

**FINAL
ENVIRONMENTAL ASSESSMENT**

WAILUA FACILITY PLAN

Prepared for:

County of Kauai
Department of Public Works
Division of Wastewater Management

April 2008

Fukunaga & Associates, Inc.

Consulting Engineers
1388 Kapiolani Boulevard, 2nd Floor
Honolulu, Hawaii 96814
(808) 944-1821

Project Summary

Project:	Wailua Facility Plan
Proposing Agency:	County of Kauai, Department of Public Works Division of Wastewater Management
Contact Person:	Mr. Edward Tschupp, P.E. Division of Wastewater Management Chief
Purpose:	A planning study for the expansion and management of the Wailua wastewater system to the year 2025
Anticipated Determination:	Finding of No Significant Impact (FONSI)
Location:	Wailua, Island of Kauai, State of Hawaii
Wailua WWTP Service Area	
Tax Map Key:	Fourth District, Third Zone, Ninth Section Fourth District, Fourth Zone, First Section Fourth District, Fourth Zone, Third Section Fourth District, Fourth Zone, Fifth Section Fourth District, Fourth Zone, Sixth Section
Property Owner:	Various
State Land Use Classification:	Various
County Zoning Ordinance:	Various
Wailua WWTP	
Tax Map Key:	Fourth District, Third Zone, Ninth Section, Sixth Plat, Nineteen Parcel
Property Owner:	County of Kauai
State Land Use Classification:	Urban
County Zoning Ordinance:	Open
Pre-assessment Consultation:	State Department of Hawaiian Home Lands County of Kauai, Department of Planning County of Kauai, Department of Public Works U.S. Fish and Wildlife Services National Oceanic and Atmospheric Administration (NOAA), The Pacific Islands Regional Office of the National Marine Fisheries Service (NMFS)

TABLE OF CONTENTS

	<u>Page</u>
I – INTRODUCTION	
A. PROJECT SUMMARY	1
B. BACKGROUND	2
C. PROJECT TECHNICAL DESCRIPTION	4
1. Existing Facilities	4
2. Near Term (Present-2010)	7
3. Middle Term (2010-2015)	10
4. Far Term (2015-2025)	12
5. Summary of Recommendation.....	13
D. LAND ACQUISITION	16
E. HAWAIIAN HOME LANDS.....	16
 II – DESCRIPTION OF THE ENVIRONMENT	
A. LAND CLASSIFICATION AND ZONING	19
1. State Land Use	19
2. County Land Use	19
3. Kauai General Plan	19
4. Coastal Zone Management Program	22
B. LAND OWNERS	24
C. PHYSICAL FEATURES	24
1. General	24
2. Topography	24
3. Wetlands	26
4. Soils	26
5. Hydrology	29
6. Geology	29
7. Water Quality	29
8. Climate	31
9. Flood and Tsunami	31
D. SOCIO-ECONOMIC FEATURES	34
E. SURFACE WATER QUALITY	34
F. ARCHAEOLOGICAL AND HISTORICAL CONSIDERATIONS	34

G. FLORA	35
H. FAUNA	37

III – PROBABLE IMPACTS AND MITIGATION MEASURES

A. SHORT TERM IMPACTS	38
1. Air Quality	38
2. Erosion	38
3. Surface Water Quality	38
4. Traffic	38
5. Noise	39
6. Fauna	39
B. LONG TERM IMPACTS	39
1. Water Quality	39
a. Surface Water	39
b. Ground Water	39
2. Agricultural Land	40
3. Coastal Zone Management	40
4. Floodplain Management	40
5. Flora and Fauna	40
6. Air Quality	41
7. Visual Impacts	41
8. Archaeological and Historical Sites	41
9. Public Health and Safety	41

IV – ALTERNATIVES TO THE PROPOSED PROJECT

A. NO ACTION ALTERNATIVE	42
B. ALTERNATIVE SITES	42
C. ALTERNATIVE SEWERAGE IMPROVEMENTS	42

V – PERMITS AND APPROVALS REQUIRED

A. APPROVALS	43
B. PERMITS	43

VI – AGENCIES AND ORGANIZATIONS CONSULTED

44

VII – FINDINGS AND DETERMINATION

A. FINDINGS	45
B. FINDINGS BASED ON DOH SERP CRITERIA	47
C. DOH CROSS-CUTTING AUTHORITIES	48
D. DETERMINATION	49

VIII – REFERENCES

50

LIST OF FIGURES AND TABLE

	<u>Page</u>
FIGURE 1 Project Location	3
FIGURE 2 Wailua Wastewater Treatment Plant Site Plan	5
FIGURE 3 Water & Sewer Service Area	6
FIGURE 4 Recommended Near Term Improvements	9
FIGURE 5 Recommended Middle Term Improvements	11
FIGURE 6 Recommended Far Term Improvements	14
FIGURE 7 Proposed DHHL Development	18
FIGURE 8 State Land Use	20
FIGURE 9 Comprehensive Zoning Ordinance	21
FIGURE 10 Special Management Area	23
FIGURE 11 Major Land Owners & Project Site TMK	25
FIGURE 12 Topography & Wetlands	27
FIGURE 13 USDA SCS Soils Map	28
FIGURE 14 Water Quality	30
FIGURE 15 Flood Insurance Rate Map	32
FIGURE 16 Tsunami Evacuation	33
FIGURE 17 Archaeological & Historical Places	36
TABLE 1 Summary of Recommendations, Wailua Wastewater Facility Plan.....	15

ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
BOD	Biological Oxygen Demand
CIP	Capital Improvement Plan
CZO	Comprehensive Zoning Ordinance
DAF	Dissolved Air Floatation
DHHL	Department of Hawaiian Home Lands
DLNR	Department of Land and Natural Resources
DOH	Department of Health
DOT	Department of Transportation
DPW	Department of Public Works
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HAR	Hawaii Administrative Rules
HHA	Hawaii Housing Authority
HRS	Hawaii Revised Statutes
HSRFP	Hawaii State Revolving Fund Program
IWS	Individual Wastewater Systems
KCCC	Kauai Community Correctional Center
MBR	Membrane Bioreactor
mgd	Million Gallons per Day
MSL	Mean Sea Level
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National and State Register of Historic Places
RAS	Return Activated Sludge
SERP	State Environmental Review Process
SMA	Special Management Area
SPS	Sewage Pump Station
TMK	Tax Map Key

TMDL	Total Maximum Daily Load
UFC	Uniform Fire Code
UIC	Underground Injection Control
USDA SCS	U.S. Department of Agriculture Soil Conservation Service
UV	Ultraviolet
WAS	Waste Activated Sludge
WWTP	Wastewater Treatment Plant

I. INTRODUCTION

A. PROJECT SUMMARY

The purpose of this project is to develop a comprehensive wastewater facility plan for the Wailua Wastewater System, County of Kauai, State of Hawaii.

The planning period for this project encompasses the period from the present to the year 2025. This report will be used to help improve water quality, protect public health, and accommodate planned future growth. The plan includes estimates of future wastewater flow based on population growth projection up to the year 2025. The plan also evaluates future wastewater treatment and effluent disposal alternatives and estimates costs and pricing data for the alternatives. These considerations will be used to determine the expansion needs for the Wailua Wastewater Treatment Plant (WWTP) and other construction within the Wailua wastewater system, and determine the timing for when the improvements should be implemented.

For the overall planning period, three planning intervals were selected as follows: near term, middle term, and far term. The near term improvements should be implemented within the next few years (present-2010). The middle term improvements are in the following five years (2010-2015). The far term improvements are in the following 10 years (2015-2025) or beyond after middle term improvements.

The projects described in this plan may be funded by Federal Funds through the State of Hawaii Clean Water State Revolving Fund Program. The projects will be required to meet all National Environmental Policy Act (NEPA) and Hawaii State Revolving Fund Program (HSRFP) requirements.

B. BACKGROUND

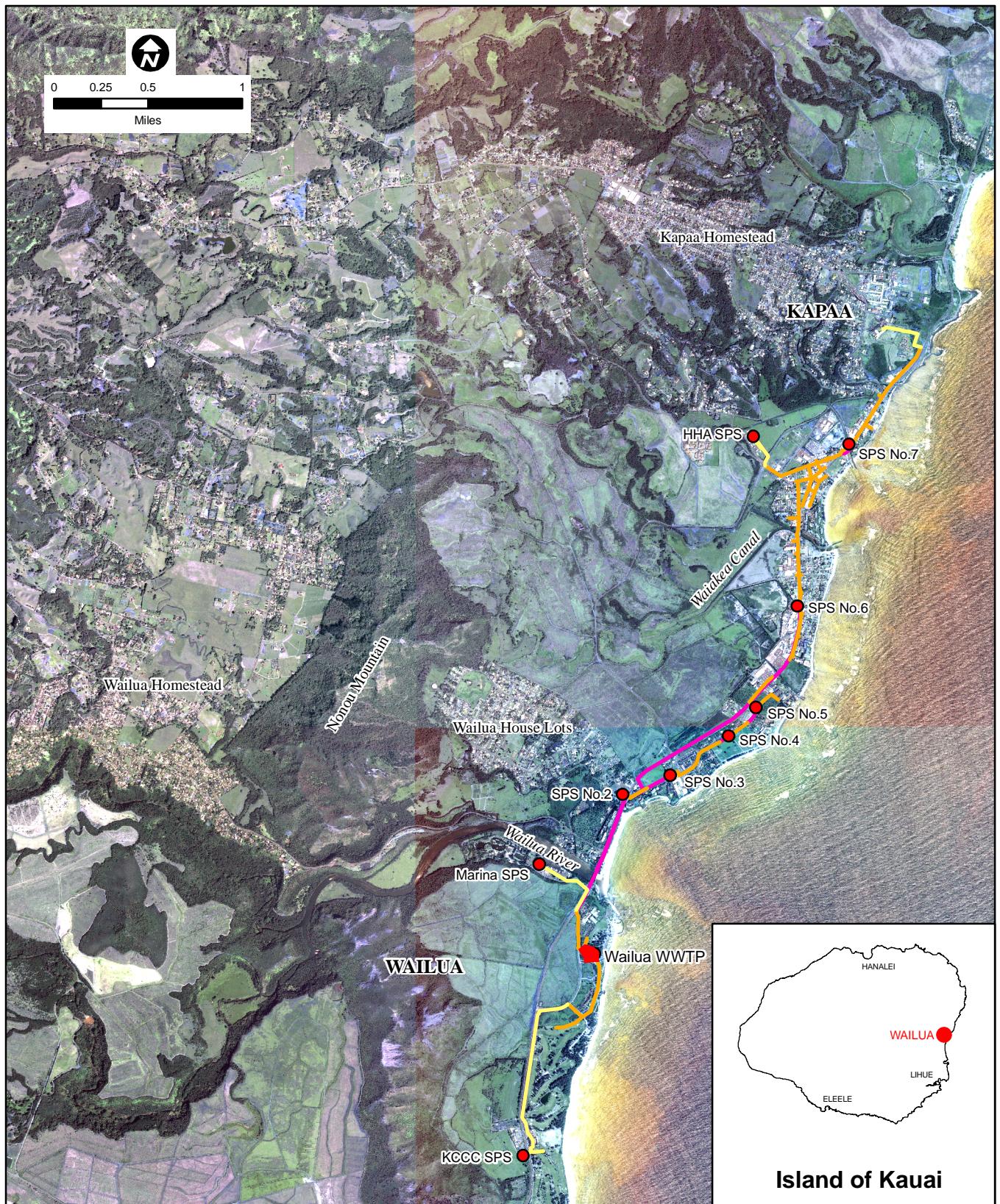
The Wailua WWTP was originally constructed in 1964 and receives wastewater from the Kapaa, Papaloa, Waipouli, and Wailua areas. The plant was originally designed to treat an average flow of 0.5 million gallon per day (mgd). The plant has gone through four phases of construction, the most recent in 1992 to expand to the current design average daily flow of 1.5 mgd and a design peak flow capacity of 5.03 mgd. However due to age and a harsh salt air environment, the actual treatment capacity is reduced to 1.0 mgd. Moreover, the treatment capacity of 1.0 mgd is not reliable due to a lack of standby units. Several processes are in poor condition and in need of repair. However, the lack of standby units makes it difficult to remove these units from service for repair and maintenance.

The existing collection system consists of gravity lines, pump stations, and force mains. The collection system is centered in the coastal area along the Kuhio Highway. The project location map is shown on Figure 1.

There are several projects, either public or private, that may affect portions of the Wailua-Kapaa sewage system, including:

- As part of the renovations to the Coco Palms Resort, it may be possible to allocate land to the County for the construction of a new Coco Palms sewer pump station (SPS). The location and size of the parcel will be subject to negotiation.
- The State Department of Transportation (DOT) is planning to widen Kuhio Highway in the vicinity of the Coco Palms SPS. The highway-widening project will encroach on the pump station site. This project is expected to begin construction at the end of 2007.

Careful planning and coordination of construction activities will be necessary.



LEGEND:

Forcemain Sewermain Private Sewerline

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Project Location

FIGURE 1

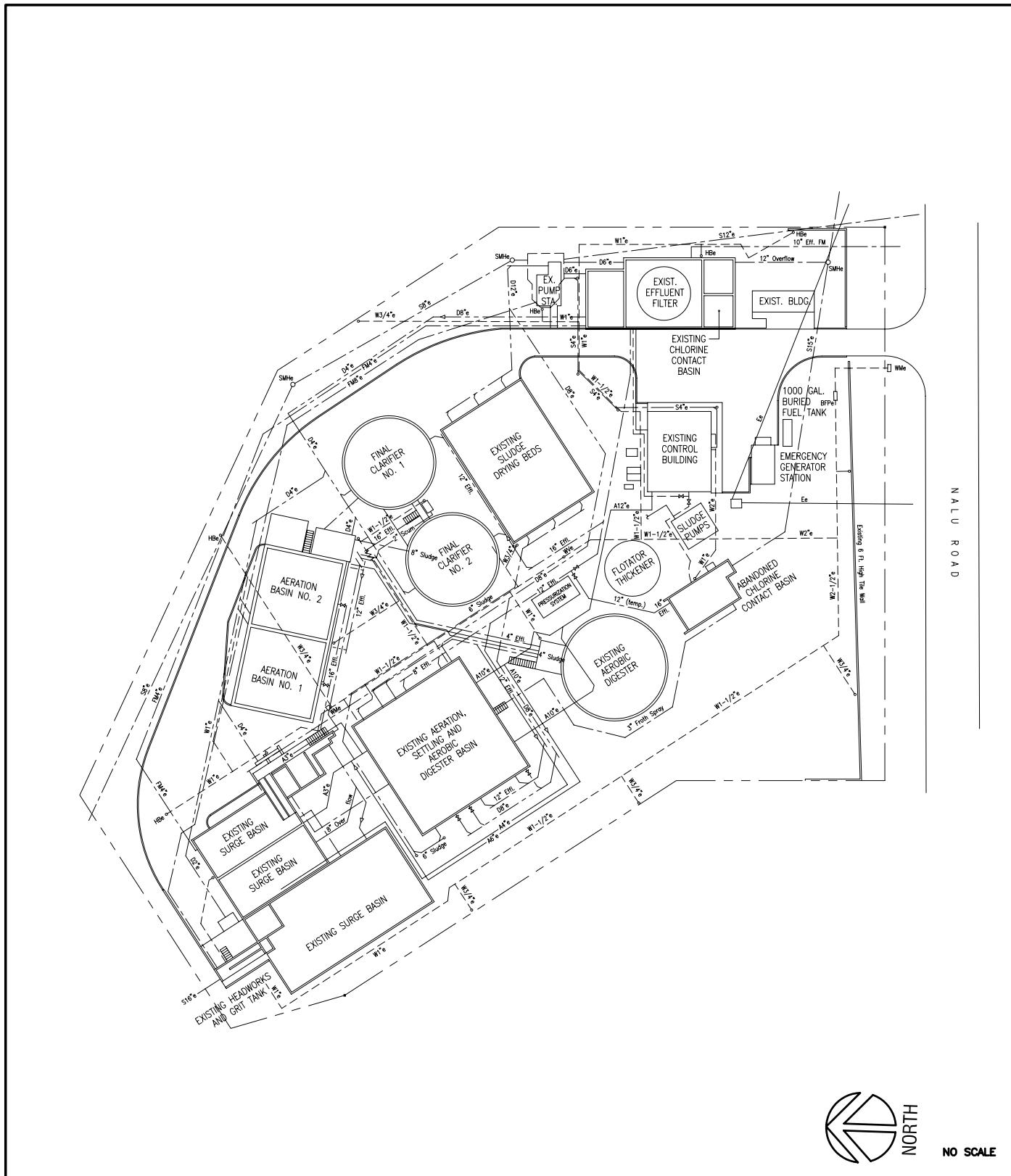
C. PROJECT TECHNICAL DESCRIPTION

1. Existing Facilities

The Wailua WWTP is located on approximately 2.1 acres of County owned land next to Lydgate Park. The treatment plant is designated as an R-2 facility, which means the plant provides secondary treatment and disinfection. This meets the minimum requirements for wastewater treatment per Hawaii Administrative Rules (HAR) Title 11, Chapter 62. The current plant layout is shown on Figure 2.

In the Wailua-Kapaa area, wastewater treatment is accomplished with Individual Wastewater Systems (IWS), such as cesspools or septic tanks, or at the County owned and operated Wailua WWTP. Figure 3 shows the parcels in the Wailua-Kapaa area that have water and sewer service. IWSs are assumed to be used in the parcels that have water service but no sewer service. Based on that assumption, there are approximately 4,300 residential cesspools in the Wailua-Kapaa area. The discharge of raw waste water directly into the ground is not beneficial to the environment; therefore, Department of Health (DOH) now limits the construction of any new cesspools. Approximately 12% of the cesspools in the Wailua-Kapaa area have reported failures.

The Wailua WWTP currently uses two methods of effluent disposal, which are an ocean outfall and water reuse for irrigation at the adjacent Wailua Golf Course. Treated effluent is conveyed to the golf course by pumping out of the effluent chamber downstream of the chlorine contact basin. Effluent sent to the ocean outfall flows by gravity to the ocean through an overflow pipe. When effluent is sent to the golf course, it is stored in a reservoir located at the golf course and is pumped out as required for irrigation.

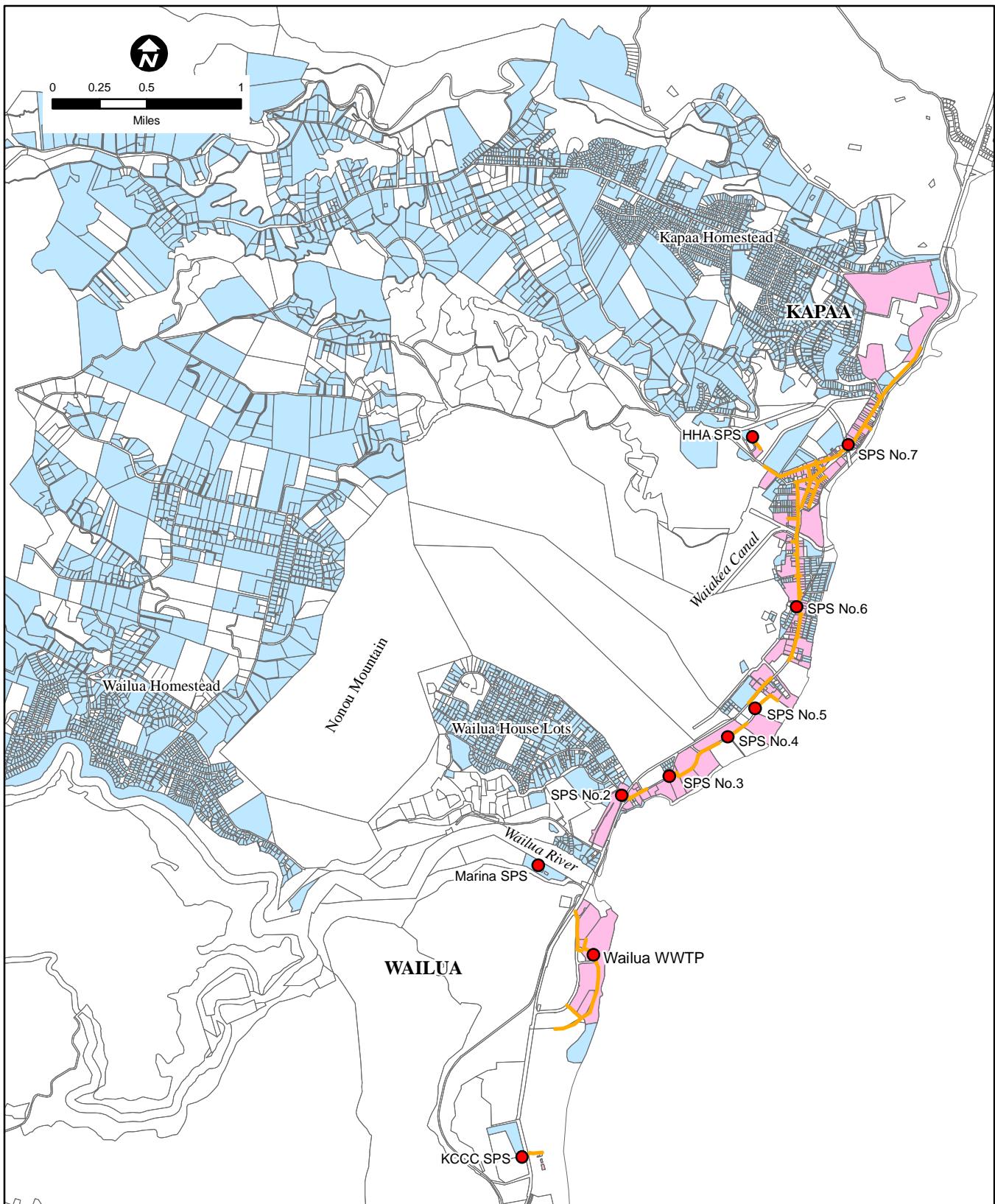


WAILUA FACILITY PLAN

Wailua Wastewater Treatment Plant Site Plan

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

FIGURE 2



LEGEND:

- Sewerline ■ Sewer & Water Service Parcels
- Water Service Parcels (Assumed IWS)

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Water & Sewer Service Area

FIGURE 3

2. Near Term (Present-2010)

The current flow of 0.7 mgd is within the 1.0 mgd treatment capacity limit of the Wailua WWTP. The projected near term flow is also within the capacity limit and will not require an expansion of the Wailua WWTP, except to provide standby facilities for reliability.

The near term improvement recommendations are split into two phases. The first phase of the near term improvements will bring the Wailua WWTP into compliance with the most recent codes. The second phase will modernize the Wailua WWTP to provide reliable capacity to treat 1.0 mgd. See Figure 4 for the recommended near term improvements. The recommended near term improvements are as follows:

Phase I

- Install a new influent flow meter upstream of the existing headworks. This is required to meet DOH requirements to meter flow.
- Install de-chlorination facilities downstream of the existing chlorine contact basin for discharge to the ocean outfall. This is required to meet National Pollutant Discharge Elimination System (NPDES) discharge requirements regarding chlorine residual.
- Install a new packaged chlorine scrubber system. This is required to meet Uniform Fire Code (UFC) requirements for storage of an oxidizing gas.

Phase II

The existing treatment plant is in poor condition, and modernizing to a Membrane Bioreactor (MBR) plant is recommended. An MBR system will provide more modularity and flexibility for future expansion. Construction of an MBR system would enable the County to reuse existing tanks. With upgraded disinfection facilities (recommended for the middle term improvements), converting the Wailua WWTP to an MBR system will raise the plant effluent to R-1 quality. This will increase opportunities to reuse plant effluent. The following facilities are required for the conversion to an MBR system:

- Demolish the existing Rapid Bloc system and construct new surge basins.
- Continue to use the existing aeration basins, but operate them at a low dissolved oxygen concentration and a high mixed liquor concentration, to achieve simultaneous nitrification and de-nitrification.
- Construct a new blower building to provide process air to the aeration basins and air scour to the membrane tanks.
- Demolish the existing sludge drying beds and construct an MBR system, including membrane tanks, pumps, chemical storage facilities, and other ancillary equipment.

- Install fine screens upstream of the aeration basins and on the Return Activate Sludge (RAS) line.
- Construct new electrical facilities to replace existing.
- Construct a new Coco Palms SPS. Site of pump station to be negotiated with owners of the Coco Palms Resort.
- Negotiate with landowners of the resorts on Papaloa Road and Aleka Loop for new pump station site(s).

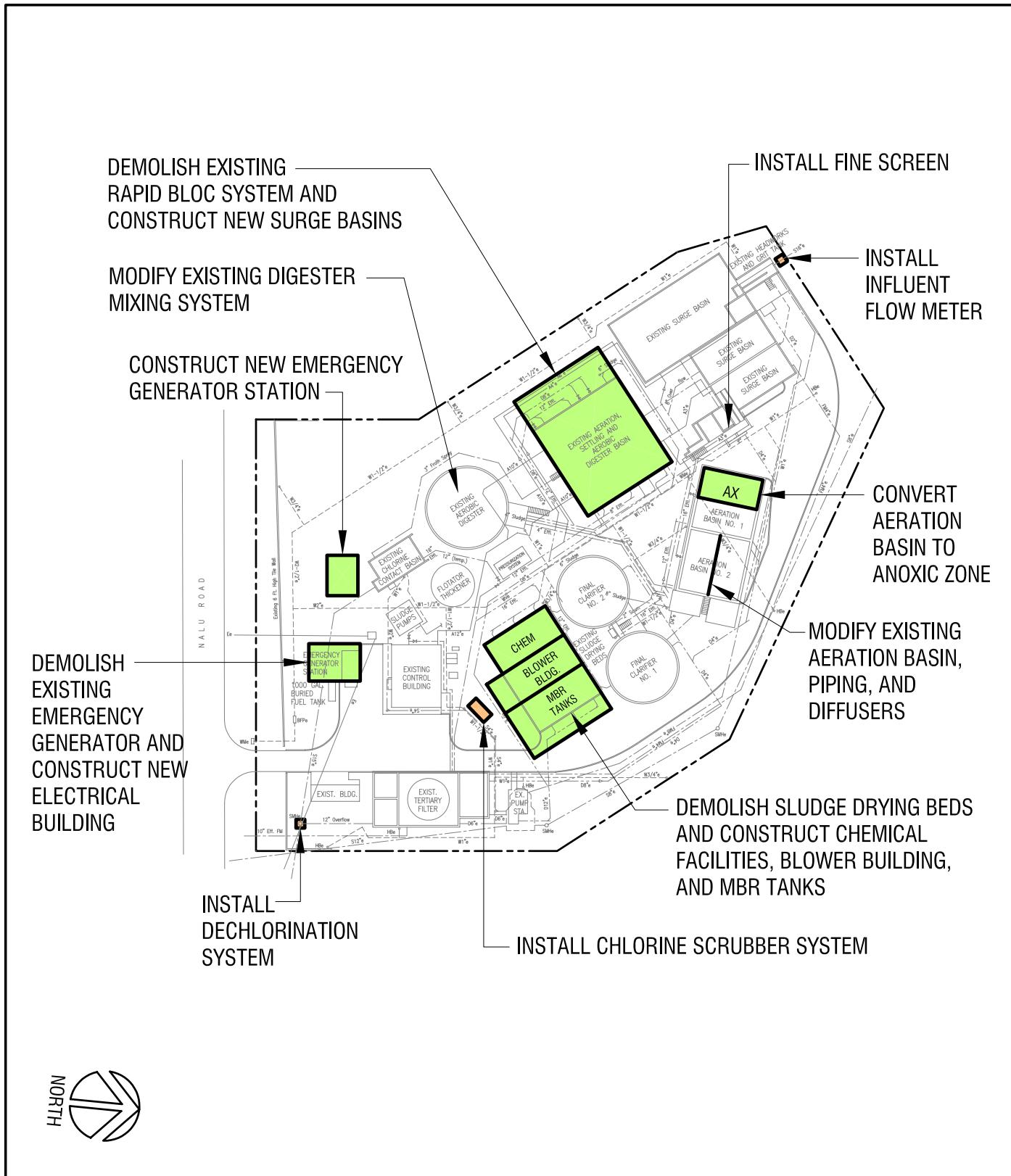
The cost to convert the Wailua WWTP to an MBR plant is more expensive than the cost to expand the plant using the existing treatment technology in the near term. However, future expansions of an MBR system in the middle and far terms will provide capital cost savings.

The recommended near term non-Capital Improvement Plan (CIP) improvements are as follows:

- Implement pretreatment and illegal discharge monitoring and enforcement program.
- Increase plant staffing and hire an additional electrician and chemist.

The monitoring program and additional electrician and chemist are intended to serve the entire County.

The County will continue to send treated effluent to the Wailua Golf Course to be reused for irrigation. During rainy weather, when the golf course does not require irrigation water, treated effluent will be discharged through the ocean outfall.



LEGEND

	Phase I
	Phase II

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Recommended Near Term Improvements

FIGURE 4

3. Middle Term (2010-2015)

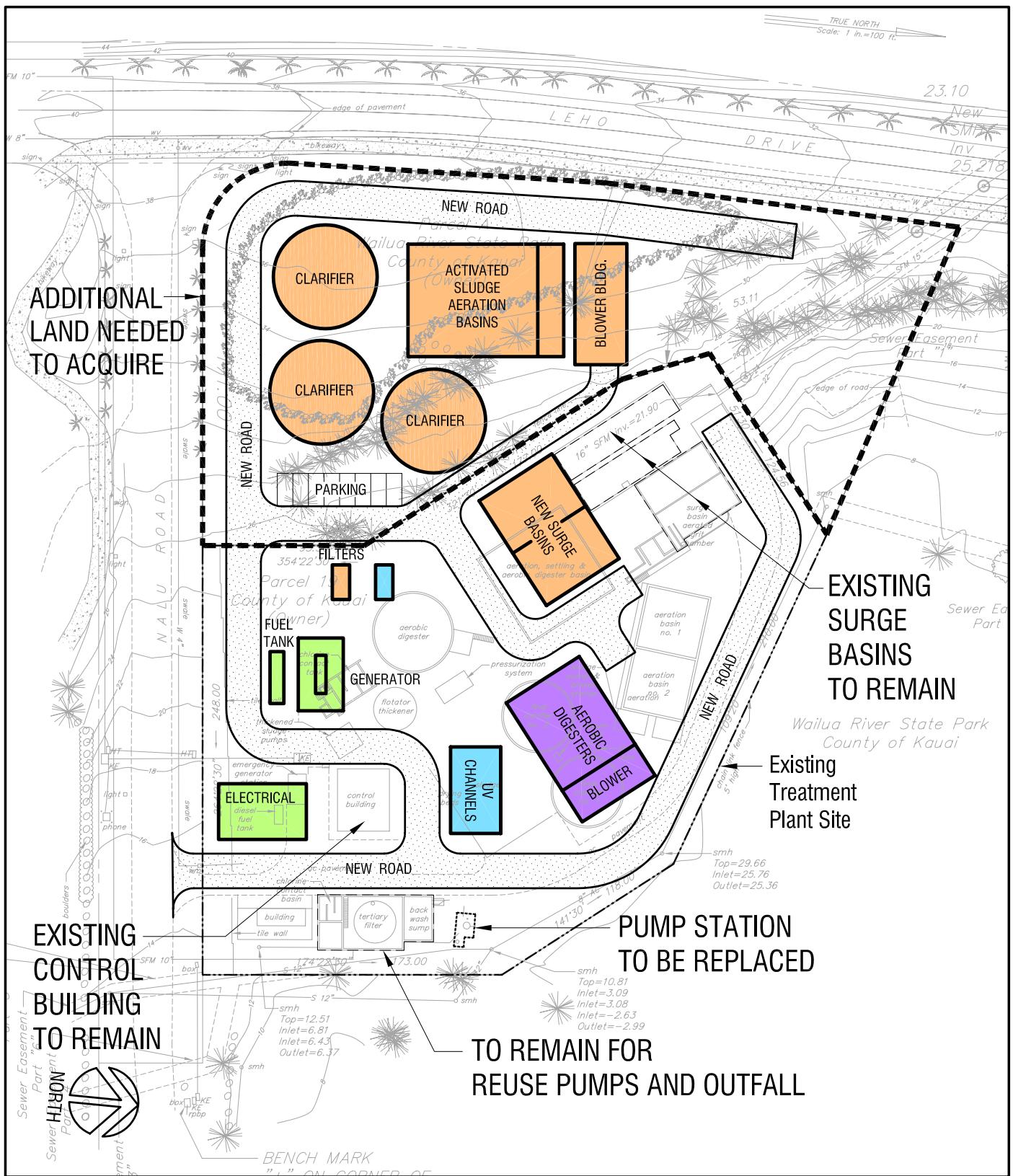
The projected middle term flow will require additional facilities at the Wailua WWTP. These facilities will restore the Wailua WWTP capacity to 1.5 mgd. This may allow the County to connect areas that are experiencing frequent cesspool failures.

A major variant to this will occur if the proposed Department of Hawaiian Home Lands (DHHL) development in Wailua is connected. The middle term improvements should be phased to allow the existing plant to remain in operation during construction. Additional land will be required for the middle term recommended facilities. Although the existing plant footprint was intended to have a treatment capacity of 1.5 mgd, there are now more requirements for redundancy in the treatment processes, mechanical equipment, and electrical facilities. This redundancy increases the footprint of the treatment plant, requiring more land. The recommended middle term improvements are as follows:

- Construct a new blower building for membrane tank mixing.
- Construct additional membrane tanks including permeate pumps, RAS pumps, and other ancillary equipment.
- Construct new aerobic digestion facilities to replace the existing digester.
- Construct a new blower building for the new digester and surge basins.
- Construct a new pump station to replace existing SPS No.1.
- Construct a new Ultraviolet (UV) disinfection system to replace existing chlorination facility, Phase I de-chlorination facility, and chlorine contact basin.
- Expand the existing collection system to connect areas in Kapaa that have a history of cesspool failure.

See Figure 5 for the recommended middle term improvements.

The County will continue to send treated effluent to the Wailua Golf Course to be reused for irrigation. During rainy weather, when the golf course does not require irrigation water, treated effluent will be discharged through the ocean outfall. With the upgrade in plant effluent to R-1 quality water, the County should investigate additional reuse customers (in addition to the Wailua Golf Course).



4. Far Term (2015-2025)

The projected far term flow will require an expansion of the Wailua WWTP. It is recommended to expand the treatment plant to a capacity of 2.0 mgd. The treatment plant will have sufficient capacity for the projected flows from the existing service area and will have excess capacity to connect some properties currently operating on cesspools. Priority will be given to areas experiencing frequent cesspool failures. If the incoming flow at the Wailua WWTP exceeds 2.0 mgd, additional effluent disposal facilities are required, or the construction of a new Kapaa WWTP is required. If the number of cesspool failures is limited and the incoming flow at the Wailua WWTP remains below 2.0 mgd, construction of the Kapaa WWTP may be deferred beyond the far term. The ultimate goal is to connect all the urban properties to the County collection system. This would bring the capacity of both the Wailua and Kapaa WWTP to 2.0 mgd. Completion of this goal is projected beyond the far term.

Far term flows will exceed the capacity of the Wailua WWTP and will require an expansion of plant facilities. A build-out to the treatment capacity of 2.0 mgd is recommended. The treatment capacity of the Wailua WWTP is limited by the capacity of the ocean outfall. The outfall peak flow capacity is approximately 3.0 mgd. The treatment capacity of the plant should be limited to 2.0 mgd (average day). The surge basin volume will be capable of dampening peak flows to a maximum of 3.0 mgd. The following work is required to build-out the Wailua WWTP to 2.0 mgd:

- Construct new headworks adjacent to the existing headworks. Although the existing headworks have sufficient capacity for the far term peak flow, several processes are unreliable and require replacement.
- Construct additional membrane tanks, including permeate pumps, RAS pumps, and blowers.
- Construct additional surge basins adjacent to the existing basins.
- Construct two new Dissolved Air Floatation (DAF) thickeners to replace the existing unit.
- Construct new sludge dewatering facilities to replace existing facility.
- Construct a new control building to replace the existing building.
- Construct a new locker room/storage building to replace the existing building.
- Construct an influent gravity line parallel to the new 24" line.

If the flow to the Wailua WWTP exceeds 2.0 mgd, additional effluent disposal facilities are needed or a new treatment plant will need to be constructed in Kapaa.

The Kapaa WWTP will initially have a small start-up capacity of approximately 0.5 mgd. The flow from the existing SPS No.6 and 7 will be diverted to the Kapaa WWTP. The Kapaa WWTP will be an MBR plant with the following facilities:

- Headworks to remove grit and other large objects.
- Surge Basins to equalize flow.
- Biological treatment facilities with anoxic, aerobic, and anaerobic tanks to remove nitrogen, phosphorus, and carbonaceous Biological Oxygen Demand (BOD).
- Blower building to provide air to various processes.
- Membrane tanks including RAS pumps, Waste Activated Sludge (WAS) pumps, and permeate pumps.
- UV disinfection facility to disinfect plant effluent.
- Aerobic digester to stabilize sludge.
- Sludge thickening facilities with dissolved air flotation units.
- Sludge dewatering facilities with a centrifuge.
- Effluent disposal facilities.

The nutrient removal in the biological treatment process and solids removal by the membranes will provide a high quality effluent that may be re-used in many ways, possibly including restored wetlands. Using treatment plant effluent to supplement the wetlands will require permitting at the Federal, State, and County level. An environmental review process will also be needed.

The County will continue to send treated effluent to the Wailua Golf Course to be reused for irrigation. During rainy weather, when the golf course does not require irrigation water, treated effluent will be discharged through the ocean outfall. The County will need to investigate effluent disposal methods for the Kapaa WWTP. Potential disposal methods include injection wells, ocean outfall, reuse, or replenishing existing wetlands.

5. Summary of Recommendation

A summary of the Near Term, Middle Term, and Far Term recommendations is provided in Table 1.

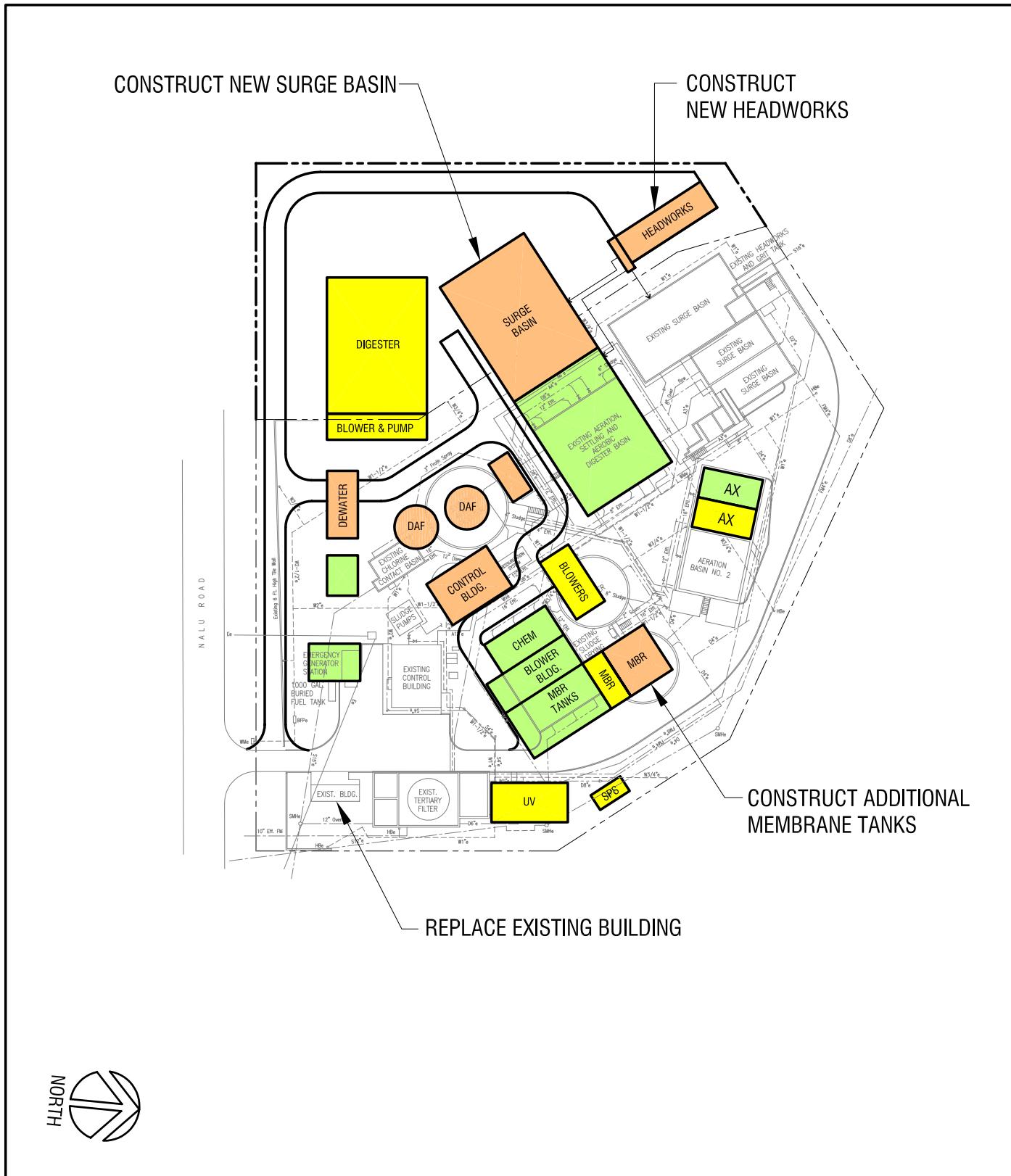


FIGURE 6

TABLE 1
Summary of Recommendations, Wailua Wastewater Facility Plan

PHASE & IMPROVEMENT TYPE	PROJECT NAME	PROJECT JUSTIFICATION	ESTIMATED COST
Near Term (<5 Years)			
Repair/Rehab Collection System	Upgrade or Replace Coco Palms SPS	Site Location Marginal, Capacity Inadequate	\$4,240,000
Repair/Rehab WWTP	1. WWTP Process, Electrical & Disinfection Equip. 2. Restore/Upgrade Treatment Process	1. Electrical System Inadequate, Equipment in need of Upgrade/Replace 2. WWTP capacity limited to 1.0 MGD (permitted for 1.5 MGD). Capacity will be inadequate by mid-term	\$7,800,000 \$8,000,000
Mid Term (5 - 10+Yrs)			
Repair/Rehab Collection System	Replace SPS 3,4 & 5	Age & Condition	\$7,000,000
Repair/Rehab WWTP	Replace On-site Pump Station	Age & Condition	\$600,000
Far Term (>10+ Yrs)			
Repair/Rehab Collection System	Parallel sewer line on Leho Dr.	Existing sewer inadequate	\$637,000
Expand/Upgrade Collection System	1. Expand Sewers to Lower Kapaa ¹ 2. Expand sewers to Wailua House Lots ¹ 3. Expand Sewers to Wailua Homesteads ¹ 4. Expand sewers to upper Kapaa ¹	Sewer areas with chronic cesspool problems Expand collection system Expand collection system Expand collection system	\$36,400,000 \$40,200,000 \$105,000,000 \$60,000,000
Expand/Upgrade WWTP	1. Wailua WWTP Expansion to 2.0 MGD 2. Construct new Kapaa WWTP ²	1. Capacity Projected to be Inadequate 2. WWTP for expanded collection system	\$23,000,000 \$25,900,000

Notes:

1. Term of sewer collection system is undetermined and is subject to availability of funds.
2. Term of Kapaa WWTP is undetermined and is subject to growth and expansion of the collection system

D. LAND ACQUISITION

The Wailua WWTP will require additional land to expand the treatment plant for the middle term flows. Approximately 1.6 acres of land east of the existing treatment plant are needed for this expansion. The land adjacent to the treatment plant is owned by the County of Kauai and is part of the Wailua River State Park. Transfer of this property to the Department of Public Works (DPW) is necessary.

The County will also need to acquire land to construct a new treatment plant in Kapaa. The County should engage in discussions with landowners of properties that may be suitable for acquisition for a future WWTP site. Early negotiation with landowners will allow the County to reserve the land so that it is available when needed.

The County will also need to acquire new sites to replace the existing old pump stations. The County should continue negotiations with the owners of the Coco Palms Resort to acquire a site for the new Coco Palms SPS. The County should begin negotiations with the landowners of the resorts along Papaloa Road and Aleka Loop to acquire land for new pump station(s) there.

E. DEPARTMENT OF HAWAIIAN HOME LANDS

The DHHL development in Wailua is currently not in the Wailua-Kapaa service area. The development area is designated Agricultural and outside the Urban land use of County & State General Plans. The projected wastewater flow from the DHHL development is approximately 0.35 mgd in the middle term and an additional 0.30 mgd in the far term. Connection to the County system will have a significant impact on plant flow and expansion plans. Connecting to the County collection system could accelerate the need of a new Kapaa WWTP. If DHHL connects to the County collection system during the middle term, incoming wastewater flow will be approximately 1.74 mgd, which exceeds the projected middle term capacity of 1.5 mgd. The following facilities recommended for the far term would have to be moved up to the middle term to accommodate the DHHL flow and increase plant capacity to 2.0 mgd:

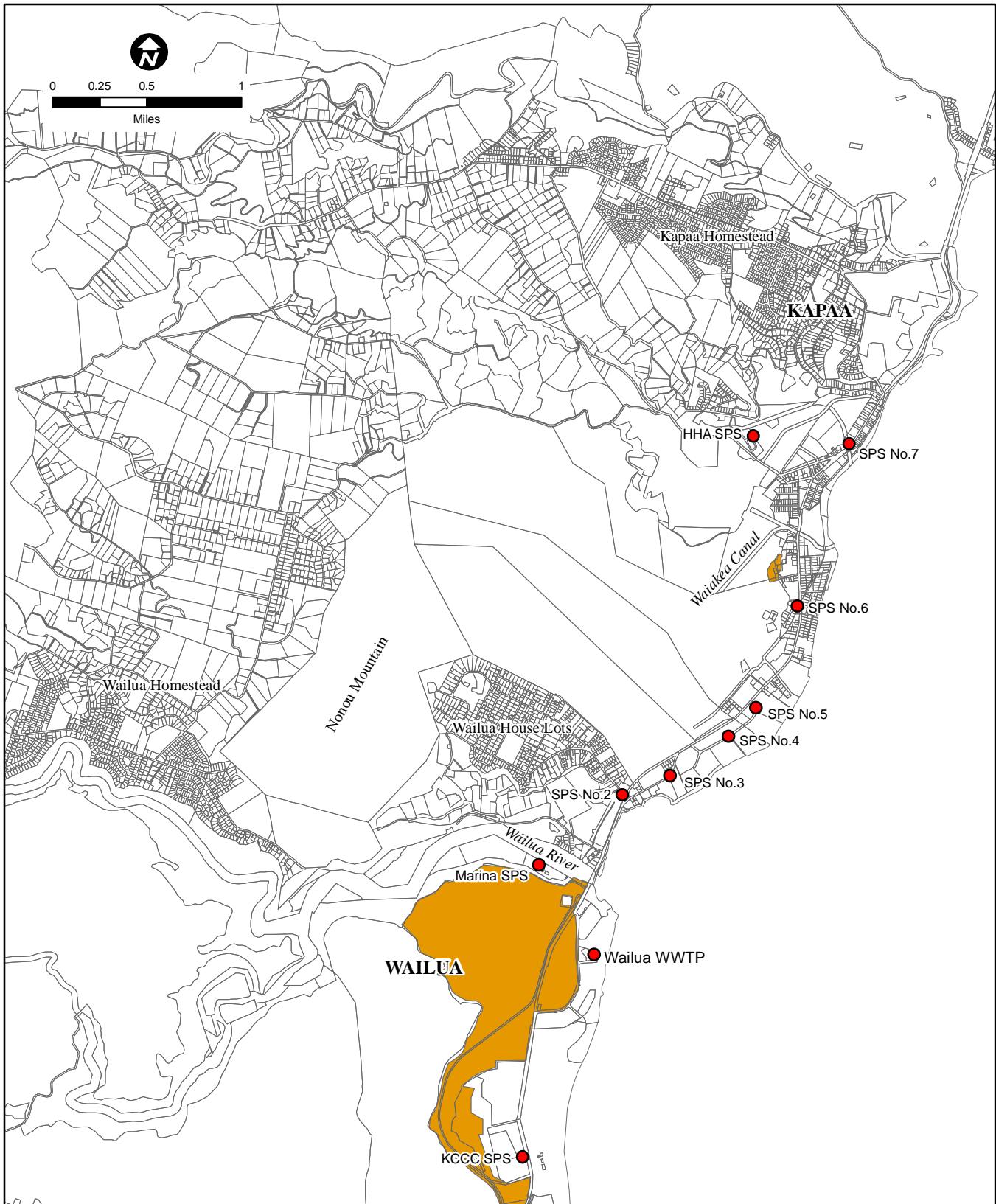
- Construct an influent gravity line parallel to the 24" line recently installed.

The far term expansion to 2.0 mgd will not have sufficient capacity to accommodate the DHHL flow. The estimated flows for far term (1.72 mgd) and an additional flow from DHHL (0.65 mgd) will bring the average daily flow to approximately 2.37 mgd. The following additional facilities will be required for the far term to accommodate the DHHL flow and increase plant capacity to 2.5 mgd:

- Construct additional membrane tanks, including permeate pumps, RAS pumps, and blowers.
- Construct additional surge basins adjacent to the existing basins.
- Construct additional effluent disposal facilities.

Beyond the far term, if all non-agricultural properties in the Wailua and Kapaa area are connected to the County collection system, the service area will be divided between the Wailua WWTP and a new Kapaa WWTP. The total wastewater flow to the Wailua WWTP (including DHHL) will be approximately 2.33 mgd.

Figure 7 shows the proposed DHHL development.



LEGEND:

■ Proposed DHHL Development

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Proposed DHHL Development

FIGURE 7

II. DESCRIPTION OF THE ENVIRONMENT

A. LAND CLASSIFICATION AND ZONING

1. State Land Use

The State Land Use Commission classifies all State lands as Urban, Rural, Agricultural, or Conservation with the intent to accommodate growth and development and to manage the natural resources of the area. The State Land Use classification of the service area of the Wailua WWTP is varied. See Figure 8 for the State Land Use zone designation.

2. County Land Use

The Comprehensive Zoning Ordinance (CZO) for the County of Kauai regulates more detailed land use zoning for the State designated land classifications (reference 1). The CZO of the Wailua WWTP service area is varied. The Comprehensive Zoning Ordinance map for the project area is shown in Figure 9.

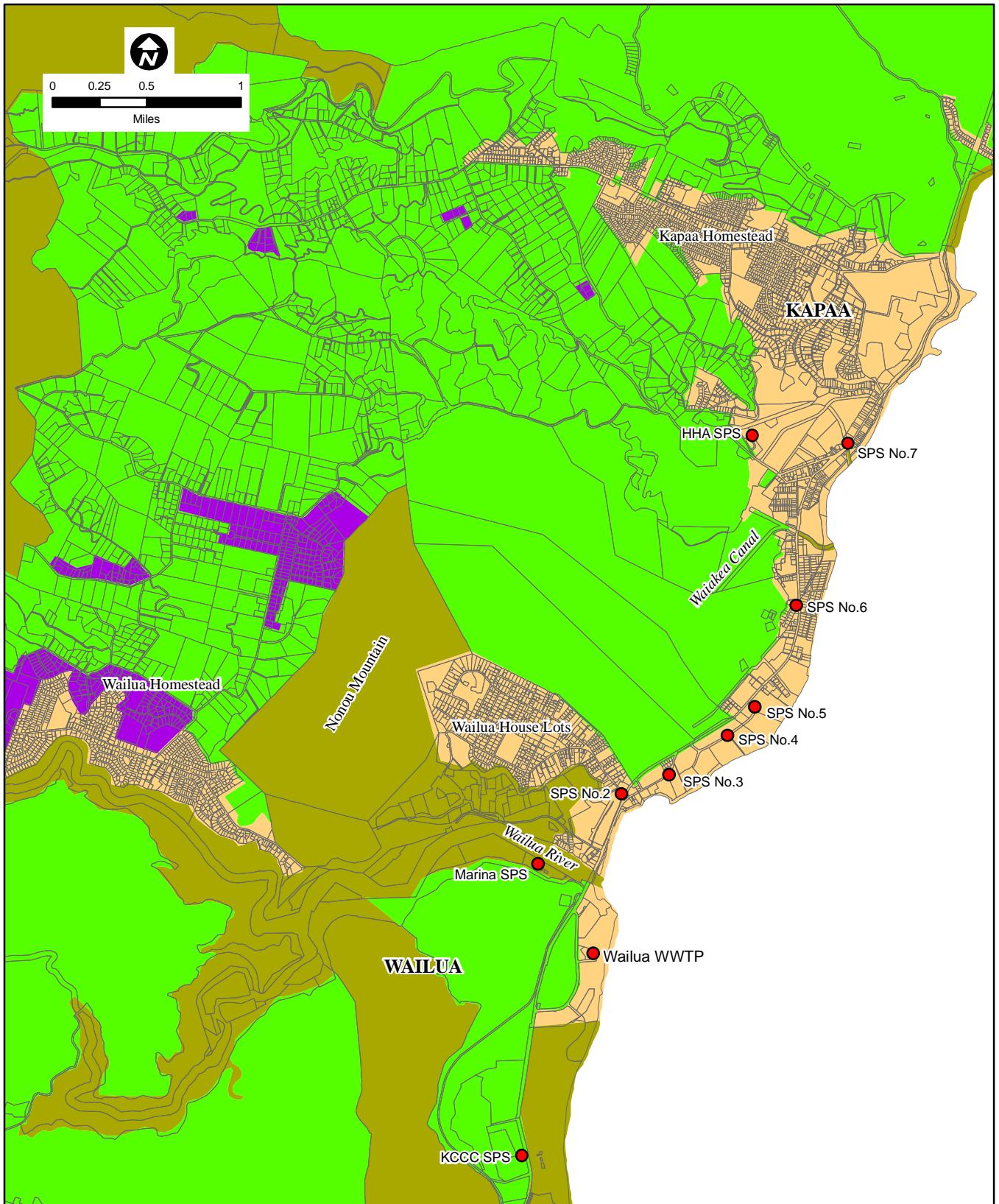
3. Kauai General Plan

The County of Kauai establishes the structure and organization of the government, and defines the responsibilities of the County. The County of Kauai is legally mandated to prepare and adopt a Kauai General Plan by State law and the County Charter. The General Plan provides guidance of land use regulations, the location and character of new development and facilities, and planning for County and State facilities and services.

The Kauai General Plan addresses development patterns and needs unique to the communities; explains social economic and environmental impacts of potential developments; and sets the desired sequence, patterns and characteristics of future developments. The Kauai General Plan also identifies objectives, priorities, policies and implementation actions with respect to various development matters, including wastewater systems.

The Kauai General Plan identifies 4 wastewater systems, including Wailua WWTP, on the island of Kauai. The Kauai General Plan Chapter 7.5.1.1 describes the status of Wailua WWTP as:

“...The transmission system has been extended to provide future service to Kapaa but collection systems makai of the highway have not been built.”



LEGEND:

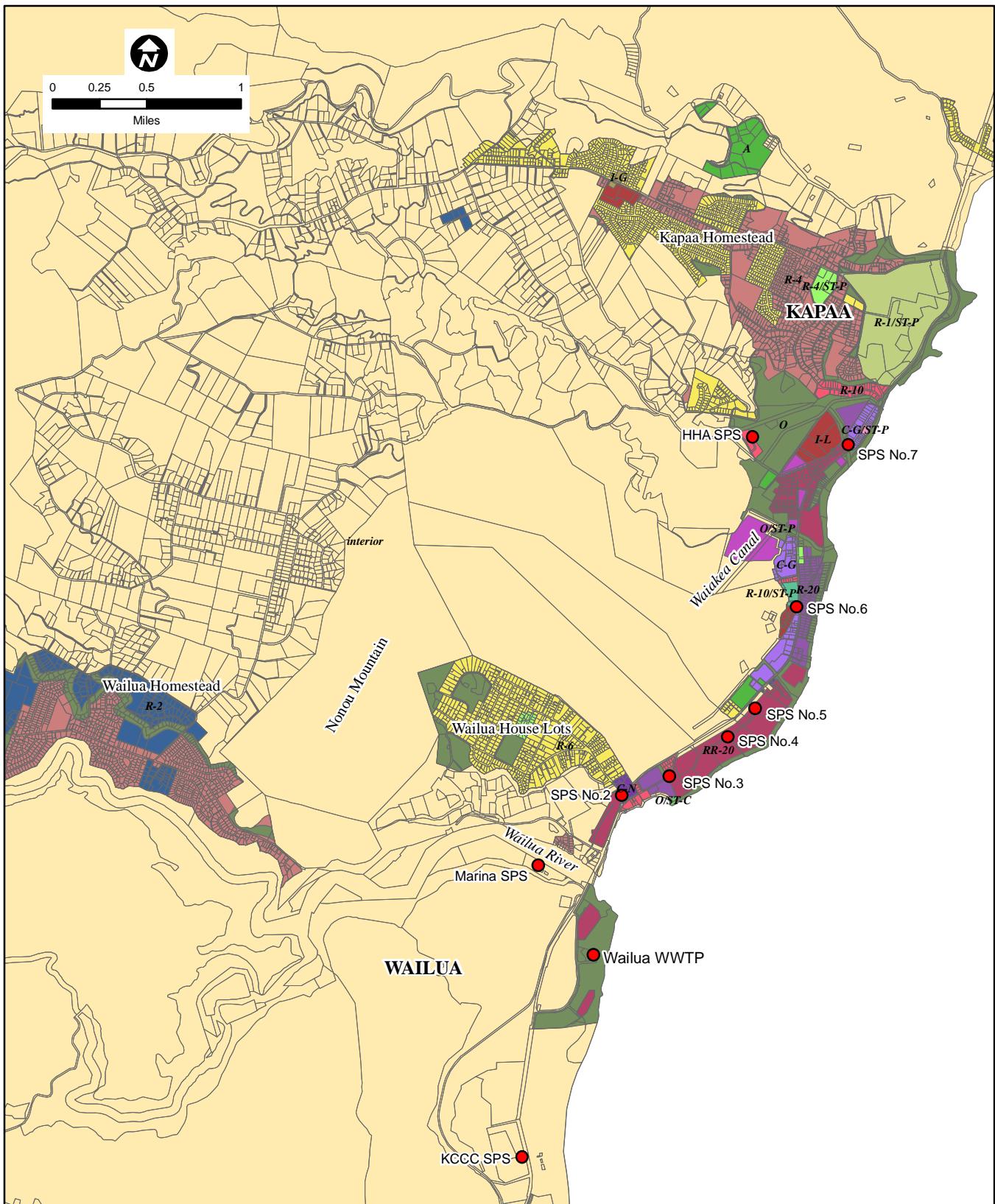
	Agricultural		Rural
	Conservation		Urban

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

STATE LAND USE

FIGURE 8



LEGEND: ZONING DISTRICTS

R: Residential	I: Industrial
O: Open	ST: Special Treatment
C: Commercial	

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Comprehensive Zoning Ordinance

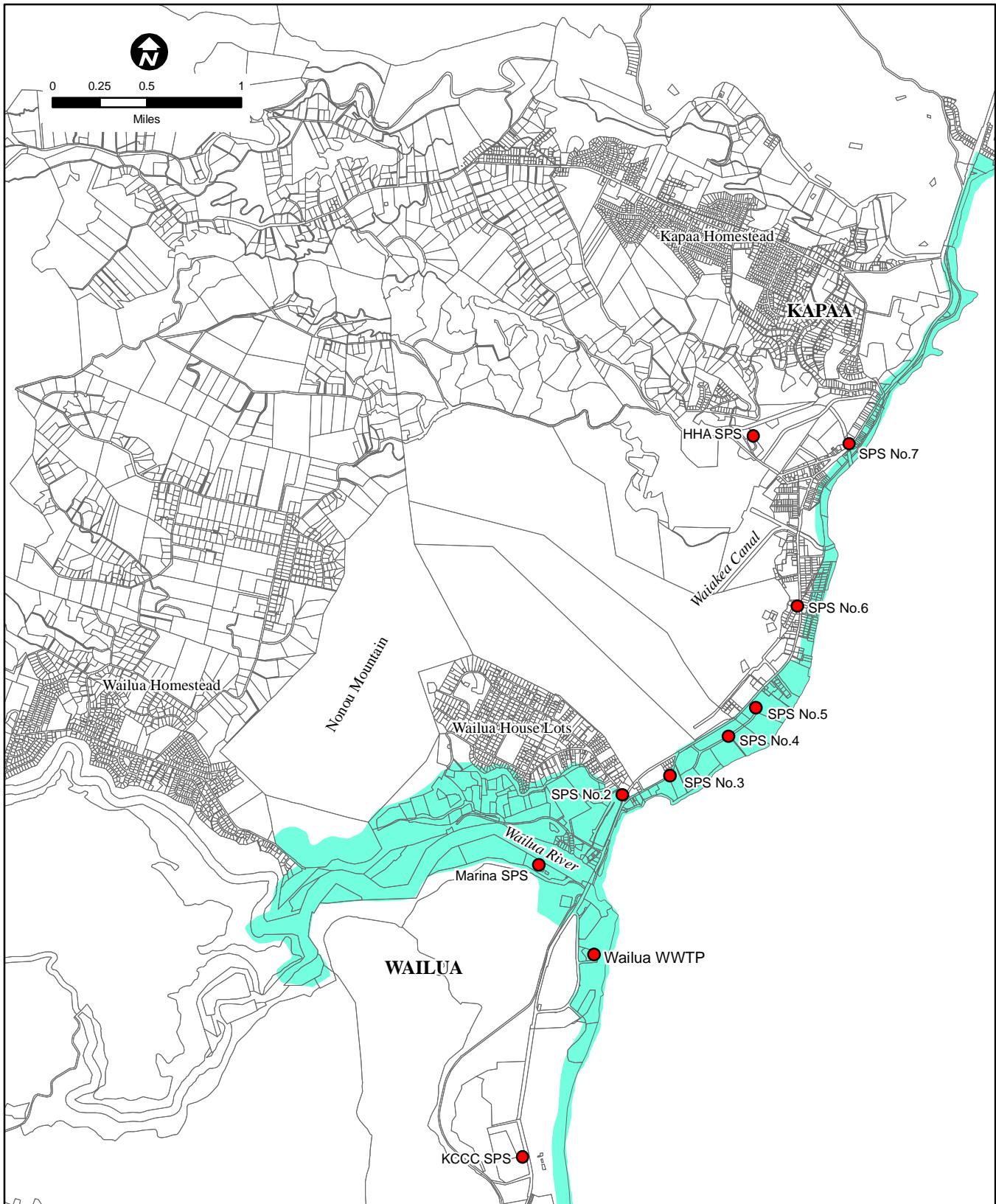
FIGURE 9

The Kauai General Plan includes the Land Use Map that depicts policy for long-range land uses with the following map designations: Urban Center, Resort, Residential Community, Agriculture, Open, Park, Transportation, Military. The Wailua WWTP is located in the Agricultural land use district. (reference 2).

4. Coastal Zone Management Program

The County of Kauai has established Special Management Area (SMA) ordinances to protect the natural resources of the coastal zone of Kauai. Any development or activity proposed within the SMA must apply for a permit or obtain an exemption. The SMA extends from the shoreline inland to a demarcation line established by the County and is shown on Figure 10. The Wailua WWTP site and some SPS (No.2, 3, 4, 5 and Marina) are located within the SMA. Any construction within an SMA requires approval from the County of Kauai, Planning Department in the form of a permit or an exemption. However, repair or replacement of existing equipment or facilities can usually receive an exemption from the Planning Department. If construction of new structures or facilities does not fall under the exemption list, a permit must be obtained.

If the Wailua WWTP is expanded, it may be possible to receive an exemption as a modification to an existing facility. However, an expansion of the treatment plant would involve a lot of construction work, and obtaining a permit is recommended. There are two types of SMA permits, major and minor. The distinction between the two types of permits is the construction cost. With the large amount of work involved in an expansion of the Wailua WWTP, a major SMA permit would be required. Applying for a major SMA permit would require the initiation of the Environmental review process. This process involves the preparation of an Environmental Assessment (EA), which includes a period for public review. If the project is determined to cause significant environmental impacts, a more detailed Environmental Impact Statement (EIS) is required.



LEGEND:

Special Management Area

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

SPECIAL MANAGEMENT AREA

FIGURE 10

B. LAND OWNERS

Wailua WWTP is located at 4460 Nalu Road, Wailua, Kauai and identified by Tax Map Key (TMK) 3-9-6:19 as shown in Figure 11. The County of Kauai-owned SPS No.2, 3, 4, 5, 6, and 7 are identified by TMK 4-1-3:44, 4-3-2:12, 4-3-2:04, 4-3-7:20, 4-3-9:69, and 4-5-12:39 respectively. The State of Hawaii owns and operates three SPS, identified as follows: Marina SPS, TMK 3-9-4:03; Hawaii Housing Authority (HHA) SPS, TMK 4-5-15:38; and Kauai Community Correctional Center (KCCC) SPS, TMK 3-9-5:20. The Kuhio Highway is owned by the State of Hawaii. The lands surrounding the Wailua WWTP are owned by the County and Department of Hawaiian Home Lands. Kaha Lani resort is located in the south approximately 1,000 feet from Wailua WWTP.

C. PHYSICAL FEATURES

1. General

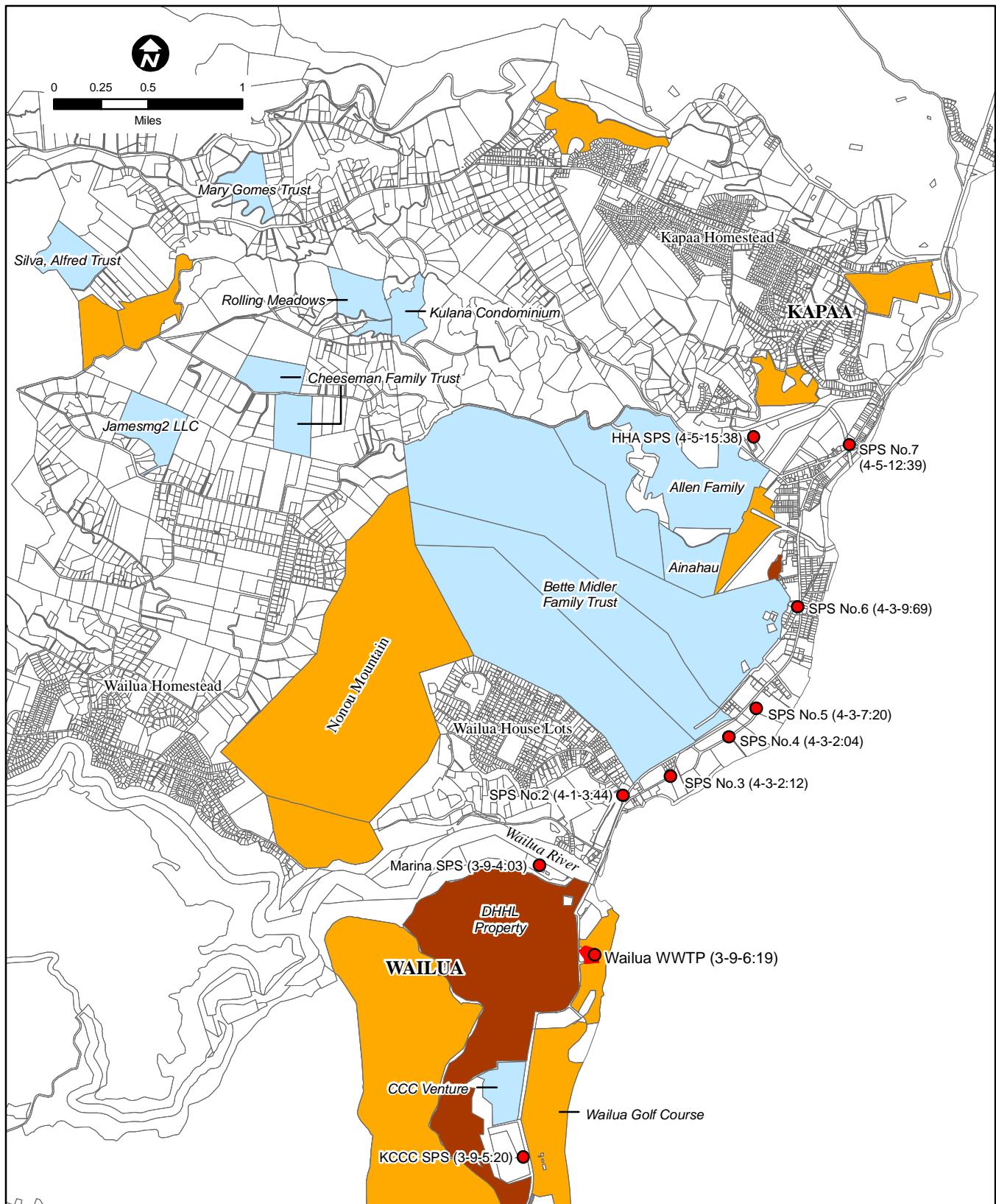
The Wailua-Kapaa area is located on the eastern plain of the island of Kauai, State of Hawaii. Kauai is the northernmost and geologically the oldest of the main Hawaiian Islands. It comprises 549 square miles of land area and 90 miles of coastline, and is the fourth largest in size and population.

Kauai is generally circular in shape with an average diametric width of 30 miles. The higher central mountainous sector is dominated by Mount Waialeale, with a peak elevation slightly more than 5,000 feet. Except for about 10 miles of sea cliffs along the northwesterly Napali Coast, the overall terrain rises gently inland from the relatively flat coastal plains to the farmlands and agricultural belt, then toward the grassy uplands, rolling foothills and forest reserves before ascending the hinterlands and the rugged slopes of Mount Waialeale.

The project area focuses on the Wailua WWTP, seven sewer pump stations, and its sewerage service area, which includes the contiguous communities of Wailua and Kapaa.

2. Topography

From the shoreline, the land gradually rises inland to the island's highest point, Mt. Waialeale, at about 5,000 feet above mean sea level (MSL). The topography of the planning area consists of sandy beaches along the coast with flat to moderately sloping terrain dominating the major portion of the near coast land and with a few areas where steep slopes occur. From an aerial point of view, the general service area tends to slope upward, which typifies the entire island topography. A majority of the residential population of Wailua and Kapaa reside at higher elevations, in the Wailua Homesteads and Kapaa Homesteads area, ranging from approximately 100



LEGEND:

- | | | |
|-------------|--|--|
| — Sewerline | Orange Box: State/County Owned Properties | Light Blue Box: Privately Owned Properties |
| | Dark Brown Box: Department of Hawaiian Home Lands (DHHL) | |

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Major Land Owners & Project Site TMK

FIGURE 11

to 400 feet above MSL. The Wailua House Lots subdivision is closer to Kuhio Highway with elevations ranging between 20 to 200 feet above MSL. There are many commercial and hotel properties in the coastal region along Kuhio Highway, at an elevation of approximately 10 feet. The Wailua WWTP is located at an elevation of approximately 10-25 feet. Figure 12 shows the topography of the area.

3. Wetlands

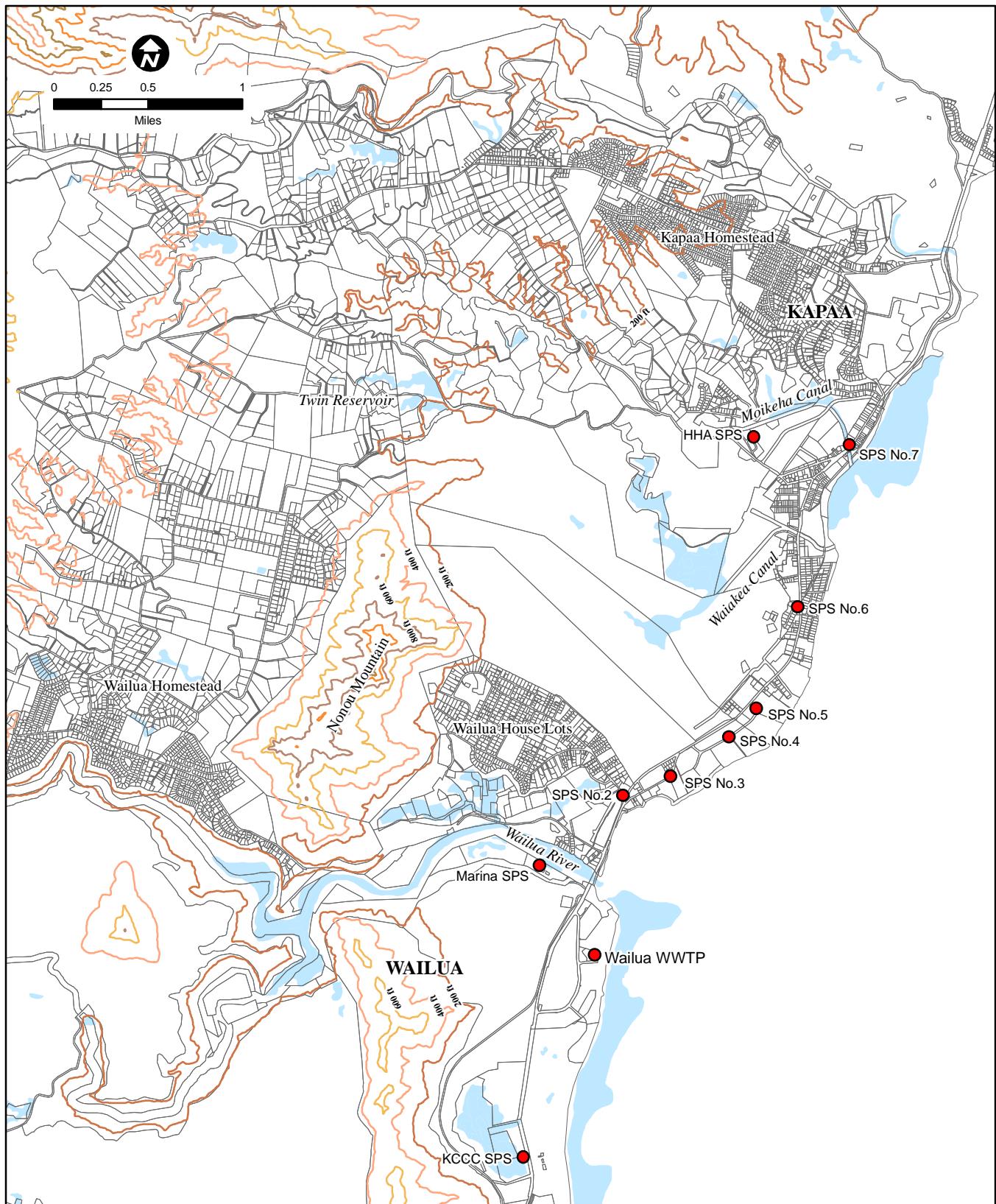
The U.S. Department of Interior, Fish and Wildlife Service “National Wetlands Inventory Maps 1978” identifies wetlands in proximity to the Wailua River. There are also several wetlands and reservoirs in Wailua-Kapaa area, but they are not located in the vicinity of the Wailua wastewater service area, as seen in Figure 12.

4. Soils

According to the Soil Survey issued in 1972 by the U.S. Department of Agriculture Soil Conservation Service (USDA SCS), general soils classifications of the Wailua-Kapaa area are:

- Jaucas-Mokuleia association: Deep, nearly level to moderately sloping, excessively drained and well-drained soils that have coarse-textured underlying material; on coastal plains.
- Hanalei-Kolokolo-Pakala association: Deep, nearly level, poorly drained to well-drained soils that have dominantly moderately fine textured or medium-textured subsoil or underlying material; on bottom land.
- Kapaa-Pooku-Halii-Makapili association: Deep, nearly level to steep, well drained and moderately well drained soils that have a fine textured or moderately fine textured subsoil; on uplands.
- Lihue-Puhi association: Deep, nearly level to steep, well-drained soils that have a fine textured or moderately fine textured subsoil; on uplands.
- Rough mountainous land-Rough broken land-Rock outcrop association: Well-drained to excessively drained, very steep to precipitous lands of mountains and gulches.

Figure 13 shows the detailed soils classification of the project area.

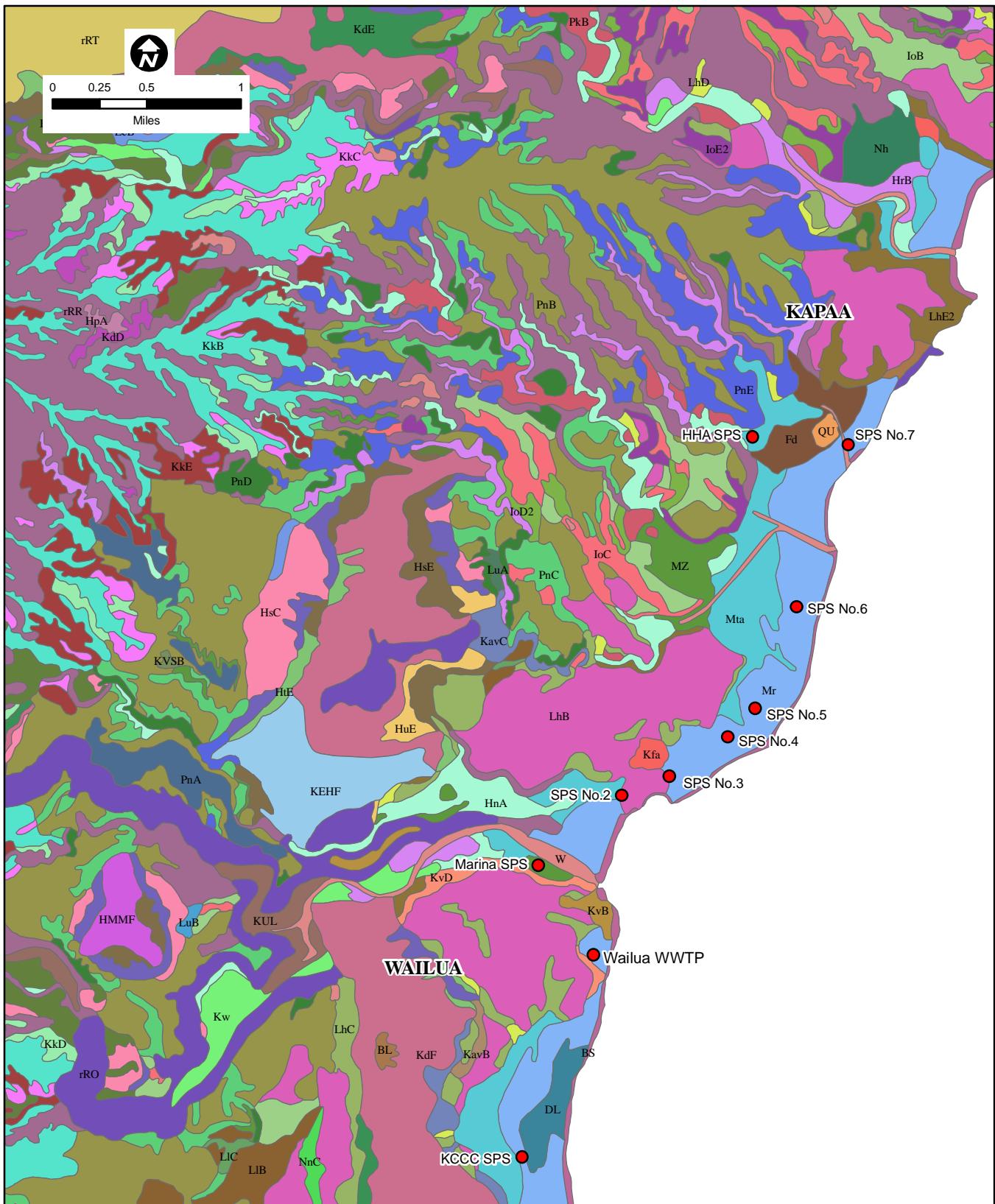


WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Topography & Wetlands

FIGURE 12



LEGEND:

- LhB Lihue silty clay, 0 to 8 percent slopes (SPS No.2)
- Mr Makuleia fine sandy loam (SPS No.3,4,5,6,7, KCCC SPS, Wailua WWTP)
- Mta Makuleia clay loam, poorly drained variant (HHA SPS)
- MZ Marsh (Marina SPS)

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

USDA SCS Soils Map

FIGURE 13

5. Hydrology

The Wailua WWTP is about 2,000 feet south of the mouth of the Wailua River and about 300 feet from the shoreline. The State-owned and operated Marina SPS is located about 150 feet from the Wailua River. All other SPS are located within 1,200 feet of the shoreline, except the State-owned and operated HHA SPS (approximately 2,600 feet). The existing collection system is primary located within 3,000 feet of the shoreline.

The coastal region of the planning area is underlain with a thick alluvial and marine sediment wedge poor in permeability. This results in a high groundwater profile in the shoreline region. Boring records in those locations extending along Kuhio Highway reveal the presence of high groundwater. The high groundwater found in the planning area is consistent with the estimates of poorly permeable substrata found in this region. Surface and groundwater movement is toward the ocean.

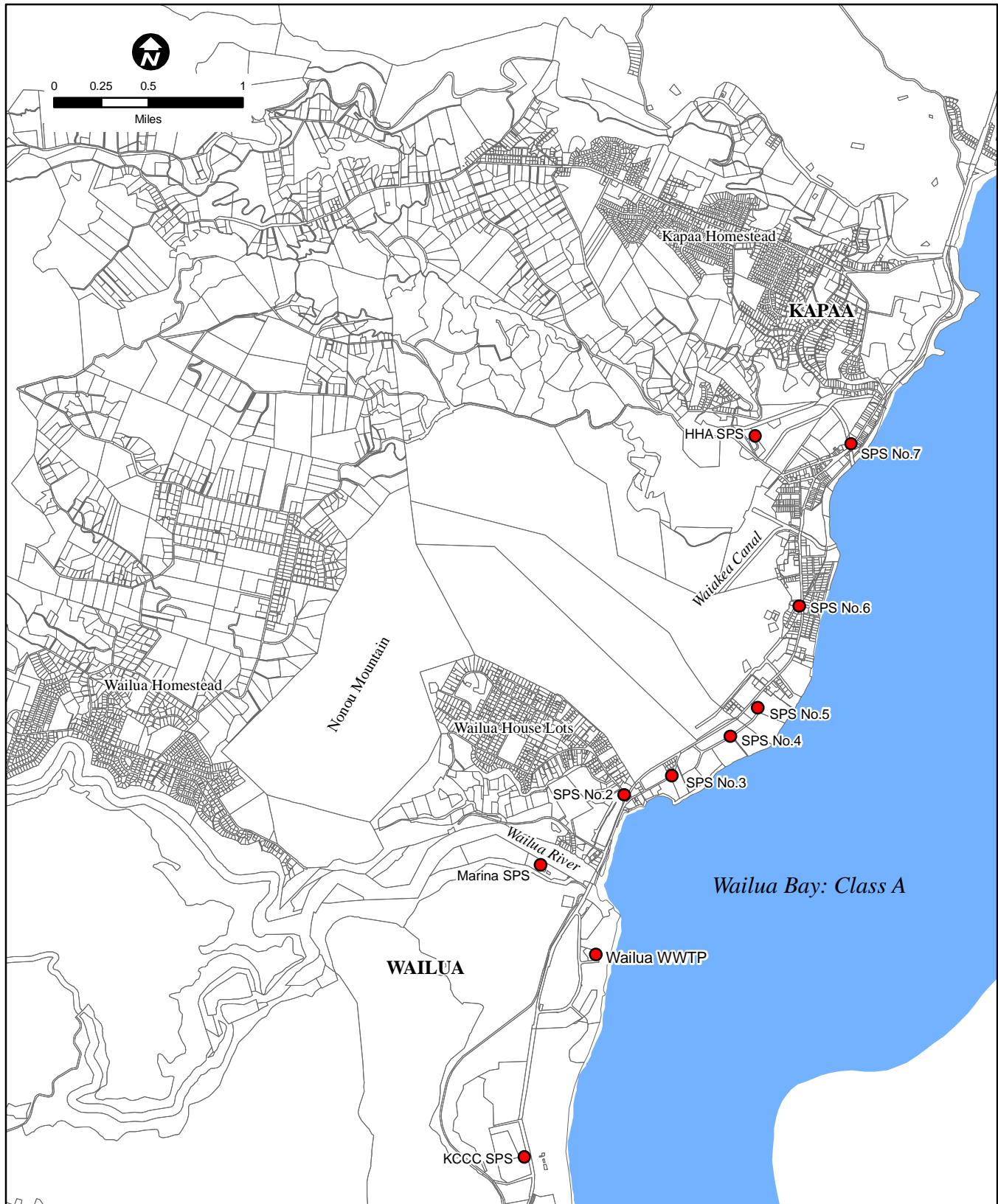
6. Geology

Two basic volcanic rocks dominate the geology of Kauai, the Waimea Canyon volcanic series and the Koloa volcanic series. The Koloa series covers most of the eastern half of Kauai and dominates the geology of the Wailua-Kapaa area. The Koloa series is much younger in age than the Waimea series and is defined as the series of volcanic rocks laid down on the rocks of the Waimea volcanic series after a long period of erosion. The two series are, therefore, separated by a profound erosional unconformity. The permeability of the Koloa series is much less than the Waimea series. Whenever beds of ash and other permeable materials are present, perched water bodies tend to occur. Perches of local aquifers can occur in layers where beds of cinder are overlain with less permeable materials. The Koloa series is known to carry fresh or brackish water at sea level elevations (reference 3).

7. Water Quality

“The Water Quality Standards Map” published by the State DOH, Office of Environmental Planning defines the marine waters off the coast of the study area as Class A (reference 4). See Figure 14 for more details. Hawaii Administrative Rules (HAR) Chapter 54 states,

“It is the objective of class A waters that their use for recreational purposes and aesthetic enjoyment be protected. Any other use shall be permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters. These waters shall not act as receiving waters for any discharge which has not received the best degree of treatment or control compatible with the criteria established for this class. No new sewage discharges will be permitted within embayments.”



WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Water Quality

FIGURE 14

8. Climate

The climate of Wailua is generally warm and subtropical with mild seasonal changes throughout the year. The variations in temperature encountered in the area range between 70.4 and 78.5° F on the average for the coolest and warmest month, respectively.

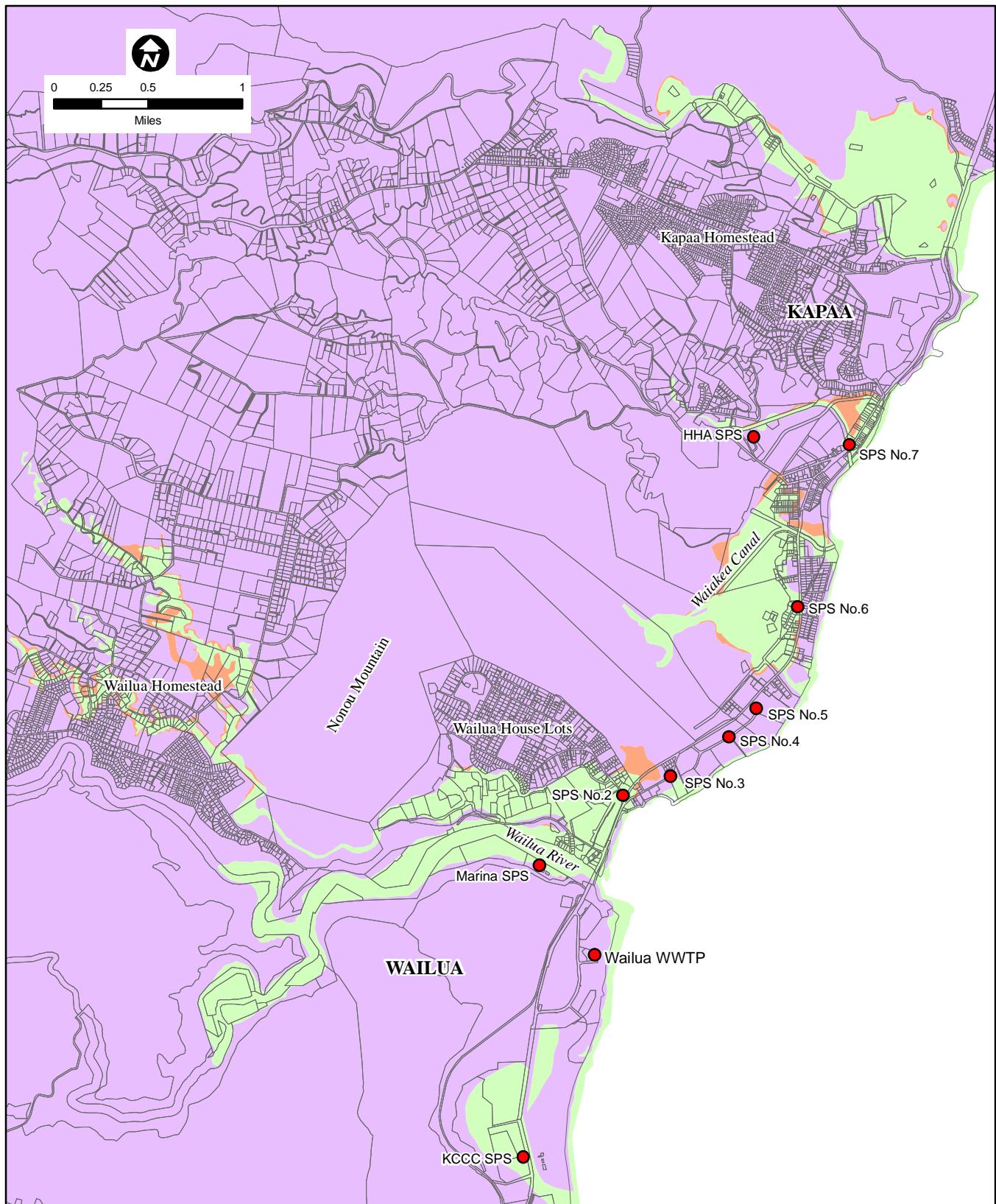
The Wailua area is characteristic of the windward coastal region where the prevailing winds, known as the trade winds, are generally from the northeast direction. The average rainfall in Wailua is approximately 49 inches per year per data collected by the National Climatic Data Center between the years 1971 and 2000 (reference 5).

9. Flood and Tsunami

The Flood Insurance Rate Map (FIRM), issued by the Federal Emergency Management Agency (FEMA), indicates that the Wailua WWTP is located in Zone X. This is an area determined to be outside of the 100 year flood plain. SPS No.3, 4, 5 and HHA SPS are also located within Zone X, while Marina SPS, KCCC SPS, SPS No.2, 6, and 7 are located Zone A, which is the 1% annual chance in 100 year. Figure 15 shows the flood zones for the Wailua area.

Recent Tsunami Evacuation Maps, as published by the Civil Defense Agency, indicates that the existing Wailua WWTP is not currently in a Tsunami Evacuation Zone. SPS No.3, 4, 5, 7 and the Marina SPS are located in a Tsunami Evacuation Zone, as shown in Figure 16. In the event of a tsunami warning, people in all areas within the Tsunami Evacuation Zone must be evacuated and follow additional instructions issued by the Civil Defense Agency.

Historical tsunami data indicated a wave height ranged from 12 to 20 feet along the shoreline near the project areas during both the 1946 and 1957 tsunamis.



LEGEND:

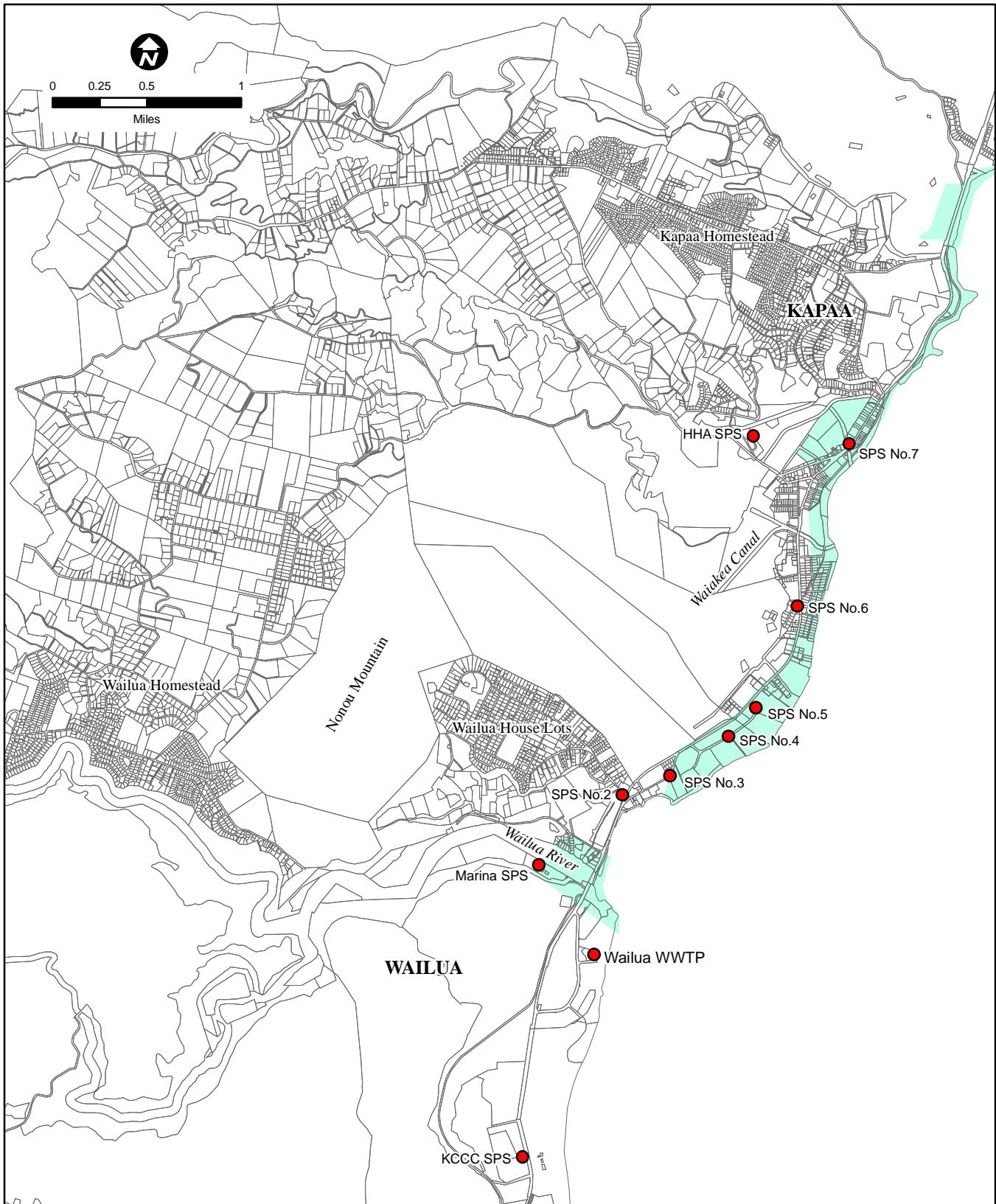
	A: 1% Annual Chance / 100 Year		X: Outside the 1%
	X500: 0.2% Annual Chance / 500 Year		D: Undetermined But Possible Flood

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Flood Insurance Rate Map

FIGURE 15



LEGEND:

Tsunami Evacuation Area

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Tsunami Evacuation

FIGURE 16

D. SOCIO-ECONOMIC FEATURES

Wailua and Kapaa are considered developing and growing areas in Kauai. There is relatively high population, many buildings, and more urban growth as compared to other cities in the island of Kauai.

In 2000, the United States Department of Commerce, Census Bureau conducted a census for all 50 states. According to this census, the total population of Wailua and Kapaa is 16,122, and an average household size is 2.89 (reference 6). According to the report “*Kauai Long-Range Land Transportation Plan – Existing Land Use and Future Land Use*”, estimated Single Family Unit counts in the areas of Wailua and Kapaa will increase approximately 20 percent between year 1994 and year 2020. Estimated Multi Family Unit counts will also increase from 120 units in 1994 to 530 units in 2020 (reference 7). The amount of future wastewater flow to the Wailua WWTP facility is anticipated to increase corresponding with the population growth.

E. SURFACE WATER QUALITY

According to the *2002 List of Impaired Waters in Hawaii, Prepared Under Clean Water Act §303(d)*, the Wailua River water quality is impaired by excessive counts of the bacterial indicator enterococcus. Consequently, the State Department of Health is in the process of implementing the Total Maximum Daily Load (TMDL) program for Wailua River. This program involves establishing TMDLs and developing an implementation plan to improve the water quality by reducing polluted runoff and discharge into Wailua River.

Wailua WWTP is located approximately 2,000 feet south of the mouth of Wailua River, and an influent force main to the treatment plant crosses the river at the bridge. However, there are no known leakages from the Wailua sewerage system, which may be contributing to the high levels of bacteria in the Wailua River.

F. ARCHAEOLOGICAL AND HISTORICAL CONSIDERATIONS

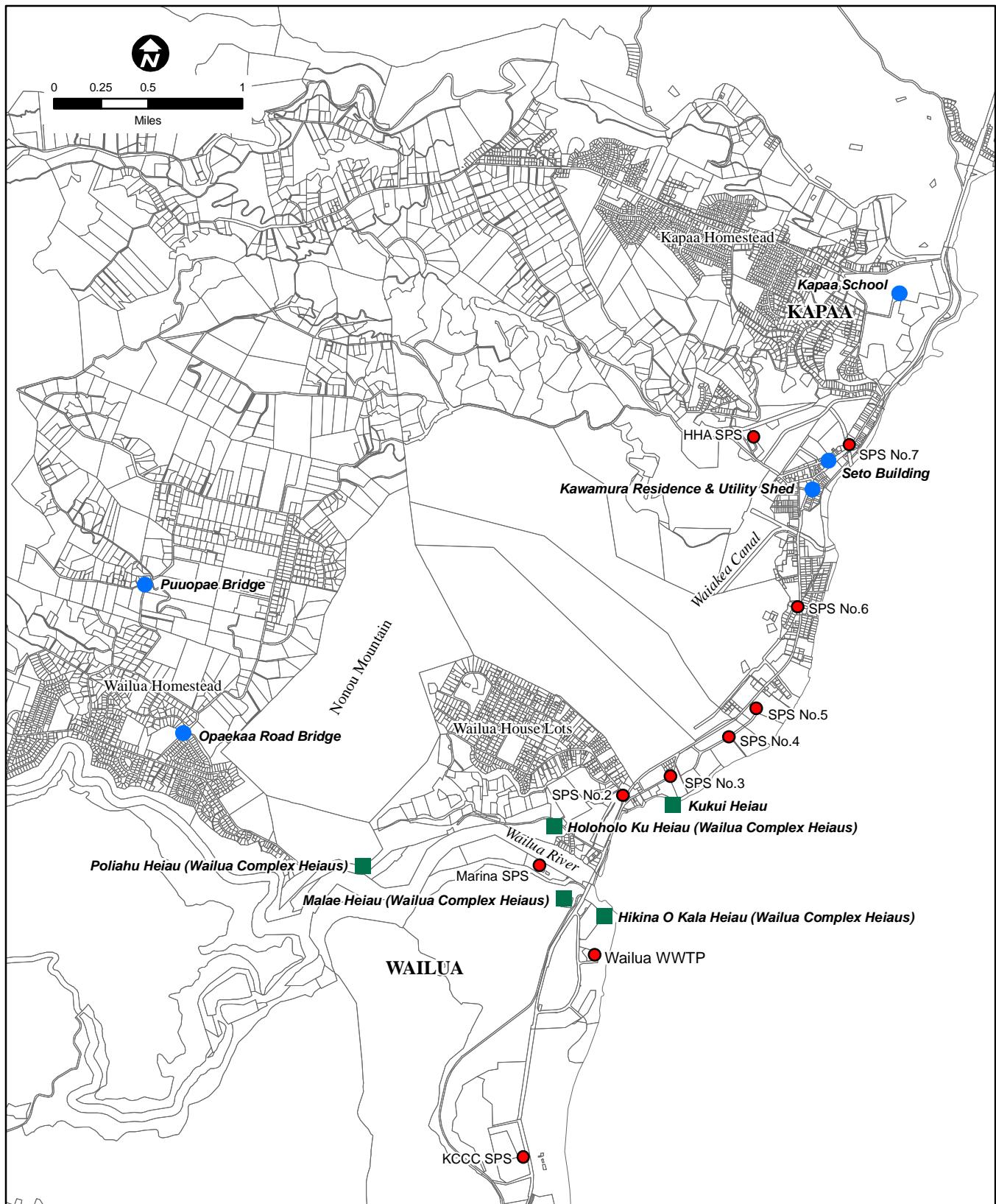
Wailua is known for a culturally significant area in Kauai, especially in the vicinity of the Wailua River. According to the *Malae Heiau: Vegetation Removal and Landscaping Plan* (reference 8), “The lands along the Wailua River comprised a political, religious, and social center for Kauai’s paramount chiefs who resided at Wailua most of the year.” The Wailua Complex of Heiau is identified and registered on the National and State Register of Historic Places (NRHP). Landscape elements, such as historic plantation town architecture in Kapaa, are also known and preserved as a significant historic cultural value of Kauai (reference 9). The State Department of Land and Natural Resources (DLNR), Historic Preservation Division recognizes historically significant structures in Kapaa (reference 10).

- Puuopae Bridge
(Site #: 30089398, TMK: 4-4-02)
- Opaekaa Road Bridge
(Site #: 30089377, TMK: 4-2-02:22)
- Seto Building
(Site #: 30089379, TMK: 4-5-11:31)
- Kapaa School
(Site #: 30089391, TMK: 4-6-14:31)
- Kawamura Residence and Utility Shed
(Site #: 30089393, TMK: 4-5-08:16)
- Wailua Complex of Heiaus
(Site #: 3008502, TMK: 3-9-06:01, 4-1-02:03, 4-2-13:17)
- Kukui Heiau
(Site #: 3008108, TMK: 4-3-02:01)

According to the DNLR, Historic Preservation Division, the Wailua WWTP service areas are within historically sensitive areas requiring careful planning and monitoring to ensure proper preservation. See Figure 17 for location.

G. FLORA

According to the data compiled by the Hawaii Biodiversity and Mapping Program and the Hawaii Gap Analysis Program, the project area has multiple classifications of low intensity development, cultivated land, grassland, scrub shrub, and wetland habitats (reference 11). The predominant vegetation zone along the eastern coast of Kauai is made up of open guava forest with shrubs. Characteristic vegetation within this zone includes Guava, Koa Haole, Lantana, Spanish clover and Bermuda grass. Surrounding residential and commercial areas are planted with Coconut trees, vegetable gardens, common landscaping trees, bushes and ornamental plants. The project areas are highly disturbed, and it is unlikely that any endangered species of flora are in the areas.



LEGEND:

- Registered Archaeological Sites
- Registered Historic Buildings & Structures

WAILUA FACILITY PLAN

COUNTY OF KAUAI
Department of Public Works
Division of Wastewater Management

Archaeological & Historical Places

FIGURE 17

H. FAUNA

Mammals in the vicinity of the project include feral cat, roof rat, cattle, dog, pig, and the Hawaiian hoary bat. Birds that are associated with the prevalent vegetation type along the eastern coast of Kauai include cardinal, spotted dove, barred dove, mockingbird, mynah, ricebird, white eye, house sparrow, elepaio, pueo, and golden plover. Elepaio and pueo are native Hawaiian birds, and the golden plover is an indigenous Hawaiian bird.

The U.S. Department of the Interior, Fish and Wildlife Service confirmed that there is no federally designated critical habitat in the proposed project area. However, the following species are observed in the project vicinity and listed as federally threatened and endangered species.

Federally threatened species –

Newell's shearwater (*Puffinus auricularis newelli*)

Federally endangered species –

Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*)

Hawaiian hoary bat (*Lasirus cinereus semotus*)

Hawaiian duck (*Anas wyvilliana*)

Hawaiian stilt (*Himantopus mexicanus knudseni*)

Hawaiian goose (*Branta sandvicensis*)

Hawaiian moorhen (*Gallinula chloropus sandvicensis*)

Hawaiian coot (*Fulica alai*)

Hawaiian monk seal (*Monachus schauinslandi*).

The project areas are already highly disturbed, and it is unlikely that any of the endangered or critical fauna species listed above inhabit the areas.

III. PROBABLE IMPACTS AND MITIGATIVE MEASURES

A. SHORT TERM IMPACTS

Short term impacts are associated with the construction activities at each of the project sites. The impacts are not anticipated to be significant; and will be controlled and minimized by Federal, State, and County of Kauai laws, regulations, best management practices (BMPs), permit requirements and monitoring of construction by County inspectors.

1. Air Quality

(Clean Air Act, Pub.L. 84-159, as amended)

There will be a temporary increase in dust, and vehicular and equipment exhaust emissions in the vicinity of the project areas during construction. Dust resulting from construction is anticipated to be minimal. The Contractor will be required to comply with Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control." and Section 11-60.1-33, "Fugitive Dust." Dust control will be maintained by sprinkling with water when needed. Exhaust emission should not have any significant effect on the area because prevailing winds should disperse any exhaust gas concentration.

2. Erosion

The Contractor will be required to implement erosion and sediment control measures during the construction as appropriate.

3. Surface Water Quality

A NPDES permit will be required because the contiguous area to be disturbed by construction activities is approximately 1.6 acres. The Contractor will be responsible for obtaining an NPDES permit from the State Department of Health, Clean Water Branch. Through the permitting process, the Contractor will propose construction BMPs for approval. Mitigation measures will be anticipated to make the disturbance small and short duration.

4. Traffic

Temporary impacts to traffic may occur during the construction of the improvements. A traffic control plan will be required at the time of construction to minimize traffic impacts in the work areas.

5. Noise

There will be an increase in noise from the construction activities. However, the work will be limited to normal working hours. The Contractor will be required to comply with the requirements of the DOH Hawaii Administrative Rules, Chapter 11-46, "Community Noise Control."

6. Fauna

Construction timing should avoid disturbance to possible nesting wetland birds in area adjacent to wetlands. Hawaiian petrel and Newelli's shearwater are known to transit this area and are prone to collisions with objects in artificially-lighted areas. Artificial lighting and structures higher than the current existing vegetation will attract seabirds circling the light source, and they might collide with structures or fall to the ground. Lights should be designed to prevent the attraction of these nocturnal seabirds (i.e. no emit light upward or no light at night). Contractors need to consult with U.S. Fish and Wildlife Service if necessary.

B. LONG TERM IMPACTS

Long term impacts are generally those impacts related to the operation of the proposed new improvements. Appropriate design, and competent, efficient, and effective operations and maintenance will mitigate any potential negative long term impacts associated with the implementation of the project.

1. Water Quality

a. Surface Water

No negative long term impacts on surface water quality are anticipated. As discussed, the recommended improvements address existing deficiencies in the conveyance and treatment capabilities of the Wailua sewerage system, and will serve to preserve the water quality of surrounding water bodies. The recommended improvements will also improve the quality of the treated effluent in the event that the ocean outfall is used for effluent disposal.

b. Ground Water

(Safe Drinking Water Act, Pub.L. 93-523, as amended)

The Wailua WWTP is an R-2 facility and does not use underground injection wells for disposal of plant effluent. Wastewater is treated in the facilities and conveyed to Wailua Golf Course for irrigation or to an ocean outfall. Therefore, the project does not adversely impact ground water aquifers.

2. Agricultural Land

(Farmland Protection Policy Act, Pub.L. 97-98)

Additional land to expand the existing facility will be needed adjacent to the Wailua WWTP. The land is designated as “Urban” in the State Land Use and “Open” in the CZO. Therefore, this project will have no added effect on “Agricultural” lands.

3. Coastal Zone Management

(Coastal Zone Management Act, Pub.L. 92-583, as amended)

The proposed project conforms to the State Coastal Zone Management Program requirements. Areas of the Wailua and Kapaa urban corridor are within the coastal zone SMA. However, the work may be considered “repair, maintenance, or interior alterations to existing structures”, and “repair and maintenance of underground utility lines”; therefore, an SMA permit may not be required for these sites.

4. Floodplain Management

(Floodplain Management, Executive Order 11988, as amended by Executive Order 12148)

Due to the nature of wastewater collection, treatment and disposal systems, pump stations and treatment plants are typically in areas lower than the associated service areas. The Wailua WWTP service area is generally in low-lying areas near the coast, and developed areas within the flood plain must be served.

Although the Wailua WWTP is outside of the 100-year flood plain, several pump stations are located within the 100-year flood plain. The Wailua River runs by the State’s Marina SPS; SPS No.7 is located by Moikeha Canal; and SPS No.2, No.6 and the State’s KCCC SPS are located in wetlands or lower areas. The Wailua WWTP is located at an elevation of approximately 10-25 feet. As mentioned earlier, historical tsunami data indicated wave heights ranged from 12 to 20 feet along the shoreline near the project areas during both the 1946 and 1957 tsunamis. This incident must be considered when the existing facilities are re-constructed.

5. Flora and Fauna

(Endangered Species Act, Pub.L. 93-205, as amended and Fish and Wildlife Coordination Act, Pub.L. 85-624, as amended)

There are no indications of rare or endangered flora in the project area. Although the U.S. Department of Interior, Fish and Wildlife Service has confirmed that threatened and endangered species are observed in Wailua-Kapaa area, the project sites are already highly disturbed and developed. Therefore, no negative impacts to existing plants and mammals are anticipated.

6. Air Quality

(Clean Air Act, Pub.L. 84-159, as amended)

No long term negative impacts on air quality resulting from the proposed project are anticipated.

7. Visual Impacts

The visual impacts of the proposed project area are not expected to be significant. The work will be done in the existing facilities or will be underground.

8. Archeological and Historical Sites

(Archaeological and Historic Preservation Act of 1974, Pub.L. 86-523, as amended and National Historic Preservation Act, Pub.L. 89-665, as amended)

The proposed project is in a culturally and historically significant area. However, since the project will be in areas that have been previously disturbed, no adverse effect on significant historic sites or human burials is anticipated. Construction and the required mitigation plans will be coordinated with the State Historic Preservation Division, the Kauai Burial Council and the Office of Hawaiian Affairs in accordance with the Hawaii Revised Statutes (HRS) and the Hawaii Administrative Rules to minimize any long term negative impacts on historic sites.

9. Public Health and Safety

Public health and safety will be a priority of this project. Monitoring will be conducted to ensure protection of public health and safety. State DOH regulations will be followed; therefore, no public health or safety problems associated with the system improvements are anticipated.

IV. ALTERNATIVES TO THE PROPOSED PROJECT

A. NO ACTION ALTERNATIVE

The No Action Alternative is unacceptable because the proposed improvements must be made to the existing Wailua sewerage system for continued compliance with the State DOH regulations, to protect the public and the environment.

B. ALTERNATIVE SITES

The proposed improvements are associated with existing facilities, particularly Wailua WWTP and seven sewerage pump stations. The expansion of the Wailua WWTP needs to be adjacent to the existing plant to allow integration of the existing and new treatment processes. If a new sewage pump station needs to be constructed, it must be adjacent to the existing pump station because the pump station is fed by gravity from the sewer system. This limits the site options for facilities to lands that are in close proximity to the existing facilities. Therefore, alternative site analysis is not applicable.

C. ALTERNATIVE SEWERAGE IMPROVEMENTS

One alternative sewerage improvement is to use a traditional treatment train instead of an MBR system. An MBR system is modular, which will allow the treatment plant to expand in small or large increments. The existing treatment plant has excess capacity. If the Wailua WWTP expands beyond 1.0 mgd using the traditional anoxic-aerobic process, site constraints will require that the anoxic and aerobic tanks constructed in the near term be demolished to make room for additional facilities to treat the increased flow. An MBR system will be able to re-use existing tanks. Furthermore an MBR system will ultimately be less expensive to construct than a traditional treatment train. Therefore, constructing an MBR system is recommended.

Another alternative sewerage improvement is to consolidate wastewater treatment to one plant. The facility plan proposes an expansion of the existing treatment plant and the construction of a new treatment plant. The treatment capacity of the Wailua WWTP is limited by site boundary constraints, as well as effluent disposal capabilities, and eventually another treatment plant will be needed. The process to site and construct any new treatment plants in the area would likely take 10 to 15 years as a minimum. During this time, the Wailua WWTP will require major work to keep the plant operating reliably, which would entail a significant investment of time and money by the County. The Wailua WWTP is ideally situated in close proximity to the Wailua Golf Course, a major user of effluent for irrigation, and the treatment plant has an existing ocean outfall. The availability of these pre-existing wastewater disposal options further increases the value of the current Wailua WWTP location. Therefore, prior to when the future wastewater flows exceed the build-out capacity of the current Wailua WWTP, operating two treatment plants in the area is recommended.

V. PERMITS AND APPROVALS REQUIRED

Several permits, approvals and clearances may be required for the recommended improvements from the County of Kauai, the State of Hawaii, and the Federal Agencies.

A. APPROVALS

- Kauai Burial Council
Burial Treatment Plan (if burials are found)
- State Department of Health, Environmental Health Administration, Environment Management Division, Wastewater Branch Engineering Report
- State Department of Land and Natural Resources, Historic Preservation Division Monitoring Plan
Burial Treatment Plan (if burials are found)
- State Department of Health, Disability and Communication Access Board, Plans and Specifications conformance with American Disabilities Act

B. PERMITS

- National Pollutant Discharge Elimination System Permit, State of Hawaii, Department of Health (if required, based on Contractor's construction methods)
- NPDES Stormwater, Construction Dewatering, Hydrotesting Permit
- NPDES for offshore effluent disposal (if required based on effluent disposal methods used)
- Underground Injection Control (UIC) Permit
- Building Permit
- Grading Permit
- Pressure Vessel and Boiler Permit
- Fuel Storage Tank Permit
- Wastewater Management Permit
- Conditional Use Permit
- Noncovered Stationary Source for Permit (modification/update)
- Water Quality Certification
- Community Noise Permit
- Notification of Renovation and Demolition Permit
- Well Construction Permit (if required based on effluent disposal methods used)

The permit application must be completed and approved prior to any wastewater improvements.

VI. AGENCIES AND ORGANIZATIONS CONSULTED

The following agencies were consulted directly or indirectly during the preparation of this document.

- State of Hawaii, Department of Hawaiian Home Lands
- County of Kauai, Planning Department
- County of Kauai, Department of Public Works
- U.S. Fish and Wildlife Services
- National Oceanic and Atmospheric Administration (NOAA), The Pacific Islands Regional Office of the National Marine Fisheries Service (NMFS)

VII. FINDINGS AND DETERMINATION

A. FINDINGS

Based upon the guidelines and provisions of Significance Criteria listed in §11-200-12 Environmental Impact Statement Rules and Chapter 343, HRS, the findings of this environmental assessment are:

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource:

Loss or destruction of a natural or cultural resource is not anticipated. As described in this assessment, careful planning and coordination must be done with review and approvals by the State Historic Preservation Division, the Kauai Island Burial Council, and other concerned parties. Any finding of archaeologically significant resources during construction will be handled in compliance with the approved plans. In addition, the proposed project protects the natural environment by improving the wastewater systems and wastewater treatment facilities for disposal and reuse. Wastewater reuse also helps to conserve water resources.

2. Curtails the range of beneficial uses of the environment:

The proposed project is improving wastewater treatment to ensure water quality for reuse and disposal; therefore, it is enhancing the beneficial use of the environment.

3. Conflict with the State's long term environmental policies or goals and guidelines as expressed in Chapter 344, Hawaii Revised Statutes, and revisions thereof and amendments thereto, court decisions or executive orders:

The proposed project is in accordance with the guidelines set forth in the State Environmental Policy Chapter 344, HRS.

4. Substantially affects the economic or social welfare of the community or State:

The proposed project provides the wastewater infrastructure necessary to keep up with the needs of the community. The improved operating conditions and better effluent quality will enhance the welfare of the community.

5. Substantially affects public health:

The proposed project will improve public health protection by providing sanitary wastewater infrastructure that complies with Federal, State and County requirements.

6. Involves a substantial secondary impact, such as population changes or effects on public facilities:

The population in Wailua-Kapaa is projected to be increased, and many residences that are using IWS will connect to the County sewer systems. In order to accommodate the growing incoming wastewater flow, the proposed sewer system improvements are needed to protect the public health. Although the public facilities, which are the County roads and the State highways, may be affected where sewer lines are replaced, the impacts will be temporary and minimal. Therefore, substantial secondary impacts are not anticipated.

7. Involves a substantial degradation of environmental quality:

The proposed project will not involve any substantial degradation of environmental quality. As described in this assessment, the impacts on the environment are generally beneficial. Negative impacts are minimal.

8. Individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions:

As described in this assessment, the proposed project does not have any significant effects upon the environment or involve any commitment for larger actions.

9. Substantially affects rare threatened or endangered species, or its habitat:

There are no identified endangered or critical species of flora and fauna in the vicinity of the project sites that would be disturbed.

10. Detrimentally affects air or water quality or ambient noise levels:

The proposed project will have positive impacts on water quality by improving wastewater transmission and effluent quality for reuse and disposal. This project will not detrimentally affect 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, freshwater, or coastal waters:

As discussed in the previous section, the proposed project does not detrimentally affect any environmentally sensitive area. The Wailua WWTP is outside of the 100-year flood plain and tsunami evacuation zone. The proposed project, which involves the improvement and expansion of the existing wastewater systems and facilities, is necessary in order to provide sanitary sewer service in the area to protect public health. The proposed facilities that are within the flood and tsunami

hazard frequently occurred area will be designed and constructed to be flood resistant or flood proof to minimize damage as a result of floods or inundation by tsunami.

12. Substantially affects scenic vistas and view planes identified in county or state plans or studies:

The proposed project does not affect any scenic vistas or views.

13. Requires substantial energy consumption:

The energy consumption at the project sites will be slightly increased by improvements due to an increase in conveyance and treatment capacity. However, this is a necessary public utility and will be designed to be as energy efficient as possible.

B. FINDINGS BASED ON DOH STATE ENVIRONMENTAL REVIEW PROCESS (SERP) CRITERIA

The proposed action involves the use of State Revolving Funds and is subject to the DOH SERP criteria, which addresses that the analysis of alternatives and impacts shall include the following items.

1. The primary and secondary (direct and indirect) impacts for all feasible alternatives (to include the “no action” alternative).

The proposed action and impacts are discussed in Section I and Section III, and alternatives to the proposed action are discussed in Section IV.

2. The impacts on social parameters such as land use, recreation and open-space opportunities.

As discussed in Section III, the impacts are not anticipated to be significant.

3. The cumulative impacts such as anticipated community growth (residential, commercial, institutional, and industrial) within the project and study area.

This is discussed in Section VII, Paragraph A, Item 6 of the DOH 11-200-12 Significant Criteria.

4. The impacts on other anticipated public works projects (if any) and the planned coordination with them.

This is discussed in Section I, Paragraph B. There are some projects held or to be held in the proposed project area; however, no impact is not anticipated.

5. The impacts on any individual sensitive environmental issues that have been identified through the public participation program.

No individual sensitive environmental issues have been identified during the pre-consultation. The public will have the opportunity to bring any issues in the 30-day public comment period for this EA of the proposed action.

C. DOH CROSS-CUTTING AUTHORITIES

According the DOH Environmental Documents Criteria, any Environmental Assessment Document submitted for an HSRFP (Hawaii State Revolving Fund Program) project shall also address the impacts on other Federal “cross-cutting” authorities to include the following:

1. Archeological and Historic Preservation Act

Discussed in Section III, Paragraph B, Item 8.

2. Clean Air Act

Dust is anticipated during construction, but it will be temporary and contractors must practice mitigative measures followed by the Federal, State, and County regulations related to construction activities. Discussed in Section III, Paragraph B, Item 6.

3. Coastal Zone Management Act

Discussed in Section III, Paragraph B, Item 3.

4. Endangered Species Act

Discussed in Section II, Paragraph G and H, and Section III, Paragraph B, Item 5.

5. Farmland Protection Policy Act

Discussed in Section III, Paragraph B, Item 2.

6. Fish and Wildlife Coordination Act

Discussed in Section III, Paragraph B, Item 5.

7. Floodplain Management

Discussed in Section III, Paragraph B, Item 4.

8. National Historic Preservation Act

Discussed in Section III, Paragraph B, Item 8.

9. Safe Drinking Water Act

Discussed in Section III, Paragraph B, Item 1.

10. Protection of Wetlands

Discussed in Section II, Paragraph C, Item 3.

D. DETERMINATION

Based upon the above findings and considerations, the proposed project is not anticipated to have significant adverse environment impacts on the historic sites, coastal waters, local ecology, hydrology and atmosphere. Mitigation measures will be implemented as deemed necessary and as required by the government agencies. A Finding of No Significant Impact (FONSI) determination is anticipated. Therefore, an Environmental Impact Statement is not required for the *Wailua Facility Plan*.

VIII. REFERENCES

1. County of Kauai, Planning Department. The Comprehensive Zoning Ordinance for the County of Kauai.
<<http://kauai-realtor.com/czo.htm>>
2. County of Kauai, Planning Department. Kauai General Plan 21 February, 2003.
<<http://www.kauai.gov/Government/Departments/PlanningDepartment/TheKauaiGeneralPlan/tabid/130/Default.aspx>>
3. MacDonald, D.A. and Cox, D.C. “The Geology and Groundwater Resources of the Island of Kauai, Hawaii.” 1960
4. Hawaii Department of Health, Office of Environmental Planning. “Water Quality Standards Map of Islands of Kauai and Niihau.” October, 1987.
5. National Climate Data Center “1971-2000 Climate Norms.”
6. United States Census Bureau. *Census 2000.*
7. County of Kauai. Long-Range Land Transportation Plan Table E-1 & E-2.
8. State of Hawaii, Department of Land and Natural Resources, Division of State Parks. “Malae Heiau: Vegetation Removal and Landscaping Plan” April 1997
9. National Register of Historical Places – Hawaii, Kauai County.
<<http://www.nationalregisterofhistoricplaces.com/hi/Kauai/state.html>>
10. State of Hawaii, Department of Land and Natural Resources, Historic Preservation Division. “Hawaii and National Register of Historic Places”
<<http://www.state.hi.us/dlnr/hpd/hpregistr.htm>>
11. U.S. Fish & Wildlife Service. “Critical Habitat for 83 Plant Species from Kauai and Niihau.” July 2007.
<<http://www.fws.gov/pacificislands/CHRules/Kauai.reproposal.fs.pdf>>