-55, Appendix E]

v. Discharges of hydrotesting water. [HAR, Chapter 11-55, Appendix F]

vi. Discharges of construction dewatering effluent. [HAR, Chapter 11-55, Appendix G]

vii.Discharges of treated effluent from petroleum bulk stations and terminals. [HAR, Chapter 11-55, Appendix H]

viii. Discharges of treated effluent from well drilling activities. [HAR, Chapter 11-55, Appendix I]

ix. Discharges of treated effluent from recycled water distribution systems. [HAR, Chapter 11-55, Appendix J]

x. Discharges of storm water from a small municipal separate storm sewer system. [HAR, Chapter 11-55, Appendix K]

xi. Discharges of circulation water from decorative ponds or tanks. [HAR, Chapter 11-55, Appendix L]

Response: The contractor will apply for NPDES General Permit Coverage for stormwater, dewatering, and hydrotesting associated with construction of the proposed project. These applications will be submitted to your Department at least 30 days prior to commencing construction.

Comment 3:

In accordance with HAR, Section 11-55-38, the applicant for an NPDES permit is required to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. If applicable, please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

Response: SHPD has reviewed the archaeological inventory survey report prepared for the project and has concluded that no further archaeological work is required on the parcel (see Appendix A of the *Draft EA*). DOW will send SHPD a copy of the NOI-C for construction of the project when it submits the application to the Department of Health.

Comment 4:

Any discharges related to project construction or operation activities, with or without a Section 401 WQC or NPDES permit coverage, shall comply with the applicable State Water Quality Standards as specified in HAR, Chapter 11-54.

Response: The contractor's applications for NPDES General Permit coverage will demonstrate that all construction-related discharges are compliant with HAR 11-54.

If you have any further questions, please call me at (808) 550-4483.

Sincerely,

Perry Y. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

LINDA LINGLE
GOVERNOR

(2)

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

(P)1204.6

SEP 2 6 2006

Mr. Perry J. White
Planning Solutions, Inc.
210 Ward Avenue, Suite 330
Honolulu, Hawaii 96814-4012

Dear Mr. White:

Subject: Stable Tank Reservoir & Waterline, Kawaihau District, County of Kauai
Draft Environmental Assessment/Anticipated Finding of No Significant Impact

Thank you for the opportunity to provide comments for the subject project's Draft Environmental Assessment. This project does not directly impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, please call me at 586-0526 or have your staff call Mr. Bruce Bennett of the Planning Branch at 586-0491.

Sincerely,

ERNEST Y. W. LAU
Public Works Administrator

BB:mo

c: Ms. Genevieve Salmonson, DOH-OEQC
Mr. Keith Fujimoto, Kauai County Department of Water

PLANNING SOLUTIONS

October 2, 2006
2005-0012-001

Mr. Ernest Y.W. Lau, Public Works Administrator
Department of Accounting and General Services
State of Hawai'i
P.O. Box 119
Honolulu, HI 96810

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Mr. Lau:

Thank you for your September 26, 2006 letter commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment: Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and preparing your letter.

We are pleased to hear that the project does not directly impact any of your Department's projects or existing facilities, and we understand that you have no comments to offer on the project at this time.

If you have any further questions, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

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(3)

BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT

DONALD M. FUJIMOTO
COUNTY ENGINEER
TELEPHONE 241-6600

DEPUTY COUNTY ENGINEER
TELEPHONE 241-6600

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUA'I
DEPARTMENT OF PUBLIC WORKS
4444 RICE STREET
MO'IKEHA BUILDING, SUITE 275
LIHU'E, KAUA'I, HAWAI'I 96766-1340

September 20, 2006

Planning Solutions
Ward Plaza, Suite 330
210 Ward Avenue
Honolulu, HI 96814-4012
ATTENTION: MR. PERRY WHITE

SUBJECT: Stable Tank Reservoir & Waterline, Kawaihau District, County of Kauai
Draft Environmental Assessment, Anticipated Finding of No Significant Impact
TMK 4-3-03-012 PW9.06.078

Gentlemen:

We completed our review of the subject draft Environmental Assessment for the Stable Tank Reservoir and Waterline. We have been reviewing the subject preliminary construction plans for the stable tank and the offsite waterline improvements along the County's Kaapuni Road. In our construction plan review comments, we have stated that a grading permit for the project site can be exempted since the grading work will be within a self contained government controlled area. We understand that the property is under the jurisdiction of the Department of Water and hence, construction management of the grading work will be under their control. A grading permit will not be required for the above project. Although a grading permit is not required, Best Management Practices (BMPs) must be provided at all times to the maximum extent practicable to prevent damage by sedimentation, erosion or dust to streams, watercourses, natural areas and the property of others.

Additionally, a road permit is required for the water line installation and connections on Kaapuni Road. Construction plans shall be submitted for our review and approval before commencing any work on Kaapuni Road. The construction plans shall include a site specific traffic control plan and for restoring the asphalt pavement on Kaapuni Road.

Thank you for this opportunity to provide our comments. Should you have any questions, please contact me at (808) 241-6498.

Very truly yours,

Wallace Kudo, P.E.
Chief, Engineering Division, P.E.

CONCUR:

DONALD M. FUJIMOTO, P.E.
County Engineer, P.E.

WK
cc:
Construction Inspection
Design and Permitting
Road Maintenance
Department of Water
D:\WALLACE KUDO\Planning Solutions RE Stable Tank Reservoir Waterline Draft EA TMK 4-3-3-012 PW9.06.078

PLANNING SOLUTIONS

October 4, 2006
2005-0012-001

Mr. Wallace Kudo, P.E., Chief
Engineering Division, P.E.
County of Kaua'i
Department of Public Works
4444 Rice Street, Suite 275
Līhu'e, HI 96766-1340

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Mr. Kudo:

Thank you for your September 20, 2006 letter commenting on the Kaua'i County Department of Water's (DOW) *Draft Environmental Assessment: Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

Thank you very much for confirming that the project will not require a grading permit. The DOW understands that Best Management Practices must be provided at all times to the maximum extent practicable to prevent damage by sedimentation, erosion or dust to streams, watercourses, natural areas, and the property of others. They have been incorporated into the construction plans and specifications for the project.

Thank you also for confirming that a road permit is required for the waterline installation and connections along Ka'apuni Road. The contractor will submit construction plans for your review and approval prior to commencing work on Ka'apuni Road. The plans will include a traffic control plan and a plan for repaving the road.

If you have any further questions concerning the project, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

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LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

#4

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

September 25, 2006

Mr. Perry J. White
Planning Solutions
210 Ward Avenue, Suite 330
Honolulu, Hawai'i 96814-4012

Dear Mr. White:

Subject: Water Reservoir and Waterline Draft Environmental Assessment
Kapaa, Kauai

The Department of Education (DOE) has reviewed the Draft Environmental Assessment (DEA) for a proposed water storage tank and two new water pipelines along Ka'apuni Road.

It is unclear from the DEA whether traffic going to, or leaving the school would face delays during construction. It is also unclear whether the construction noise will be heard in the classrooms of Kapaa Middle. We request that the principal of Kapaa Middle be notified in advance of road closures or particularly loud construction noise.

The DOE appreciates the opportunity to review the DEA. Should you have any questions, please call Heidi Meeker of the Facilities Development Branch at 733-4862.

Very truly yours,

Patricia Hamamoto
Superintendent

PH:jmb

cc: Randolph Moore, Acting Assistant Superintendent, OBS
Duane Kashiwai, Public Works Manager, FDB
Daniel Hamada, CAS, Kapaa/Kauai/Waimea Complex Areas

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

PLANNING SOLUTIONS

October 4, 2006
2005-0012-001

Ms. Patricia Hamamoto, Superintendent
Department of Education
State of Hawai'i
P.O. Box 2360
Honolulu, HI 96804

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Ms. Hamamoto:

Thank you for your September 25, 2006 letter commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment* (*DEA*): *Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

Item-by-item responses to your comments are provided below. The comments are reproduced for your convenience in italics before each response.

Comment 1:

It is unclear from the DEA whether traffic going to, or leaving the school would face delays during construction. .

Response: As discussed in more detail below, most students, faculty, and staff would experience no delays as a result of the proposed action.

Most vehicles traveling to and from the school do not travel over the affected roadway segment at all. Section 3.7.1 of the *DEA* explains that of the approximately 75 residences situated along Ka'apuni Road, only a few are along the portion of the road fronting the proposed reservoir site and waterline. The remainder are situated *mauka* of that. School-bound traffic coming from those *mauka* areas can easily avoid travel on Ka'apuni Road by using Ka'ehulua Road as an alternate route to Kapa'a Middle School. For residents of the large Kapa'a Homesteads area, Ka'ehulua Road is actually a shorter route to the school. Further, as discussed in Section 3.7.2.2 of the *DEA,* even those few vehicles that would find it difficult to avoid travel on the affected roadway, traffic delays during construction are expected to be a few minutes at most.

Comment 2:

It is also unclear whether the construction noise will be heard in the classrooms of Kapaa Middle.

Response: Section 3.6 of the *Draft EA* concludes that noise related to the waterline construction may exceed applicable noise standards, in which case the contractor will obtain a noise permit. Any effect of the elevated noise levels would be limited to immediately adjacent properties and residences. The Kapa'a Middle School is approximately 900 feet from the nearest segment of the proposed waterline. While there will be periods during which construction equipment will be audible at the school, construction-related noise would have attenuated to well below the level at which interference in classroom activities can occur.

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Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

Comment 3:

We request that the principal of Kapaa Middle be notified in advance of road closures or particularly loud construction noise.

Response: DOW and/or the construction contractor will keep the principal of the middle school apprised of construction activities that could affect the school.

If you have any further questions, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

LINDA LINGLE
GOVERNOR

#5

RODNEY K. HARAGA
DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BARRY FUKUNAGA
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:

STP 8.2284

September 26, 2006

Mr. Perry J. White
Planning Solutions
Ward Plaza, Suite 320
210 Ward Avenue
Honolulu, Hawaii 96814-4012

Dear Mr. White:

Subject: Stable Tank Reservoir & Pipeline, Kauai
Draft Environmental Assessment (DEA)
TMK: (4) 4-3-03: 012

Thank you for providing the draft environmental report on the subject water service project. The project is not expected to impact our State highway facilities.

We appreciate the opportunity to provide our comments.

Very truly yours,

RODNEY K. HARAGA
Director of Transportation

c: Keith Fujimoto, Kauai County, Department of Water

PLANNING SOLUTIONS

October 2, 2006
2005-0012-001

Mr. Rodney K. Haraga, Director
Department of Transportation
State of Hawai'i
869 Punchbowl Street
Honolulu, HI 96813-5097

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Mr. Haraga:

Thank you for your September 26, 2006 letter commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment (DEA): Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and preparing your letter.

We are pleased to hear that the proposed project will have no impact on your State highway facilities and understand that you have no comments to offer at this time.

If you have any further questions concerning the project, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

LINDA LINGLE
GOVERNOR OF HAWAII

#6

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

September 28, 2006

Mr. Perry White
Planning Solutions
210 Ward Ave., Suite 330
Honolulu, Hawai'i 96814

LOG NO: 2006.3204
DOC NO: 0609NM23
Archaeology

Dear Mr. White:

SUBJECT: Chapter 6E-42 Historic Preservation Review (County) Draft EA for Stable Tank and Waterline
Kapaa, Kawaihau, Island of Kaua'i
TMK: (4) 4-3-003: 012

The aforementioned project consists of a water storage tank and waterlines.

We believe that **"no historic properties will be affected"** by this undertaking because:
- ☐ Intensive cultivation has altered the land
- ☐ Residential development/urbanization has altered the land
- ☐ Previous grubbing/grading has altered the land
- ☐ An accepted archaeological inventory survey (AIS) found no historic properties
- ☒ SHPD previously reviewed this project and mitigation has been completed
- ☐ Other: *Historic properties have been documented.*

In the event that historic resources, including human skeletal remains, are identified during the construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance, and the State Historic Preservation Division, Kauai Section, needs to be contacted immediately at (808) 742-7033.

Aloha,

Melanie Chinen, Administrator
State Historic Preservation Division

NM:gvf

PLANNING SOLUTIONS

October 4, 2006
2005-0012-001

Ms. Melanie Chinen, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
State of Hawai'i
601 Kamokila Boulevard, Room 555
Kapolei, HI 96707

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Ms. Chinen:

Thank you for your September 28, 2006 letter [your reference LOG NO: 2006.3204] commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment (DEA)*: *Stable Tank Reservoir and Waterline Project*. We appreciate the time you and your staff spent reviewing the document and preparing your letter.

We appreciate your confirming that the project has undergone SHPD review and completed the requisite mitigation. In the event that historic resources, including human skeletal remains, are identified during the construction of the project, the contractor will halt work in the immediate vicinity of the find and contact SHPD immediately.

If you have any further questions concerning the project, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

PHONE (808) 594-1888 FAX (808) 594-1865

#7

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD06/2704

September 27, 2006

Perry J. White
Planning Solutions
Ward Plaza, Suite 330
210 Ward Avenue
Honolulu, HI 96814-4012

RE: Draft Environmental Assessment for Stable Tank Reservoir & Waterline, Kawaihau District, Kaua'i, TMK 4-3-003:012

Dear Mr. White,

The Office of Hawaiian Affairs (OHA) is in receipt of your September 12, 2006 submission and offers the following comments:

Our staff recommends that the applicant qualify the statement (p.3-15) that "...there is no indication that it [the project site] has ever been used for traditional cultural purposes." We ask this because the archaeological report by Scientific Consultant Services, Inc (Appendix A) did not consider, and makes no mention of assessing traditional cultural properties. We also recommend that the Environmental Assessment (EA) contain a Cultural Impact Assessment of the proposed undertaking. To this end, please contact Cheryl Lovell in order to expand the consultation component of the EA.

OHA further requests your assurances that if the project goes forward, should iwi or Native Hawaiian cultural or traditional deposits be found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck, Native Rights Policy Advocate, at (808) 594-0239 or jessey@oha.org.

Aloha,

Clyde W. Nāmu'o
Administrator

C: Kanani Kagawa
OHA Community Affairs Coordinator (Kaua'i)
3-3100 Kuhio Hwy., Suite C4
Lihue, HI 96766-1153

PLANNING SOLUTIONS

December 8, 2006

Mr. Clyde W. Nāmu'o, Administrator
Office of Hawaiian Affairs
State of Hawai'i
711 Kapi'olani Boulevard, Suite 500
Honolulu, HI 96813

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Mr. Nāmu'o:

Thank you for your September 27, 2006 letter [your reference HRD06/2704] commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment (DEA): Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

Item-by-item responses to your comments are provided below. The comments are reproduced for your convenience in italics before each response.

Comment 1:

Our staff recommends that the applicant qualify the statement (p.3-15) that "...there is no indication that it [the project site] has ever been used for traditional cultural purposes." We ask this because the archaeological report by Scientific Consultant Services, Inc (Appendix A) did not consider, and makes no mention of assessing traditional cultural properties. We also recommend that the Environmental Assessment (EA) contain a Cultural Impact Assessment of the proposed undertaking. To this end, please contact Cheryl Lovell in order to expand the consultation component of the EA.

Response: Thank you for your suggestion. We contacted Cheryl Lovell-Obatake and sent her a copy of the *Draft EA*. Her comment letter and our response are included in the *Final EA*.

Comment 2:

OHA further requests your assurances that if the project goes forward, should iwi or Native Hawaiian cultural or traditional deposits be found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Response: As stated in the *EA*, DOW's construction contract for the work will stipulate that if any artifact or burial site is encountered during construction, all activities would halt and SHPD would be notified. It will provide that work may be resumed only after consultation with the SHPD is completed and a monitoring program is in place.

If you have any further questions, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

LINDA LINGLE
GOVERNOR OF HAWAII

#8

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EPO-06-157

October 3, 2006

Mr. Perry J. White
Planning Solutions, Inc.
210 Ward Avenue, Suite 330
Honolulu, Hawaii 96814-4012

Dear Mr. White:

SUBJECT: Draft Environmental Assessment (DEA) for Stable Tank Reservoir & Pipeline
Kawaihau District, Kauai, Hawaii
TMK: (4) 4-3-003: 012

Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have the following Safe Drinking Water Branch comments.

Safe Drinking Water Branch

The project consultant, Planning Solutions, Inc., contacted the Safe Drinking Water Branch to inform us that the Kauai Department of Water decided that it might apply for federal funding under the Drinking Water State Revolving Fund (DWSRF) for the project after the DEA had been finalized and submitted to the Office of Environmental Quality Control (OEQC) for publication. Thus the necessary language to comply with DWSRF requirements was not included in the current DEA.

However, the September 23, 2006, OEQC publication notice for the Stable Tank Reservoir and Pipeline DEA clearly stated that the project may be funded under the DWSRF and that the document was prepared under both Hawaii Revised Statutes (HRS), Chapter 343, and the National Environmental Policy Act. In addition, Planning Solutions, Inc., and the Kauai Department of Water has committed to incorporating the required language to comply with DWSRF requirements into the Final Environmental Assessment. We recognize these corrective measures as meeting the DWSRF requirements for the State Environmental Review Process for the subject project.

If you have any questions, please call Stuart Yamada at 586-4258.

We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiacai Liu with the Environmental Planning Office at (808) 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
SDWB
EH-Kauai

PLANNING SOLUTIONS

October 25, 2006
2005-0012-001

Mr. Kelvin H. Sunada, Manager
Environmental Planning Office
Department of Health
State of Hawai'i
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Mr. Sunada:

Thank you for your October 3, 2006 letter [your reference EPO-06-157] commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment (DEA): Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

Thank you very much for confirming that we have taken the necessary steps to comply with the Drinking Water State Revolving Fund (DWSRF) requirements. We appreciate your flexibility in the matter and will coordinate with the Safe Drinking Water Branch to ensure that the *Final EA* incorporates all of the required content for DWSRF.

Thank you also for referring us to your Department's standard comments. We will ensure that the *Final EA* addresses those that are relevant to the proposed action.

If you have any further questions concerning the project, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
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#9

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON

MEREDITH J. CHING
JAMES A. FRAZIER
NEAL S. FUJIWARA
CHIYOME L. FUKINO, M.D.
LAWRENCE H. MIKE, M.D., J.D.
STEPHANIE A. WHALEN

DEAN A. NAKANO
ACTING DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

October 13, 2006

REF: Stable Tank Res & Waterline.Kauai.dea.dr

Mr. Perry J. White
Planning Solutions
Ward Plaza, Ste. 330
210 Ward Ave.
Honolulu, HI 96814-4012

Dear Mr. White:

SUBJECT: Stable Tank Reservoir & Waterline, Kawaihau District, County of Kauai
Draft Environmental Assessment/Anticipated Finding of No Significant Impact

FILE NO.:

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at *http://www.hawaii.gov/dlnr/cwrm.*

Our comments related to water resources are checked off below.

☒ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM: Additional information and forms are available at *www.hawaii.gov/dlnr/cwrm/forms.htm.*

☐ 4. The proposed water supply source for the project is located in a designated ground-water management area, and a Water Use Permit is required prior to use of ground water.

☐ 5. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.

☐ 6. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 7. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 8. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 9. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.

☐ 10. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 11. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 12. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☐ 13. We recommend that the report identify feasible alternative non-potable water resources, including reclaimed wastewater.

☐ OTHER:

If there are any questions, please contact Lenore Nakema at 587-0218.

Sincerely,

W. Roy for

DEAN A. NAKANO
Acting Deputy Director

PLANNING SOLUTIONS

October 25, 2006
2005-0012-001

Mr. Dean A. Nakano, Acting Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawai'i
P.O. Box 621
Honolulu, HI 96809

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Mr. Nakano:

Thank you for your October 13, 2006 letter [your reference *Stable Tank Res & Waterline. Kauai.dea.dr*] commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment* (*DEA*): *Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

Your comment is reproduced below for your convenience, followed by our response.

Comment:

We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or the Department of Water Supply for further information.

Response: As stated in Section 4.1.3 of the *Draft EA*, the Department of Water's *Water Plan 2020* serves as the Water Use and Development Plan (WUDP) for the County of Kaua'i. Chapter 1 of the *Draft EA* discusses the need for the project in the context of the WUDP.

If you have any further questions, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

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Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

#10

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

October 18, 2006

Mr. Keith Fujimoto
County of Kaua'i, Department of Water
P.O. Box 1706
Lihu'e, Hawai'i 96766

Mr. Perry White
Planning Solutions, Inc.
210 Ward Avenue, Suite 330
Honolulu, Hawai'i 96814

Dear Messrs. Fujimoto and White:

The Office of Environmental Quality Control has reviewed the draft environmental assessment for the Kapa'a Stable Tank Reservoir and Pipe in the judicial district of Kawaihau and offers the following comments.

1. ***Figure 3-1, Agricultural Lands of Importance to the State of Hawai'i:*** The legend for the Agricultural Land Code shows horizontal, vertical and dotted black and white cross-hatching for prime, unique and other lands, respectively. The map itself, however, shows two shades of green monochrome. Please indicate which of these shades is prime, unique, or other agricultural lands of importance to the State of Hawai'i.
2. ***Figure 3-2, Critical Plant Habitat & Seabird Nesting Areas of Kaua'i:*** Both the legend and the map are various shades of black monochrome; it is very difficult to discern on the map what areas are designated critical habitat and what areas are known seabird nesting colonies. Please revise the map to allow the reader to make these distinctions.
3. ***Figure 3-3, Census Tract No. 403:*** Both the legend and the map are various shades of black monochrome; it is very difficult to discern on the map the boundaries of the census tract.

Thank you for the opportunity to comment. Please call Mr. Leslie Segundo, Environmental Health Specialist at (808) 586-4185 if you have any questions.

Sincerely,

for GENEVIEVE SALMONSON
Director

PLANNING SOLUTIONS

October 25, 2006
2005-0012-001

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
Department of Health
State of Hawai'i
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Ms. Salmonson:

Thank you for your October 18, 2006 letter commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment (DEA): Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

Item-by-item responses to your comments are provided below. The comments are reproduced for your convenience before each response.

Comment 1:

Figure 3-1, Agricultural Lands of Importance to the State of Hawai'i: The legend for the Agricultural Land Code shows horizontal, vertical and dotted black and white cross-hatching for prime, unique and other lands, respectively. The map itself, however, shows two shades of green monochrome. Please indicate which of these shades is prime, unique, or other agricultural lands of importance to the State of Hawai'i.

Response: Thank you for noticing this. We have corrected the legend to match the color scheme used on the figure and will include the revised version in the *Final EA.*

Comment 2:

Figure 3-2, Critical Plant Habitat & Seabird Nesting Areas of Kauai: Both the legend and the map are various shades of black monochrome; it is very difficult to discern on the map what areas are designated critical habitat and what areas are known seabird nesting colonies. Please revise the map to allow the reader to make these distinctions.

Response: We will include a color version of this figure in the *Final EA* that more clearly shows the designated critical habitat and seabird nesting areas.

Comment 3:

Figure 3-3, Census Tract No. 403: Both the legend and the map are various shades of black monochrome; it is very difficult to discern on the map the boundaries of the census tract.

Response: We have emboldened the census tract boundary lines on this figure and will include the revised version in the *Final EA.*

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Phone: 808 550-4483 • Fax: 808 550-4548 • www.psi-hi.com

Thank you again for your comments. If you have any further questions concerning the project, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Mr. Greg Fukumitsu, TNWRE

#11

Cheryl Lovell-Obatake
P.O. Box 366
Lihue, Hawaii 96766

Phone: (808) 346-1544

October 25, 2006

Planning Solution
Ward Plaza, Suite 330
210 Ward Avenue
Honolulu, Hawaii 96814-4012

FAX: (808) 550-4549

Attention: Melissa M. White

Subject: Stable Tank Reservoir and **WATERLINE**, Kapaa, Kauai, Hawaii

The following are my comments on the Draft EA received for the above subject.

- Pg. 5-2, 5.2.6 - PRODUCE SUBSTANTIAL SECONDARY IMPACTS

"The proposed project will not produce significant secondary impacts. It is not designed to foster population growth or to promote economic development. Instead, it is intended to meet existing needs for additional water storage and distribution infrastructure in the Wailua-Kapaa system.

This statement contradicts the reality of project applications already filed at the Kauai Planning Department and have been approved.

1. Chris Singleton's project at Waipouli across Safeway. (Timeshare)
2. Kauai Lagoons at Wailua. (Affordable housing)
3. Coco Palms - Condominium units (Timeshare)

Still in the process in Waipouoli, two more project developments are pending due to wastewater, water, and highway traffic circulation plans. Check the total number of units that have been approved (as stated above), and two others that have been proposed and have not yet been approved. The Department of Water in my opinion is fostering population growth and is promoting economic development.

Therefore, the WATERLINES that will be stubbed for water distribution will most likely inadvertently discover some historical properties, such as burials and ancient artifacts which ancient habitation existed. Already burials in Wailua-Kapaa Town have been inadvertently discovered by the State Highways Division, which in my opinion most waterline transmission will be located on government roads (County and State).

Page 5-2
5.2.8 CUMULATIVE EFFECTS OR COMMITMENT TO A LARGER ACTION

"Development of the proposed reservoir and waterline is not a commitment to a larger action and is not intended to facilitate substantial population growth. It will provide adequate water storage and delivery capacity to accommodate the existing needs identified for the Wailua-Kapaa system."

My comments are the same as mentioned above. What are the existing needs? Be more specific.

- Section 106

This section may apply because of federal funding since transmission lines will be on government roads and highways. A monitoring plan should be considered.

I recommend that Planning Solution inquire with the Department of Water as to whether private developments are financially contributing for the waterlines etc. This should be distinguished by confirming with the County of Kauai and the developers.

- Marine baseline data

The Draft EA does not mention a baseline data for Moikeha Canal. No aquatic biology studies are mentioned. Eatable resources are cultural and traditional. Such as the seasonal oama fishing and samoan crabs, *papio, a holehole, and more.*

I question the overflow from the tank discharging on the ground and impacts of chlorinated water affecting natural resources through a stream and into ocean waters.

This concludes my comments.

Aloha,

Cheryl Ululani Lovell-Obatake

P L A N N I N G
S O L U T I O N S

December 8, 2006

Ms. Cheryl Lovell-Obatake
P.O. Box 366
Lihu'e, HI 96766

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Ms. Lovell-Obatake:

Thank you for corresponding with Melissa White of our office about cultural aspects of the new water line and reservoir that the Kaua'i County Department of Water has proposed along Ka'apuni Road. The Office of Hawaiian Affairs recommended that we contact you, and the information you provided in your October 25, 2006 letter helped us complete the cultural consultation component of the Kaua'i County Department of Water's *Final Environmental Assessment* for the Stable Tank Reservoir and Waterline Project.

Item-by-item responses to the comments and suggestions in your letter are provided below. To simplify your review, we have reproduced the text of your comments in italics before each response.

Comment 1:

Page 5-2, 5.2.6 – PRODUCE SUBSTANTIAL SECONDARY IMPACTS

"The proposed project will not produce significant secondary impacts. It is not designed to foster population growth or to promote economic development. Instead, it is intended to meet existing needs for additional water storage and distribution infrastructure in the Wailua-Kapa'a system."

This statement contradicts the reality of project applications already filed at the Kauai Planning Department and have been approved.

1. *Chris Singleton's project at Waipouli across Safeway (Timeshare)*
2. *Kauai Lagoons at Wailua (Affordable Housing)*
3. *Coco Palms – Condominium units (Timeshare)*

Still in the process in Waipouoli [sic], two more project developments are pending due to wastewater, water, and highway traffic circulation plans. Check the total number of units that have been approved (as stated above), and two others that have been proposed and have not yet been approved. The Department of Water in my opinion is fostering population growth and is promoting economic development.

Response: The infrastructure improvements that the Department of Water has proposed as part of the Stable Tank Reservoir and Waterline project are intended to bring the existing water system closer to modern design standards. The reservoir would provide emergency water reserves in proximity to Kapa'a town, one of Kaua'i's population centers. Similarly, the waterline would improve the distribution infrastructure to the busiest parts of Kapa'a. As stated in Section 3.2.2.2 of the *Draft EA*, the project would not change the amount of water being drawn from the sources in the system. Hence, while the projects that you named will benefit from the improved service, the project is not one whose principal purpose or effect is to foster population growth or promote economic development.

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Chapter 1 of the *Draft EA* places the proposed project in the context of DOW's long-range plan to provide water to all of its systems in Kaua'i County, *Water Plan 2020*. The water system improvements recommended in that document stem from the goals and objectives and growth and development scenarios in the County of Kaua'i's *General Plan*.

Comment 2:

Therefore, the WATERLINES that will be stubbed for water distribution will most likely inadvertently discover some historical properties, such as burials and ancient artifacts which ancient habitation existed. Already burials in Wailua-Kapaa Town have been inadvertently discovered by the State Highways Division, which in my opinion most waterline transmission will be located on government roads (County and State).

Response: It is not clear from the information you provided how you concluded that it was likely that workers would inadvertently discover burials, ancient artifacts, or previous habitation. The proposed waterline route is within the existing Ka'apuni Road right-of-way. It has already been extensively disturbed during road construction and the placement of existing waterlines, and there is no record of cultural remains or burials having been encountered during the installation of those facilities.

Nonetheless, DOW's construction contract for the work will stipulate that should any artifact or burial site be encountered during construction, all activities will halt and the State Historic Preservation Division will be notified. It will provide that work may be resumed only after consultation with the SHPD is completed and a monitoring program is in place.

In summary, while it is impossible to guarantee that no cultural remains will be encountered during construction, the available evidence indicates that the probability of this is low and DOW will have a plan in place for dealing with inadvertent finds (if any are encountered) in an appropriate and respectful manner.

Comment 3:

Page 5-2, 5.2.8 – CUMULATIVE EFFECTS OR COMMITMENT TO A LARGER ACTION

"Development of the proposed reservoir and waterline is not a commitment to a larger action and is not intended to facilitate substantial population growth. It will provide adequate water storage and delivery capacity to accommodate the existing needs identified for the Wailua-Kapa'a system."

My comments are the same as mentioned above. What are the existing needs? Be more specific.

Response: See response to Comment 1 above.

Comment 4:

Section 106:

This section may apply because of federal funding since transmission lines will be on government roads and highways. A monitoring plan should be considered.

Response: The State Historic Preservation Division, the agency responsible for ensuring compliance with State and Federal historic preservation regulations, has reviewed the plans for the proposed project and has indicated that no further mitigation is needed. SHPD's letter and the archaeological inventory survey conducted for the project will be included in the *Final EA*.

Comment 5:

I recommend that Planning Solutions inquire with the Department of Water as to whether private developers are financially contributing for the waterlines, etc. This should be distinguished by confirming with the County of Kauai and the developers.

Response: The County often requires developers to contribute to water supply infrastructure as a condition of zoning or other permits. In the case of the proposed project, the developer of the above-mentioned timeshare units at Waipouli contributed funds to the initial project design phase and will reimburse the County for 10% of the construction costs. No other developers are contributing funding for this specific project.

Comment 6:

Marine baseline data:

The Draft EA does not mention a baseline data for Moikeha Canal. No aquatic biology studies are mentioned. Eatable resources are cultural and traditional. Such as the seasonal oama fishing and samoan crabs, papio, a holehole, and more.

I question the overflow from the tank discharging on the ground and impacts of chlorinated water affecting natural resources through a stream and into ocean waters.

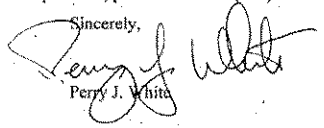
Response: The tank drain line running from the reservoir into the adjacent gulch would carry water under only two circumstances:

- The first is in the extremely unlikely event that a failure in the valve system causes the tank to overtop, spilling water into the overflow pipe until the inflow ceases.
- The second is in the event the tank ever needs to be completely emptied. In that instance most of the water in it would be drained out into the normal DOW transmission system, but water in the very bottom of the tank (the last 16", or less than 10 percent of the total) would have to be discharged into the gulch through the bottom drain.

Such discharges would be extremely infrequent, probably no more than once every 25 years. Moreover, the proposed drain line discharges into a pasture rather than directly into the unnamed intermittent stream segment described in the *EA*. Since chlorine, which is the only chemical added to the water, dissipates rapidly in the presence of organic matter, it does not have the potential to reach the stream in concentrations sufficient to harm aquatic communities. Consequently, there is essentially no potential for adverse effect on aquatic biota, and, therefore, there is no need to conduct studies of Moikeha Canal (which begins almost a mile from the project site) or to undertake aquatic biological studies.

Thank you again for your help identifying cultural concerns and for your comments on the *Draft Environmental Assessment*. If you have any further questions, please call me at (808) 550-4483.

Sincerely,



Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

LINDA LINGLE
GOVERNOR
STATE OF HAWAII

#12

MICAH A. KANE
CHAIRMAN
HAWAIIAN HOMES COMMISSION

BEN HENDERSON
DEPUTY TO THE CHAIRMAN

KAULANA B. PARK
EXECUTIVE ASSISTANT

STATE OF HAWAII

DEPARTMENT OF HAWAIIAN HOME LANDS

P.O. BOX 1879

HONOLULU, HAWAII 96805

October 26, 2006

Mr. Perry White
Planning Solutions
210 Ward Avenue
Ward Plaza, Suite 330
Honolulu, Hawaii 96814

Dear Mr. White:

Subject: Stable Tank Reservoir and Waterline, Draft Environmental Assessment (Draft EA) and Anticipated Finding of no Significant Impact (FONSI), Kawaihau District, Island of Kauai

Thank you for your letter dated September 8, 2006, requesting input from the Department of Hawaiian Home Lands (DHHL) regarding the Draft EA and anticipated FONSI for the Stable Tank Reservoir and Waterline in the Kawaihau District, Island of Kauai.

DHHL believes this upgrade will be a tremendous benefit to the Wailua and Kapaa areas.

Because the reservoir and waterline is not being constructed on DHHL land, we currently do not have any concerns or regulatory requirements concerning this project.

Please call Mr. Kaipo Duncan, Land Agent, at 586-3855, should you have any questions regarding this matter.

Aloha and mahalo,

Micah A. Kane, Chairman
Hawaiian Homes Commission

P L A N N I N G
S O L U T I O N S

November 1, 2006
2005-0012-001

Mr. Micah A. Kane, Chairman
Hawaiian Homes Commission
Department of Hawaiian Homelands
State of Hawai'i
P.O. Box 1879
Honolulu, HI 96805

Subject: Stable Tank Reservoir and Waterline
Draft Environmental Assessment, Kapa'a, Kaua'i, Hawai'i

Dear Mr. Kane:

Thank you for your October 26, 2006 letter commenting on the Kaua'i County Department of Water's *Draft Environmental Assessment (DEA): Stable Tank Reservoir and Waterline Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

We appreciate your confirming that the proposed project will provide a benefit to the Wailua and Kapa'a areas and affirming that the project does not affect DHHL lands. If you have any further questions concerning the project, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Fujimoto, Department of Water
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4649 • www.psi-hi.com

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APPENDIX A ARCHAEOLOGICAL INVENTORY SURVEY REPORT

SCS Project Number 695-1

AN ARCHAEOLOGICAL INVENTORY SURVEY OF THE 1.19-ACRE STABLE TANK PROJECT, LOCATED IN KAPA`A AHUPUA`A, KAWAIHAU DISTRICT, ISLAND OF KAUA`I, HAWAI`I [TMK (4) 4-3-003:012]

Prepared by:
Cathleen A. Dagher
and
Michael F. Dega, Ph.D.
June 2006

Prepared for:
Planning Solutions, Inc.

ABSTRACT

Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory Survey of a 1.19 acre property located in Kapa`a Ahupua`a, Kawaihau District, Island of Kaua`i, Hawai`i [TMK: (4) 4-3-003:012]. This survey was conducted for Planning Solutions, Inc. in response to a request from Ms. Nancy McMahon, State Historic Preservation Division (SHPD) Archaeologist for the Island of Kauai. The SHPD request stemmed from discussions of the results of an Archaeological Field Inspection of the subject property conducted by SCS staff archaeologist Jim Powell on 13 May 2006 that identified three historic features.

The Inventory Survey was conducted by SCS staff archaeologist Jim Powell under the direct supervision of Dr. Michael Dega, Principal Investigator. The inventory survey involved 100% systematic survey of the entire parcel, re-locating, recording, and documenting the three features identified during the Field Inspection. The surface features were then grouped into two sites:
1) State Inventory of Historic Properties (SIHP) site 50-30-08-3940, which consists of a municipal water storage tank constructed in 1930 by the Kauai County Department of Water, and 2) SIHP 50-30-08-3941, which is part of a complex irrigation system created in the early 20th century by Makee and Lī'hu'e Plantations. This system moves water from the eastern slopes of Mauna Wai`ale`ale through a series of ditches and reservoirs to the cane fields of Lī'hu'e, Wailua, Kealia and Kapa`a. Both of these sites have been determined to be significant under Criterion D, for information content only.

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INTRODUCTION

Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory survey of a 1.19 acre property located in Kapa`a Ahupua`a, Kawaihau District, Island of Kaua`i, Hawai`i [TMK: (4) 4-4-003:012] under contract to Planning Solutions, Inc. (Figures 1 and 2). This survey was conducted for in response to a request from Ms. Nancy McMahon, State Historic Preservation Division (SHPD) Archaeologist for the Island of Kaua`i. The SHPD request stemmed from discussions of the results of an Archaeological Field Inspection of the subject property conducted by SCS staff archaeologist Jim Powell on 13 May 2006 that identified three historic features. The project area landowner is the County of Kaua`i.

Archaeological Inventory Survey of the project area was conducted to determine the presence/absence of archaeological sites and features in surface and subsurface contexts through complete systematic survey and representative subsurface testing. The ultimate goals were to determine the presence/absence of historical sites, to provide adequate recordation and documentation of all historic sites present, to determine the significance of these sites, and to provide recommendations to the State Historic Preservation Division (SHPD) concerning site significance and mitigation measures for future land use in the project area.

ENVIRONMENTAL SETTING

LOCATION

The project site is located on the eastern side of the island in the *moku* (district) of Puna (also known as Kawaihau) in the *ahupua`a* of Kapa`a, meaning literally, "the solid or the closing" (Pukui *et al.* 1974). The 1.19 acre parcel is situated immediately north of Ka`apuni Road, which forms the southern property boundary, at an elevation of 200 feet above mean sea level (msl). The majority of the land is relatively flat, but it slopes steeply down to the un-named valley floor on the northern, northeastern, and northwestern sides.

PROJECT AREA LANDFORMS AND SOIL

According to Foote *et al.* (1972) the soil within the project area has been classified as Rough Broken Land (rRR) (Figure 3). This soil type consists of "...very steep land broken by numerous interment drainage channels." It is known to occur in gulches and mountainsides on all of the islands, with the exception of O`ahu, with elevations ranging from around sea level to approximately 8000 feet. This soil type exhibits slopes of 40 to 70 percent, rapid runoff, and active erosion. This type of land is used in some areas for pasture and woodland, but its primary use is for watersheds and as wildlife habitat.

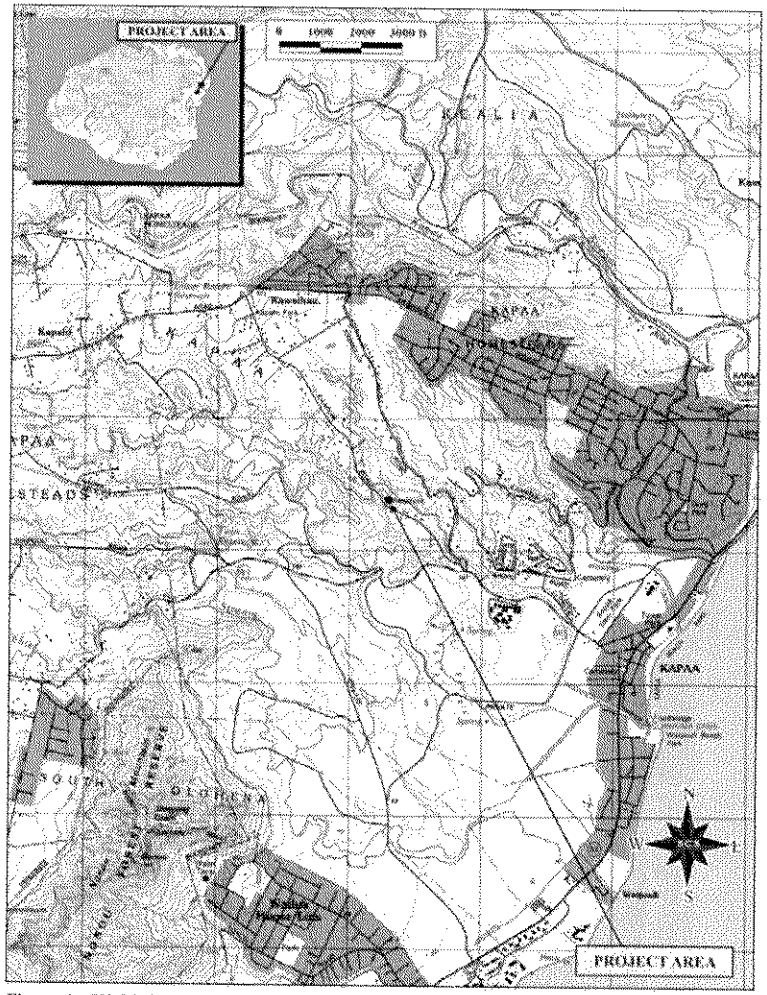

Figure 1: USGS Quadrangle (Kapa`a Quad) Showing Project Area.

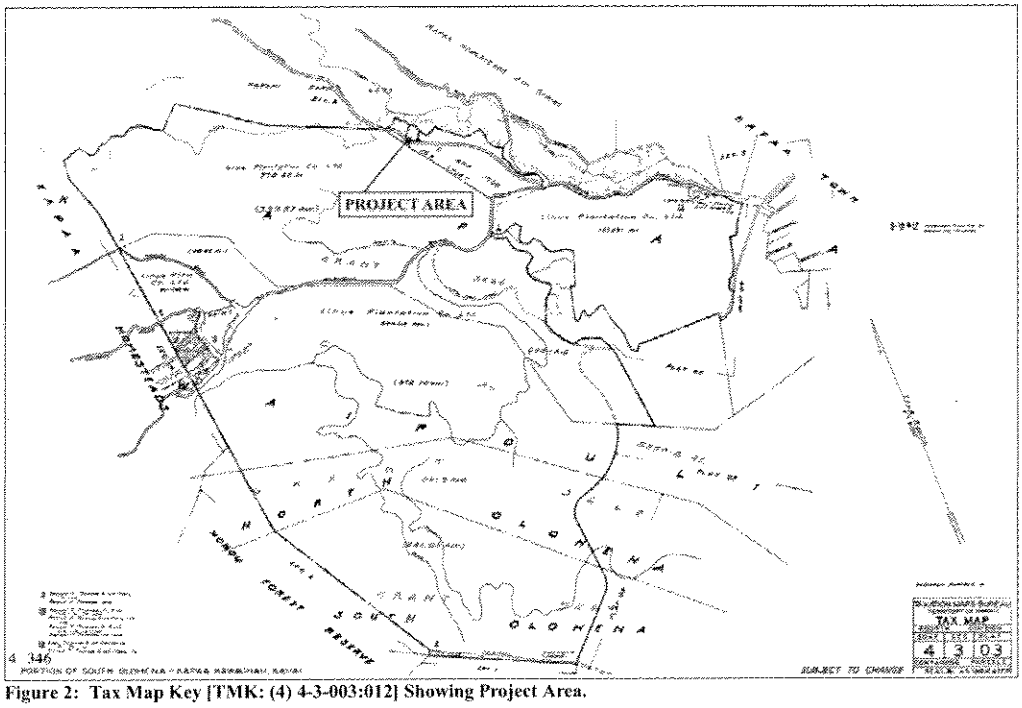

Figure 2: Tax Map Key [TMK: (4) 4-3-003:012] Showing Project Area.

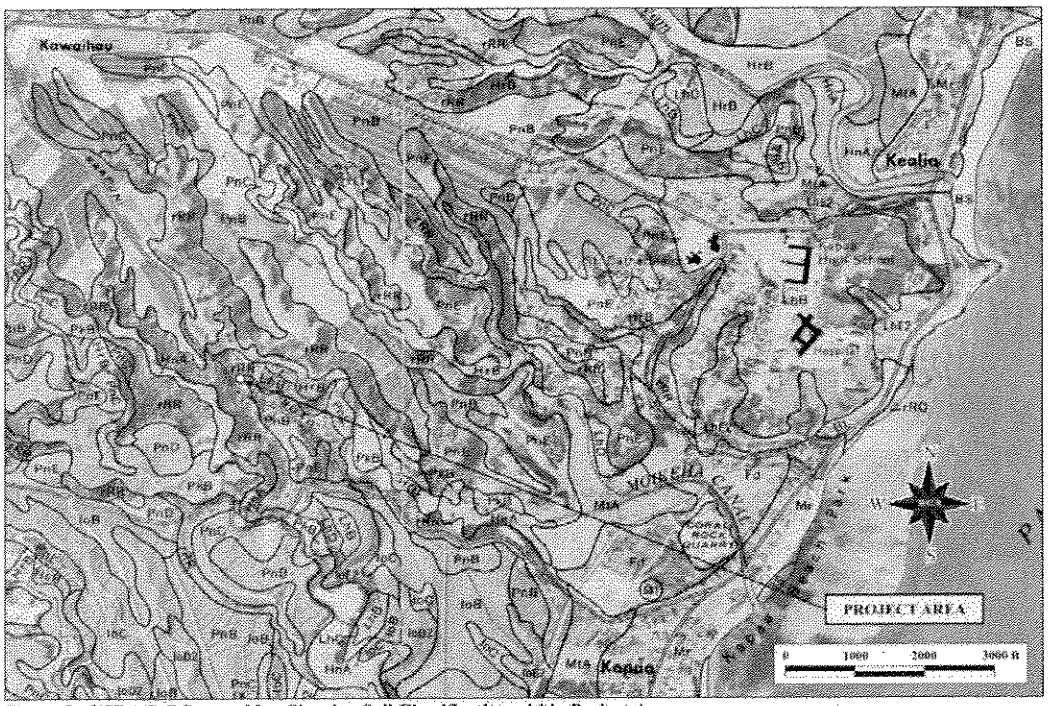

Figure 3: USDA Soil Survey Map Showing Soil Classification within Project Area.

CLIMATE

The annual rainfall on the Island of Kaua'i varies widely, from 20 to over 200 inches annually (Foote et al. 1972). According to the Climate of Hawai'i (1967), average annual rainfall in the project area is approximately 40-50 inches.

VEGETATION

Vegetation found in association with the rRR soil type in the more arid locales include guava (*Psidium guajava*), lantana (*Lantana camara L.*), Natal redtop (*Rhynchelytrum repens*), Bermuda grass (*Cynodon dactylon*), *haole koa* (*Leucaena leucocephala*), and molasses grass (*Melinus minutiflora*). The dominant vegetation in the wetter regions includes *'ohi'a* (*Metrosideros*), *kukui* (*Aleurites moluccana*), *koa* (*Acacia koa*), and ferns. Vegetation noted within the subject property includes Java plum (*Syzygium cumini*), strawberry guava (*Psidium cattleianum*), and non-native grasses (Figure 4).

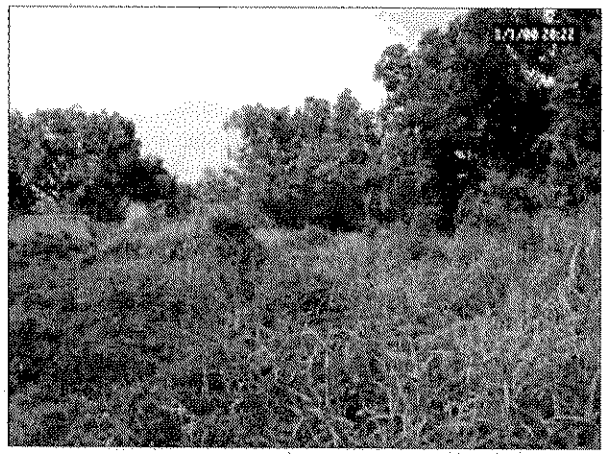

Figure 4: Project Area Overview Showing Vegetation Within Project Area.

PAST POLITICAL BOUNDARIES

Approximately 600 years ago (Cordy 2002) the native population had expanded throughout the Hawaiian Islands to a point where large, political districts could be formed (Lyons 1903, Kamakau 1991, Moffat and Fitzpatrick 1995). At that time, Kaua`i consisted of six

districts, or *moku*: East and West Kona, Puna, Ko`olau, Halele'a, and Nāpili. Land was considered to be the property of the king or Ali`i `ai moku (the leader who controls the island/district), which he held in trust for the gods. The title of Ali`i `ai moku ensured rights and responsibilities to the land, but did not confer absolute ownership. The king kept the parcels he wanted; his higher chiefs received large parcels from him who, in turn, distributed smaller parcels to lesser chiefs. The maka'āinana (commoners) worked the individual plots of land.

In general, several terms, such as *moku, ahupua`a, `ili or `ili` āina* were used to delineate various land sections. A district (*moku*) contained smaller land divisions (*ahupua`a*) that customarily continued inland from the ocean and upland into the mountains. Extended household groups living within the *ahupua`a* were therefore able to harvest from both the land and the sea. Ideally, this situation allowed each *ahupua`a* to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The *`ili `āina* or *`ili* were smaller land divisions next in importance to the *ahupua`a* and were administered by the chief who controlled the *ahupua`a* in which it was located (Lyons 1875:33; Lucas 1995:40). The mo`o`āina were narrow strips of land within an *`ili*. The land holding of a tenant or hoa `āina residing in an *ahupua`a* was called a kuleana (Lucas 1995:61).

TRADITIONAL AND HISTORIC SETTING

Archaeological settlement pattern data indicates that initial colonization and occupation of the Hawaiian Islands occurred on the windward shoreline areas between the A.D. 4th and 11th centuries of the main islands, with populations eventually settling into drier leeward areas at later periods (Kirch 1985). Coastal settlement was still dominant, but populations began exploiting and living in the upland kula zones. Greater population expansion to inland areas did not occur until the c. A.D. 12th century but continued through the 16th century. Large scale or intensive agricultural endeavors were implemented in association with habitation. Coastal lands were used for settlement and taro was cultivated in near-coastal reaches and in the uplands.

TRADITIONAL SETTLEMENT PATTERNS

The Hawaiian economy was based on agricultural production and marine exploitation, as well as raising livestock and collecting wild plants and birds. Extended household groups settled in various *ahupua`a*. During pre-Contact times, there were primarily two types of agriculture, wetland and dry land, both of which were dependent upon geography and physiography. River valleys, such as those on Kaua`i, provided ideal conditions for wetland kalo (Colocasia

esculenta)—agriculture that incorporated pond fields and irrigation canals (ʻauwai). Other cultigens, such as kō (sugar cane, Saccharum officinaruma) and maiʻa (banana, Musa sp.), were also grown and, where appropriate, such crops as ʻuala (sweet potato, Ipomoea batatas) were produced. This was the typical agricultural pattern seen during traditional times on all the Hawaiian Islands (Kirch and Sahlins 1992, Vol. 1:5, 119; Kirch 1985). Agricultural development on Kauaʻi was likely to have begun early (A.D. 1100–1300) during what is known as the Expansion Period (Kirch 1985). Coastal zones were utilized for marine resources, habitation, burials, and ceremonial structures often associated with fishing (Bennett 1931). Often, land sections located in back of the shoreline contained pond fields and dunes that were used for sweet potato production (Handy and Handy 1972; Earle 1978). Trails linked the makai and mauka sections of the *ahupuaʻa*, allowing easy access to its resources. Other trails skirted the coast, which made communication between *ahupuaʻa* possible.

TRADITIONAL SETTING

Kauaʻi is the fourth largest and the oldest of the main Hawaiian Islands. It is the only island not susceptible to drought and famine due to the rivers and streams constantly replenished by waters from Mount Waiʻaleʻale, one of the wettest spots on earth. It is said that many years ago, the fire goddess Pele and her family briefly stopped on Kauaʻi to explore the possibility of finding a permanent home. She dug a deep pit, but it was instantly filled with water so they left Kauaʻi and traveled on, eventually settling in Halemaʻumaʻu where she resides to this day (Beckwith 1976).

In pre-Contact times, impressive irrigation systems were built on Kauaʻi to transport stream water to agricultural fields (Handy and Handy 1972; Earle 1978). The eastern flank of Kauaʻi, in particular, is prominent for its many significant traditional-period complexes and fertile areas for cultivation. Captain George Vancouver in 1793 noted this area as the "most fertile and pleasant district of the island."

The *ahupuaʻa* of Kapaʻa has been described as a broad, wide, and deep kula land containing small ridges and valleys inland and two small streams (Handy and Handy 1972). According to Bennett (1931) there are "...many little valleys which contain taro terraces..." located in the foothills of the mountains. Handy and Handy (1972) go on to say that "...there was a highly developed irrigation system at Kapaʻa..." with "...extensive flatlands located below the mountains with terraces irrigated from Kapahi, Makaleha, and Moalepi Streams".

Kapaʻa was known to have "a highly developed irrigation system" (Handy and Handy 1972). Kapaʻa also was known for the kalukalu reed that grew in the marshes along the shoreline just behind the sand dunes. The kalukalu was woven into mats stronger and more durable than those made of pandanus (Wichman 1998).

Although Kapaʻa was one of the largest *ahupuaʻa* in the Puna District, it has limited mention in the legends (Wichman 1998). Handy and Handy (1972) state that Kapaʻa "is famous as the home of the great aliʻi Moikeha who lived there in his later years". It was also the home of the boy Pākaʻa, who lived there with his mother and uncle. Pākaʻa longed to go with the fishermen who caught his favorite food (mālolo, flying fish), but they always refused his pleas. So, Pākaʻa invented the crab-clawed sail and challenged the fishermen to a race, betting that whoever reached the shore first could keep the day's catch. Pākaʻa won the race and he and that night his family had all the mālolo they could eat (Wichman 1998).

TRADITIONAL LAND TENURE

According to Kamakau (1964), traditional Hawaiian land tenure was a system formed in order to care for the land. Around the fourteenth century, various individual island *moʻi* (King/ultimate ruler) believed the land should be surveyed as to be permanently marked. The land system was needed to avoid disputes between neighboring aliʻi (chiefs). A kahuna (priest/expert) named Kālaikaʻōhia is said to have carved the land into districts (*moku*) and numerous smaller divisions (i.e.: *ahupuaʻa, ʻokana, ʻili* etc.) were also coordinated.

The idea of holding land was not synonymous with owning it, but more like a trusteeship between the caretakers and the nature gods Lono and Kane (Handy & Handy 1972:41). The *ahupuaʻa* is the most well known of all traditional land divisions and is still relevant today.

The *ahupuaʻa* land divisions vary in size and generally encompass land from the mountain to the sea. Traditionally, the areas were governed by a designated caretaker (konohiki) and those residing within the region had designated access to all mountain and marine resources. Chinen (1958:5) explains that all chiefs and commoners were entitled to a portion of the mountain and marine resources.

HISTORIC SETTING

The Māhele of 1848 set the stage for vast changes to land holdings within the islands as it introduced the foreign concept of land ownership to the Islands. For natives that had been cultivating and living on the lands, lengthy and costly procedures enabled them to possibly claim

some of the plots. Awarded claims were called Land Commission Awards (LCAs) and each was issued a Royal Patent number (RP). The first Land Commission was formed in 1845, during which time all individuals holding land were required to submit their claims or forfeit their lands.

In 1848, the Māhele (division) led to the introduction and implementation of privatization that required both chiefs and commoners to retain private land title. If informed of the tedious and lengthy procedures, Hawaiians were permitted to claim lands in which they had worked or lived. The land that maka'āinana received was less than 1% of total lands, all of which needed to be surveyed. A total of 88,000 people submitted 14,000 requests for land and of these only 8,500 were awarded. (Kame`eleihiwa 1992) A large amount of Hawaiian lands were lost due to mortgage default.

Under the Māhele and the first Land Commission of the Trust Territory of Hawai`i, lands were allocated in three ways. A third of all lands became Crown Lands belonging to the ali`i, a third was distributed to the chiefs, and a third was awarded to the general populace. In 1850, it became legal for foreigners to purchase land and they received large portions for diminutive prices. According to Kame`eleihiwa (1992: 228-230), the amount of land given to the ali`i was determined by genealogical rank. Each needed to list the claimed lands by name of the *ahupua`a*, surrender half of their land (50-71%), and pay the commutation fee, which was one third of the value of land.

In 1903, following the overthrow of Queen Lili`uokalani and the subsequent annexation of Hawaii to the United States, unclaimed lands which were about to be purchased were subject to the land court application process, which included title searches to establish whether prior title was held to that land. If the lands were found to be clear of title, ownership reverted to the government which could then sell the land. Such was the case with the property included in the current project area as archival research pertaining to the current project area indicates there were no known Land Court Awards issued for the subject property.

Archival research conducted at the Bureau of Conveyances yielded no information on the subject property prior to 1983. At that time, the Lī'hu'e Plantation Company transferred the subject property to the County of Kauai by a Decree of Registration (#2000). As the surrounding parcels were owned by the Lī'hu'e Plantation Company (and being the whole of Grant 9899 to Makee Sugar Company and a portion of Grant 5266 to Rufus Spalding being subdivided into Lots 1 through 5, inclusive, in 2003) we infer that the subject property was initially owned by the Makee Sugar Company, and subsequently obtained by the Lī'hu'e Plantation.

PREVIOUS ARCHAEOLOGY IN THE KAPA`A AREA

No previous archaeological work has been conducted of the subject property. However, many projects have been conducted within the *ahupua`a* of Kapa`a. In1981 the Archaeological Research Center Hawaii, Inc. (ARCH) conducted an archaeological reconnaissance survey of 52.5 acres in TMK: (4) 4-6-013:001 (Hammatt 1981). There were no historic sites or cultural materials identified during this study as the property had undergone extensive alteration as a result of many years under commercial agriculture.

Cultural Surveys Hawaii (CSH) performed subsurface testing for the proposed Kapa`a Sewerline Project in 1991. A total of 28 trenches were excavated (13 backhoe trenches and 15 hand excavated trenches) within the proposed project corridor. Three historic sites were identified during this study. Site 50-30-08-1836, Waipouli Cultural Layer, has been described as "an extensive cultural layer covering the southern portion of TMK: 4-3-008:001." This site was initially identified by Folk *et al.* (1991) and consists of a cultural layer extending 61.2 by 91.4 meters long 0.10 to 0.20 meters thick. This site contained numerous post molds and pit features. Eight human burials were also identified at this site, with three burials being stratigraphically contemporaneous with the cultural deposit. Historic artifacts were present in the upper portion of the cultural layer and the lower portions are believed to date to the pre-Contact period. This is supported by the results of four radiocarbon samples collected from the makai lot which yielded dates ranging from A.D. 1500 to 1950 and the traditional artifact assemblage (Folk 1991 in Hammatt 1991). Given these findings, this site has been interpreted as a permanent pre-Contact occupation area. Site -1848, Kapa`a Cultural Layer, was newly identified during this project. This site is located on the makai side of Kuhio Highway and has been interpreted as a traditional permanent habitation site and is believed to be associated with the shoreline occupation of Kapa`a Ahupua`a. Site -1849 is located on the southern portion of Inia Street and is thought to extend the entire length of the street, to the shoreline, and possibly to Kuhio Highway. This site also has been interpreted as permanent habitation associated with the shoreline occupation of Kapa`a Ahupua`a (Hammatt 1991).

CSH conducted archaeological inventory survey of a 1.87 acre parcel located in TMK: 4-5-005:006 in Kapa`a Ahupua`a in 1993 (Hammatt, *et al.*1994). A total of five backhoe trenches were excavated (34 linear meters). During the survey, a single historic site (Site 50-30-08-748) was newly identified. This site consists of "a weak cultural layer, containing no midden or

artifacts" (Hammatt *et al.*1994: page 15) and an intact buried A-Horizon is thought to be contemporaneous with late pre-Contact occupation of the area.

CSH provided archaeological monitoring and data recovery from 31 March 1991 through March 1995 for the Kapa`a Sewerline Project. Three historic sites (Sites 50-530-08-1836, 1848, and -01849) were identified during the subsurface testing phase, which was conducted prior to the monitoring and data recovery. During the archaeological monitoring, no new historic sites were identified. However, a total of 26 burials with human skeletal remains representing a minimum of 30 individuals were encountered during monitoring activities. A total of five radiocarbon dates were obtained from Site 50-30-08-1849, the Kapa`a Cultural Layer (Hammatt *et al.* 1995) which yielded two dates ranging from 1445 through the present and three dates (including one obtained from a charcoal sample associated with a burial on Ulu Street) ranging from 1165 though 1665 A. D. (Hammatt *et al.* 1995).

In April 1996, Nancy McMahon, Exploration Associates LTD., conducted archaeological inventory survey of 9.26 acres for a multi-purpose building for a YMCA located at TMK: (4) 4-6-014:026 in Kapa`a Ahupua`a, in April 1996. There were no cultural or datable materials identified during this project.

In June 1996 Exploration Associates LTD., conducted an archaeological inventory survey including subsurface testing for a five unit apartment complex in Kapa`a [TMK: (4) 4-5-005:008] (McMahon 1996). There were no cultural or datable materials identified during this project.

In 2000, Pacific Legacy, Inc. conducted archaeological inventory survey of a 398-acre parcel located in Kapa`a Ahupa`a at TMK: 4-3-003:005. During this survey eleven surface features were newly identified and designated collectively as Site 50-30-08-989 (McIntosh and Cleghorn 2000). This site has been interpreted as being associated with the sugar industry.

In 2000, Scientific Consultant Services (SCS) conducted archaeological monitoring for the Kapa`a Beach Park Public Bathroom Installation. During the monitoring activities human skeletal remains, representing a single individual, were identified at a maximum depth of 0.30 meters below surface (Calis 2000). These remains were determined to have a secondary context, given the disturbed nature of the associated deposit.

CSH conducted archaeological monitoring for the Kūhiō Highway, Waikea Bridge Widening Project located in Kapa`a Ahupua`a [TMK: 4-3-06 to 4-3-08], in 2001. No cultural or datable materials were encountered during this project.

Archaeological Consultants of the Pacific, Inc. (ACP) conducted archaeological monitoring of the Kūhiō Highway Drainage Improvements Project located at Kapa`a and Anahola Ahupua`a [TMK: 4-6 and 4-8], in 2003. There were no cultural or datable materials identified during this project

PROJECT AREA EXPECTATIONS

A review of archival resources and the results of previous archaeological work conducted in the Kapa`a area was undertaken to assess the types of sites expected to be encountered during the fieldwork portion of the project. While limited archaeological studies have been conducted in upland Kapa`a, archaeological studies conducted in the lower and coastal portions of the *ahupua`a* suggest Kapa`a may have supported a sizable population during the pre-Contact period. The results of the only archaeological inventory survey conducted in relatively close proximity to the current project (McIntosh and Cleghorn 2000) indicate the upland portions of Kapa`a Ahupua`a were under commercial agriculture. The findings of these investigations indicate use of this area occurred from around the mid-1100s to the 1600s and continued through the plantation-era. The coastal area of Kapa`a appears to have supported permanent habitation, fishing activities, such as arrivals and departures, and tool manufacture.

METHODOLOGY

FIELD METHODOLOGY

Multiple field tasks were completed during this archaeological inventory survey. A complete systematic pedestrian survey of the entire project site was conducted in order to identify any architecture or cultural materials on the ground surface and to assess project area geographical and topological features. The ground surface of the project area was relatively clear, thus, ground visibility was high. The property has undergone previous modifications to the ground surface and to the subsurface deposits as it was previously in commercial agriculture and an old municipal water tank is currently exists on the ground surface.

All identified surface features were plotted on an overall site map and flagged. Following the surface survey each feature was mapped, documented, recorded, photo-documented, and

assessed for significance. Temporary site numbers were converted to State Site Numbers upon a cursory project review by SHPD following the completion of fieldwork (see below).

LABORATORY METHODOLOGY

All field notes and digital photographs from this project are being temporarily curated at the SCS laboratory in Honolulu. As there were no midden deposits or artifacts present on the ground surface and subsurface testing was not conducted during this inventory survey, there were no cultural materials to process or curate nor were there additional field data to draft, store, or present.

FIELDWORK RESULTS

Inventory Survey led to the identification and documentation of two historic sites (Figure 5). Both of these sites are newly identified and both date to the early 1900s, as described in further detail below.

SITE 50-30-08-3940

Site 50-30-08-3940 consists of an historic tank and valve system constructed in 1930 (Figures 6, 7 and 8) in an effort to reduce the pressure in the domestic water pipeline servicing the town of Kapa`a. The tank measures 61.0 feet long by 7.5 high with walls 4.0 inches thick (Figure 9) and exhibits concrete walls and floor with a wood framed metal roof. The roof is no longer in place, but the twisted metal panels were noted in the surrounding woods.

SITE 50-30-08-3941

Site 50-30-08-3941 consists of two features: Feature 1, the Upper Ditch, and Feature 2, the Lower Ditch. This site is part of a complex irrigation system created in the early 20th century by Makee and Lī'hu'e Plantations. This system moves water from the eastern slopes of Mauna Wai`ale`ale through a series of ditches and reservoirs to the cane fields of Lī'hu'e, Wailua, Kealia and Kapa`a. The two ditches on the property are only small segments of the greater system. Construction dates are unknown. At this location the upper ditch is 5 meters above the lower ditch.

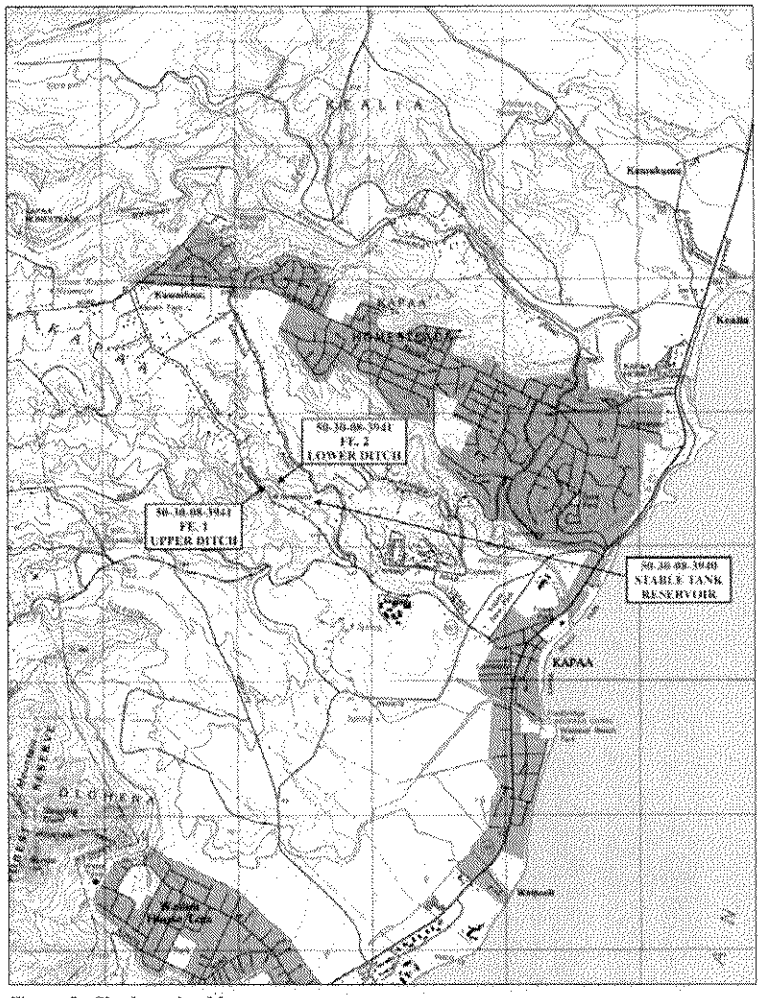

Figure 5: Site Location Map.

Figure 6: Site-3940 Southeast Corner Showing Construction Date.

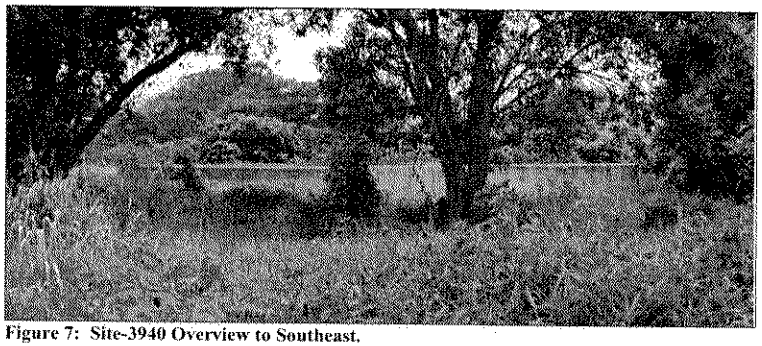

Figure 7: Site-3940 Overview to Southeast.

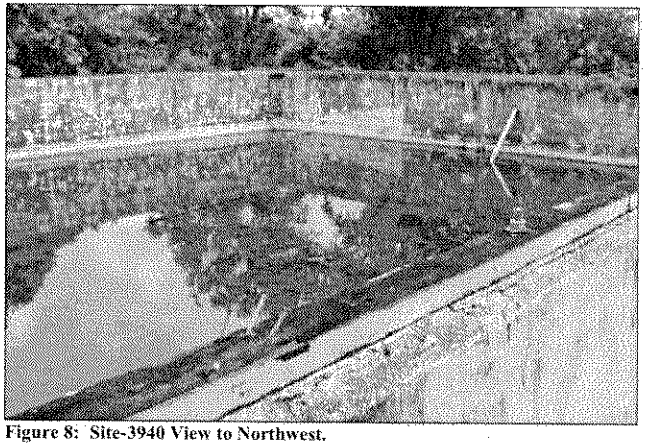

Figure 8: Site-3940 View to Northwest.

Figure 9: Site-3940 East Wall.

Feature 1, the Upper Ditch

Site 50-30-08-3941, Feature 1 (the Upper Ditch) consists of a segment of an unimproved earthen ditch (Figure 10). This feature measures 125.0 meters long by 1.20 meters wide by 00.0 to 0.20 meters deep. The ditch's western and eastern end have been removed or eroded away. The ditch surface is nearly level due to the build up of sediment and a lack of maintenance. The overall condition/integrity of Feature 1 is poor.

Figure 10: Site-3941, Feature 1, View to West.

Feature 2, the Lower Ditch

Site 50-30-08-3941, Feature 2 (Lower Ditch), consists of an earthen ditch with walls of dirt, concrete and basalt boulders (Figure 11). Feature 2 measures 400.0 meters long by 1.30 meters wide by 0.80 meters deep. The concrete and basalt occur at critical locations to prevent erosion. This ditch, a lateral off the North Wailua Ditch, irrigates the cane fields of Lī'hu'e Plantation west of Kapa'a Town. The overall condition/integrity of Feature 2 is good.

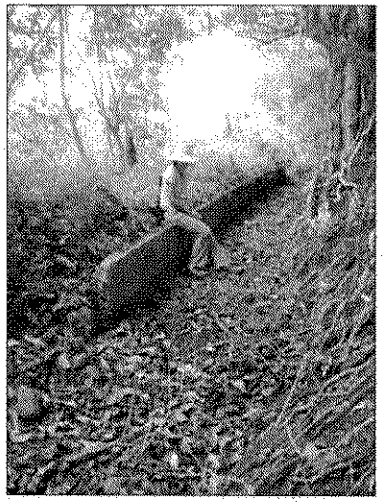

Figure 11: Site-3941 View to East.

DISCUSSION AND CONCLUSIONS

A total of two newly identified historic sites comprised of three features were documented during this Archaeological Inventory Survey. Both of these sites date to the early 1900s. Site 50-30-08-3940 consists of an historic tank and valve system constructed in 1930 in an effort to reduce the pressure in the domestic water pipeline servicing the town of Kapa'a. Site 50-30-08-3941 is part of a complex irrigation system created in the early 20th century by Makee and Lī'hu'e Plantations. This system moves water from the eastern slopes of Mauna Wai'ale'ale through a series of ditches and reservoirs to the cane fields of Lī'hu'e, Wailua, Kealia and Kapa'a.

SITE SIGNIFICANCE ASSESSMENTS

A total of 2 newly identified sites were documented in the project area. These sites have been evaluated for significance according to the criteria established for the Hawai'i State Register of Historic Places. The five criteria are presented below:

Criterion A: Site is associated with events that have made a significant contribution to the broad patterns of our history

Criterion B: Site is associated with the lives of persons significant to our past

Criterion C: Site is an excellent site type; embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual construction

Criterion D: Site has yielded or has the potential to yield information important in prehistory or history

Criterion E: Site has cultural significance to an ethnic group; examples include religious structures, burials, major traditional trails, and traditional cultural places

Both of the sites identified during the Inventory Survey have been assessed as significant under Criterion D.

RECOMMENDATIONS

Both of the sites identified during the Inventory Survey are significant under criterion D, for information content only, but have yielded sufficient information. Based on the results of the archaeological inventory survey, it is unlikely that additional research would contribute significant information to furthering our understanding of Hawaiian prehistory or history.

No further archaeological work is recommended in the project area, planned development can proceed within the parcel without endangering significant historic and cultural resources.

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July 10, 2006

Dr. Mike Dega
Scientific Consultant Service
711 Kapiolani Boulevard, Suite 975
Honolulu, Hawai'i 96813

LOG NO: 2006.2342
DOC NO: 0607NR38
Archaeology

Dear Dr. Dega:

SUBJECT: **Chapter 6E-42- Historic Preservation Review –**
An Archaeological Inventory Survey Report of the 1.19 Acre Stable Tank Project
Kapaa, Kawaihau District, Island of Kauai
(SCS, Dagher and Dega, 2006)
TMK: (4) 4-3-003: 012

We are in receipt of the aforementioned archaeological assessment report which we received on June 22, 2006 for our review. One hundred percent of the parcel was systematically surveyed. Two historic sites (50-30-08-3940 – water storage tank built in 1930 and 50-30-08-3941 – cane irrigation system) were found on the property. We concur with your findings that this sites are significant under criteria D. These two historic properties have been documented thoroughly by this work. This report is approved.

No further archaeological work is needed on these sites or this parcel If you have any questions please call Nancy McMahon at 808-742-7033.

Aloha,

Melanie A. Chinen, Administrator
State Historic Preservation Division

NM:jen

c. Ian Costa, County of Kauai Planning Department