BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
JANET E. KAWELO

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
ENGINEERING BRANCH
PLANNING BRANCH
TECHNICAL & SUPPORT BRANCH
STATE PARKS

REF:LD/WL-EK

RECEIVED
'99 OCT 11 A8:19
OFC. OF ENVIRONMENTAL QUALITY CONTROL

OCT -7 1999

TO: Genevieve Salmonsen, Director
Office of Environmental Quality Control

FROM: Timothy E. Johns, Chairperson

SUBJECT: **Final Environmental Assessment for Job No. 93-KP-B7 Kokee Exploratory Well No. 0739-03 Development, Kokee, Kauai**

The Department of Land and Natural Resources has reviewed the public comments received during the comment period for the draft environmental assessment. The Department has determined that the subject project will have no significant effect on the environment and has issued a Finding of No Significant Impact (FONSI) determination. Please publish a notice of availability for this project in the next OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form, four (4) copies of the Final Environmental Assessment, and the project summary on disk. Please call Hiram Young of the Engineering Branch at 587-0260 if you have any questions.

Enclosures
c: Division of State Parks

OCT 2 3 1999

1999-10-23-KA-FEA- (rest of title in yellow) FILE COPY

Chapter 343, Hawaii Revised Statutes (HRS)

FINAL

ENVIRONMENTAL ASSESSMENT

FOR

JOB NO. 93-KP-B7

KOKEE EXPLORATORY WELL NO. 0739-03 DEVELOPMENT

KOKEE, KAUAI

Proposing Agency:

Department of Land and Natural Resources
State of Hawaii

September 1999

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Purpose of Document

The State of Hawaii, Department of Land and Natural Resources (DLNR), Division of State Parks, is proposing to develop the existing Kokee Exploratory Well No. 0739-03 located at the Kokee State Park, Kauai. The proposed improvements constitute an agency action which is subject to Section 11-200-9 of the Environmental Impact Statement Rules, Title 11, Chapter 200, Department of Health, State of Hawaii, pursuant to Chapter 343, Hawaii Revised Statutes. The proposed action is anticipated to have no significant effect on the environment.

Purpose of Project

The purpose of this project is to develop Kokee Exploratory Well No. 0739-03 as a potable drinking water source. A Final Environmental Assessment and Negative Declaration for the exploratory well was previously filed with the Office of Environmental Quality Control on December 23, 1995. The existing Well "A," which provides water to Kokee State Park, is inadequate to meet the current potable water needs of the park. The well has been running constantly and pumped "dry" on several occasions.

Proposed Action

The proposed project involves the installation of a forty (40) gallon per minute submersible pump, pump controls, connecting 3-inch pipeline, chlorination (hypochlorite) system, and related electrical work.

Anticipated Impacts and Mitigation Measures

The anticipated environmental impacts will be primarily short-term associated with construction activities. Use of construction equipment will create noise, dust, and exhaust emissions. Noise, dust, and air pollution controls will be included in the contract specifications.

I. GENERAL INFORMATION

A. PROJECT SUMMARY

Pursuant to Chapter 343, Hawaii Revised Statutes (HRS) for Environmental Assessments:

Proposing Agency:	Department of Land and Natural Resources Engineering Branch, Land Division
Accepting Agency:	Department of Land and Natural Resources
Project Name:	Kokee Exploratory Well No. 0739-03 Development, Kauai
Project Description:	Installation of a submersible pump, connecting pipeline, chlorination system, and related electrical improvements
Anticipated Determination:	Finding of No Significant Impact (FONSI)
Project Location:	Kokee State Park, Kauai
Tax Map Key:	1-4-01:13
Landowner:	State of Hawaii

B. AGENCIES CONSULTED

Department of Land and Natural Resources
- Historic Preservation Division
- Division of State Parks
- Division of Forestry and Wildlife
- Commission on Water Resource Management
- Division of Aquatic Resources

Office of Environmental Quality Control

C. PERMITS REQUIRED

Commission on Water Resource Management -	Well Construction Permit/Pump Installation Permit

County of Kauai - Building Permit

II. PROJECT DESCRIPTION

A. PROJECT NEED

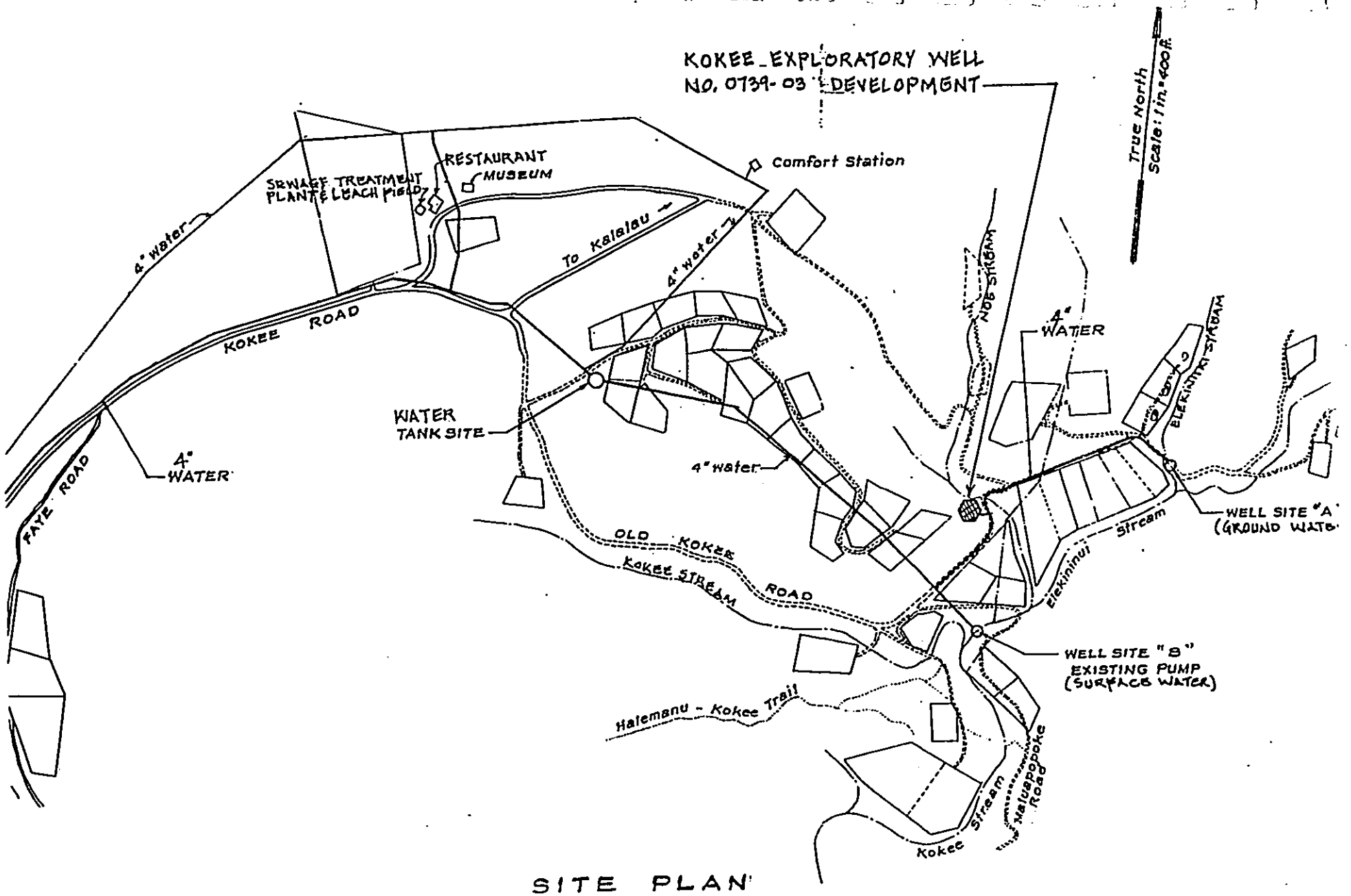
The Kokee State Park was originally serviced by a surface water source pumped from the Elekeninui Stream. However, the surface water was plagued with problems of turbidity and water quality. To resolve these problems, and meet the Department of Health's drinking water standards, two wells were drilled and developed. The two wells are located at an elevation of 3,560 feet above sea level. Well "A" is located near the intersection of Elekeninui and Elekeniiki Streams. Well "B" is located approximately 500 feet from the Park's pump house source, which lies on the opposite bank of Elekeninui stream (See Exhibit 1 for location of existing Kokee State Park Water Sources). Currently, Well "A" is the primary source and produces approximately 40 gallons per minute (gpm). Well "B," due to its location in a dense basalt geological formation which limits water production, is used as a standby source. All waters produced by the wells are pumped and stored at a 200,000-gallon storage tank.

B. PROPOSED IMPROVEMENTS

The proposed project will develop the existing Kokee Exploratory Well No. 0739-03 as a potable drinking water well. The project calls for the installation of a 40-gpm submersible pump, pump controls, connecting 3-inch pipeline to the existing 4-inch transmission water line, chlorination (hypochlorite) system, and related electrical improvements.

C. TECHNICAL CHARACTERISTICS

The proposed project involves installing a 5-horsepower submersible pump into a 12-inch diameter cased well, approximately 150 feet deep. The submersible pump will be capable of pumping 37-40 gpm at 297 feet of head. Approximately 25 linear feet of 3-inch ductile iron pipe and related fittings will be installed to connect the well to the existing 4-inch transmission line. A chlorination system using a hypochlorite solution will be installed to provide disinfection for the water system. The electrical improvements consist of connecting to the existing overhead line and installing a meter, service equipment, motor control center, power, and control wiring for the pump and chlorination system (See Exhibit 2 for layout of improvements).



SITE PLAN

EXHIBIT 1

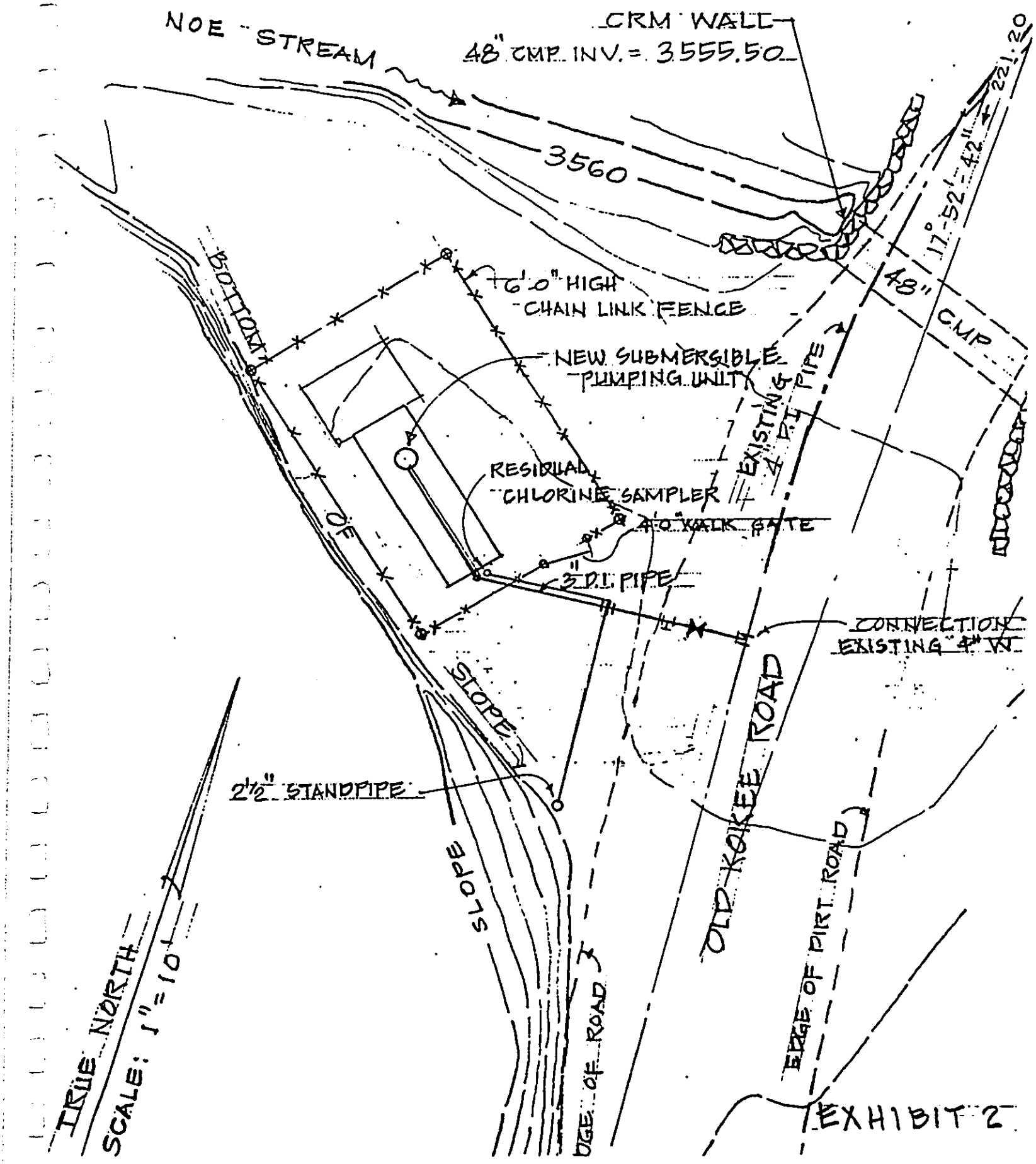

NOE STREAM
CRM WALL
48" CMP. INV. = 3555.50
3560
BOTTOM
OF
SLOPE
6'-0" HIGH
CHAIN LINK FENCE
NEW SUBMERSIBLE
PUMPING UNIT & PIPE
RESIDUAL
CHLORINE SAMPLER
4'-0" WALK GATE
3" D.I. PIPE
2½" STANDPIPE
EXISTING 4" A.I.
48" CMP
17°-52'-42" = 221.20
CONNECTION
EXISTING 4" W.
OLD KOKEE ROAD
EDGE OF DIRT ROAD
SLOPE
EDGE OF ROAD
TRUE NORTH
SCALE: 1" = 10'

EXHIBIT 2

III. ENVIRONMENT

A. TOPOGRAPHY AND CLIMATE

The proposed well site is located within the Kokee State Park. The Kokee State Park encompasses approximately 4,345 acres of land located in the northwestern portion of Kauai and is identified by TMK: 1-4-01:13 (See Exhibit 3). By Executive Order 1509, dated May 15, 1952, the government-owned lands within the Territorial Forest Reserve were set aside as a Territorial Park to be known as the "Kokee Park." The park is administered by the Division of State Parks, Department of Land and Natural Resources. The park is noted for its many scenic lookouts and beautiful surroundings. The climate in the area is generally cool and sunny to misty most of the time. Annual rainfall in the area is about 60 inches. Temperatures at the park range from approximately 45 to 80 degrees F. The State Land Use classification is Conservation and is within the Resource Subzone.

No endangered, rare, or threatened species of fauna or flora were found at this site during the construction of the exploratory well. Nor was there any evidence of significant archeological or historic sites encountered during the construction of the exploratory well. However, if anything of significance is found during construction, work will be halted and the State Historic Preservation Division will be contacted.

B. HYDROLOGY

The Kokee Exploratory Well No. 0739-03 is located in the Waimea Aquifer of the Waimea Sector of Kauai (See Exhibit 4). Several streams are found in the vicinity of the project. These streams are the 1) Kokee Stream, 2) Noe Stream, 3) Elekininui Stream, and 4) Elekiniiki Stream. According to the Kauai Water Use and Development Plan, the estimated sustainable yield for the Waimea Sector is 42 million gallons per day (mgd). The 12-inch diameter well was drilled and tested at 40 gpm in August 1996. A copy of the well completion report, filed with the Commission on Water Resource Management (CWRM), is attached as Appendix 1. A monitoring report, prepared by the United States Geological Survey (USGS), indicated that there appeared to be no reduction in stream flow during the pump test. The USGS report did not recommend any further monitoring of the stream or the swampy area near the well site. The geologic data collected from the drilling and pump test suggests the presence of a perched high level aquifer. As such, the yield of the well will be limited to about 40 gpm or less.

Water samples were collected at the existing 200,000 gallon reservoir during the pump test and analyzed for potential contamination in the aquifer for chlorides, turbidity, heavy metals, inorganic, and organic chemicals. The results of the analysis showed that the water is of good quality. The results of the testing are included in Appendix 2. However, to meet the Department of Health's requirements for a new drinking water source,

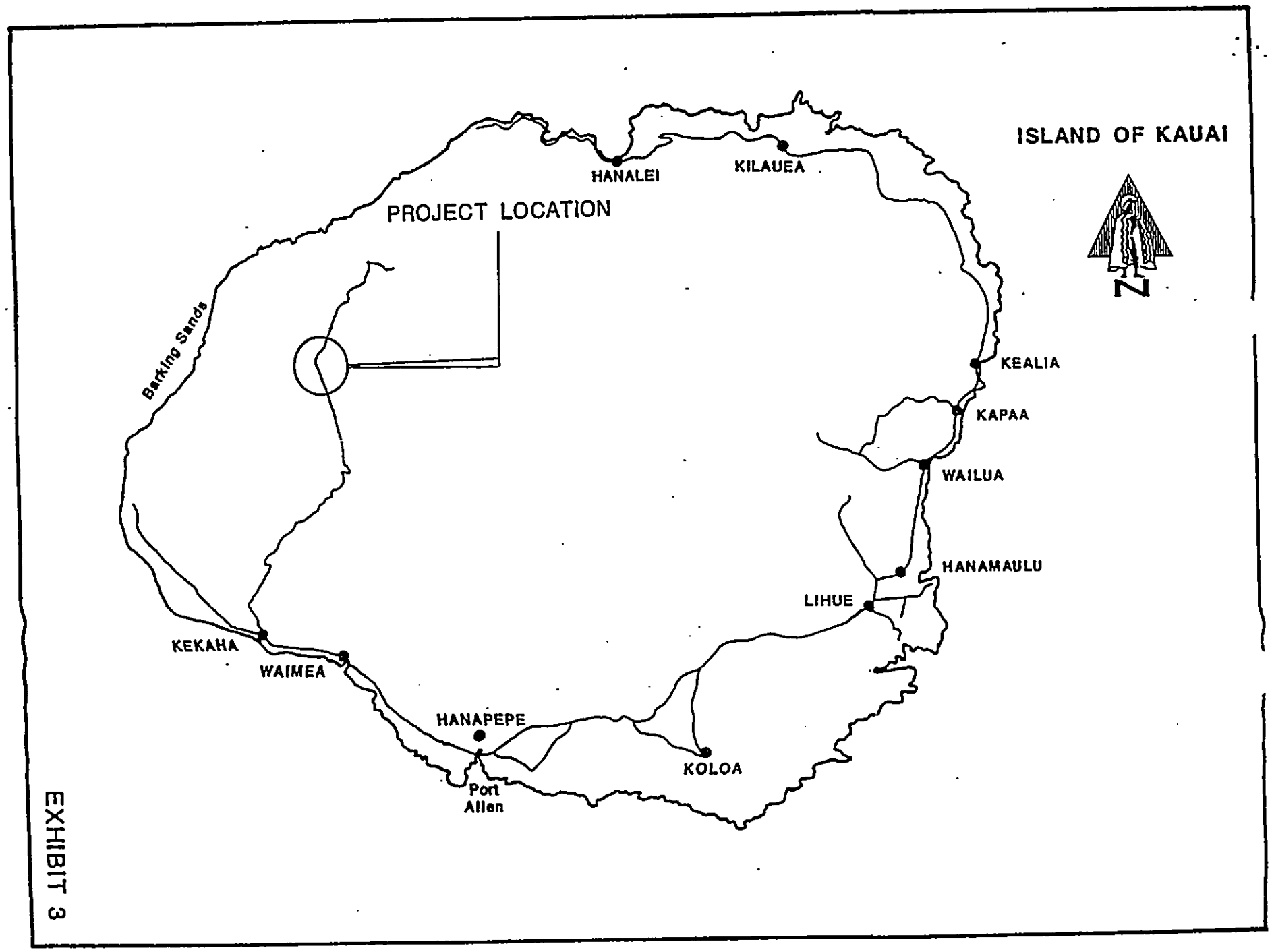
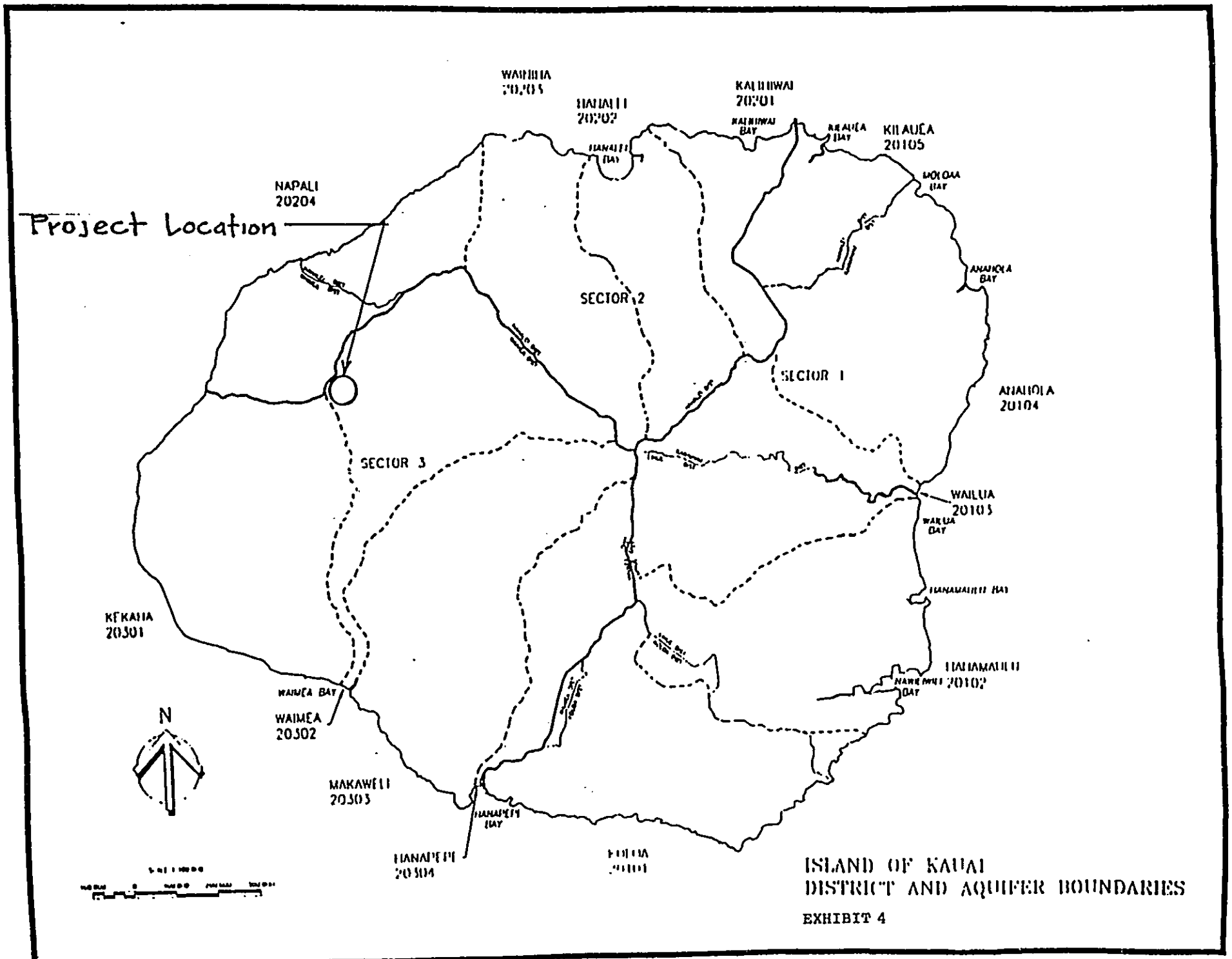

ISLAND OF KAUAI
N
HANALEI
KILAUEA
PROJECT LOCATION
Barking Sands
KEALIA
KAPAA
WAILUA
HANAMAULU
LIHUE
KEKAHA
WAIMEA
HANAPEPE
KOLOA
Port
Allen

EXHIBIT 3



ISLAND OF KAUAI
DISTRICT AND AQUIFER BOUNDARIES

EXHIBIT 4

another water quality test will be conducted on water collected from the well and tested for potential contaminants. The test results will then be summarized and submitted to the to the Department of Health's Drinking Water Branch for their review and approval of the Kokee Exploratory Well No. 0739-03, as a drinking water source.

Calculation of the hydrologic budget is an exercise in approximate accounting. Not only are the component values assumed, due to lack of information, the regional extent to which the budget applied is also unknown. This is especially true in the Waimea Sector of Kauai, where regional data base information is sparse and hydrogeological relationship of the basal lens and the high level groundwater is uncertain.

A potential source of contamination for the Kokee Exploratory Well Development would be from the sewage treatment plant for the Kokee Lodge and Restaurant and individual wastewater systems for the various home sites near the well. A chlorination system will be provided to protect the well water from contamination from these sources. There are no other known sources of contamination near the well site.

C. FLORA AND FAUNA

No rare, endangered, or threatened species of fauna or flora are expected at this site. The majority of species present are introduced and exotic. The project site has been previously disturbed by the construction of Wells"A" and "B," the transmission line, and drilling of Kokee Exploratory Well No. 0730-03.

D. ARCHAEOLOGY

During the preparation of the environmental assessment for the drilling of Kokee Exploratory Well No. 0730-03, the State Historic Preservation Division confirmed that there will be "no effect" upon significant historic sites. This was confirmed during the construction of Kokee Exploratory Well No. 0730-03. However, due to the uncertainty of encountering archaeological finds during construction of the proposed project, the contract will include provisions to halt construction and the State Historic Preservation Division will be contacted.

E. NATURAL HAZARDS

The Flood Insurance Rate Map indicates that the project site is located within the Zone "X" boundary. Areas within the Zone "X" boundary are determined to be outside the 500-year flood plain.

According to the Uniform Building Code, the island of Kauai is classified as a Seismic Zone 1. Therefore, all new structures will be designed and constructed to resist stresses produced by lateral forces, which apply to Zone 1.

F. SOCIO-ECONOMIC ENVIRONMENT

The proposed project is located within Kokee State Park, which encompasses approximately 4,345 acres of land. The park is located in the northwest portion of the Island of Kauai. The portion of the park to be served by the proposed improvements consists of approximately 33 buildings; including the Kokee lodge, a picnic pavilion, and 12 rental cabins.

Currently, the park has approximately 400,000 visitors per year. Prior to Hurricane Iniki, the visitor count was about 1,000,000 per year. We anticipate that the visitor count will slowly rise and place additional burden on the existing water supply. The proposed project will reduce the undue stress being experienced by the existing water system. The proposed project should be completed in 180 calender days. The estimated cost for the construction of the improvements is $110,000. Funding for this project is available through Act 218, SLH 1995, Item H-2.

G. PROBABLE IMPACTS AND MITIGATIVE MEASURES

The anticipated impacts of the proposed project will be short-term and primarily from the construction work involved in the site preparation for a concrete well pad and chlorinator building, connecting the 3-inch pipeline to the existing 4-inch transmission water line, and related electrical improvements.

A working area of approximately 5,000 square feet will be needed by the contractor for equipment and material storage. Dust, erosion, and sediment control provisions will be included in the contract provision. Upon completion of the construction, the contractor will be required to clean up the site.

Noise generated during construction may at times be in excess of 95 decibels. Therefore, all construction will be restricted to eight hours during daylight hours, as specified in Chapter 44B, Public Health Regulations. No work will be allowed during weekends or holidays without prior consent of the Department.

IV. ALTERNATIVES

There are two possible alternatives to the proposed project: taking no action, or finding an alternative well site.

A. NO ACTION

The "no action" alternative would preclude the development of Kokee Exploratory Well No. 0739-03 as a groundwater source for Kokee State Park. The unreliability of the current water sources that serve the Kokee State Park would require the continuation for delivery of water by tanker truck during extreme dry periods to avoid park closure. The development of the well is necessary for drinking, sanitation, and fire protection.

B. ALTERNATIVE SITES

Alternative sites are not a consideration at this time. There is no assurance that drilling another exploratory well would yield a better well, due to the hydrogeological conditions of the area.

C. WATER CONSERVATION

Water conservation programs can be used to meet future water demands. Conservation programs generally fall into two major categories: Water System Conservation and Consumer Conservation.

Water system conservation is the responsibility of the water purveyor. It requires careful monitoring of all water in the transmission and distribution systems to minimize water losses through leaks and misuse. Water conservation is the responsibility of the consumer. Consumers are encouraged to use water saving practices, detect and repair leaks within their property, and minimize wasteful uses.

The Division of State Parks is currently working with the users to conserve water and minimize wasteful uses.

D. RAIN CATCHMENT

The Kokee area has an annual rainfall of about 60 inches and would be ideal for rain catchment as a source of drinking water. However, during periods of low rainfall, the water demands of Kokee State Park cannot be met. The recent dry weather has caused a prolonged drought in the Kokee area, which prompted water restrictions on the users of the water system. The only reliable water source is potable groundwater.

E. WASTEWATER REUSE

Wastewater reuse and nonpotable water supplies are viable alternative water sources for applications such as irrigation and potable water. However, the relative cost to construct, maintain, and operate facilities to treat wastewater and nonpotable water is relatively higher than the cost to provide water from a potable groundwater source.

F. RECOMMENDATION

The proposed action to develop the Kokee Exploratory Well No. 0739-03 is by far the best and most cost-effective solution to meet the water demands of Kokee State Park.

V. DETERMINATION, FINDINGS, AND REASONS FOR SUPPORTING DETERMINATION

A. SIGNIFICANT CRITERIA

According to the Department of Health Rules (11-200-12), an applicant or agency must determine whether an action may have significant impact on the environment; including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and it's short and long-term effects. In making the determination, the Rules establish "Significant Criteria" to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impact on the environment, if it meets any one of the following criteria:

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resources:

The proposed project will not significantly impact the natural or cultural resources in the area. The site is located on a parcel of land that has been previously developed with existing wells and water transmission water line. The site is ideal for a production well because it will require minimal site improvements to be incorporated into the existing distribution system.

As previously noted, no significant archaeological or historical sites are known to exist, or were encountered, during the construction of the exploratory well. Should any significant artifacts, bones, or other indicators of previous on-site activity be uncovered during construction, their treatment will be conducted in strict compliance with the requirements of the Division of Historic Preservation.

(2) Curtails the range of beneficial uses of the environment:

The proposed site is located in a developed area of Kokee State Park and will have no impact on the overall environment of the park. The close proximity to the existing water distribution system, and nearby overhead electrical lines, makes this an ideal site for the proposed project.

(3) Conflicts with the State's long-term environmental policies or goals and guidelines, as expressed in Chapter 344, HRS; and any revisions thereof and amendments thereto, court decisions, or executive orders:

The proposed development is consistent with the Environmental Policies established in Chapter 344, HRS and the National Environmental Policy Act.

The development of the well is consistent with the long range plans to meet the water demand of Kokee State Park.

(4) Substantially affects the economic or social welfare of the community or state:

The proposed project is part of the ongoing plan for providing an adequate water supply for Kokee State Park. Current water demand for the park is being met entirely with an unreliable water system. The proposed project will provide the additional water supply. It is unlikely that the proposed project will affect the economic or social welfare of the area in either the short-term or long-term.

(5) Substantially affects public health:

The proposed project will be performed in accordance with all federal, state, or local regulations to ensure the protection of humans and the environment. Impacts to public health may be affected by air, noise, and water quality impacts. However, these impacts will be temporary, insignificant, or not detectable; especially when weighed against the positive implications associated with this project.

(6) Involves substantial secondary impacts, such as population changes or effects on public facilities:

The proposed project will not in itself generate new population growth, and will provide a much needed reliable source of potable water for the park.

(7) Involves a substantial degradation of environmental quality:

The proposed project will utilize a vacant parcel of land and will not impact the present or future use of the park. The general vicinity of the proposed site is relatively developed. Therefore, the construction of the proposed project should not visually impact the environmental quality of the existing conditions.

(9) Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions:

Impacts during the construction of the project are expected to be temporary and insignificant, when compared to the overall benefits associated with a production well.

(10) Substantially affects a rare, threatened, or endangered species or its habitat:

No known endangered or threatened species of plant or animal are known to inhabit the project area. The project area in question has already faced extensive disruption during the construction of existing water infrastructure.

(11) Detrimentally affects air or water quality or ambient noise levels:

Temporary impacts to air, water, and noise levels are expected during construction. Dust, erosion, sediment, and noise control provisions will be included in the contract provisions.

(12) 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:

There are no environmentally sensitive areas associated with the proposed project site. The physical character of the area has been previously disturbed by prior development.

(13) Substantially affects scenic vista and view planes identified in county or state plans or studies:

Once constructed, the production well will not pose a significant threat to existing scenic vistas and view planes.

(14) Requires substantial energy consumption:

Energy in the form of gasoline, diesel fuel, and electricity will be consumed during construction. Operation of the submersible pump, upon completion of construction, will require a long-term commitment of electricity. Construction and operation of the proposed project will not require substantial energy consumption relative to other projects.

VI. REFERENCES

Commission on Water Resource Management, Kauai Water Use and Development Plan Draft, Department of Land and Natural Resources, February 1992.

Division of Water and Land Development, Final Environmental Assessment, Job. No. 93-KP-B2, Kokee Exploratory Well No. 0739-03 Kokee State Park, Kokee, Kauai, December 1995.

Commission on Water Resource Management staff submittal for Well Permit, February 1996.

Various unpublished water chemistry reports, 1996.

APPENDIX 1 - WELL COMPLETION REPORT

State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

WELL COMPLETION REPORT

3/20/96 WCR Form

(Check Appropriate Box) ☒ Well Construction ☐ (Permanent) Pump Installation

Instructions: Please print or type and submit completed report within 30 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 587-0225, or 1-800-468-4644 Extension 70225.

1. State Well No.: 0739-03 Well Name: 93-KP-B2 Kokee Expl.Well Island: Kauai
2. Location/Address: Kokee State Park Tax Map Key: 5-9-1:23

PART I. WELL CONSTRUCTION REPORT

3. Drilling Company: Mel's Water Works, Hi Inc.
4. Name of driller who performed work: David L. McAllister
5. Type of rig/construction: Cable Tool
6. Date(s) Well Construction and pump tests (if any) completed: 9-6-96
7. GROUND ELEVATION (*referenced to mean sea level, msl*): 3542.8 ft.
   Well Bench Mark (description/location): 3544.8 Top of Casing Elevation(msl): 3544.8 ft.
8. DRILLER'S LOG: *Please attach geologic log (if available or if required by permit)*

Depths (ft.)	Rock Description, Water Level, Dates, etc.	Depths (ft.)	Rock Description, Water Level, Dates, etc.
0 to 40	Red Mud Clay 9.6'	48 to 81	Hard Blue Rock 8.2'
40 to 48	Gray, Red Mud Rock 8.3'	81 to 99	Red Mud Clay 8.2'

(If more space is needed, continue on back.)

9. Total depth of well below ground: 150 ft.
10. Hole size: 18 inch dia. from 0 ft. to 150 ft. below ground
    _____ inch dia. from _____ ft. to _____ ft. below ground
    _____ inch dia. from _____ ft. to _____ ft. below ground
11. Casing installed: 12 in. I.D. x 0.365 in. wall solid section to 50 ft. below ground
    12 in. I.D. x 0.365 in. wall perforated section to 150 ft. below ground
    Casing Material/Slot Size: 80 Sq. Inch Per L.F. Louver
12. Annulus: Grouted from 0 ft. below ground to 34 ft. below ground
    Gravel packed from 34 ft. below ground to 150 ft. below ground
13. Initial water level: 8.2 ft. below ground. Date and time of measurement: 8-26-96, 11:50a.m.
14. Initial chloride: 10 ppm Date and time of sampling: 8-26-96, 12:00p.m.
15. Initial temperature: 59 °F Date and time of measurement: 8-26-96, 12:00p.m.
16. PUMPING TESTS: Reference Point (R.P.) used: Top of Casing, which elevation is 3544.8 ft.
    (1) Step-Drawdown Test Date 8-23-96
    Start water level 9.6 ft. below R.P.
    End water level 15.5 ft. below R.P.
    (2) Long-term Aquifer Test Date 8-26-96
    Start water level 11.18 ft. below R.P.
    End water level 13.78 ft. below R.P.
17. Aquifer Pump Test Procedures data & graphs *(1/9/96 LTAT Form)* attached? X Yes __ No
18. As-built drawings attached attached? X Yes __ No
19. Other remarks/comments: *(On back of this form)*

Well Drilling Contractor (print) Mel's Water Works, Hi Inc C-57 Lic. No. C-17980
Signature Melvin E. Dennis Date 11-19-1996

Surveyor (print) _____ Lic. No. _____
Signature _____ Date _____

Applicant (print) Andrew M. Monden
Signature Andrew M. Monden Date 11/21/96

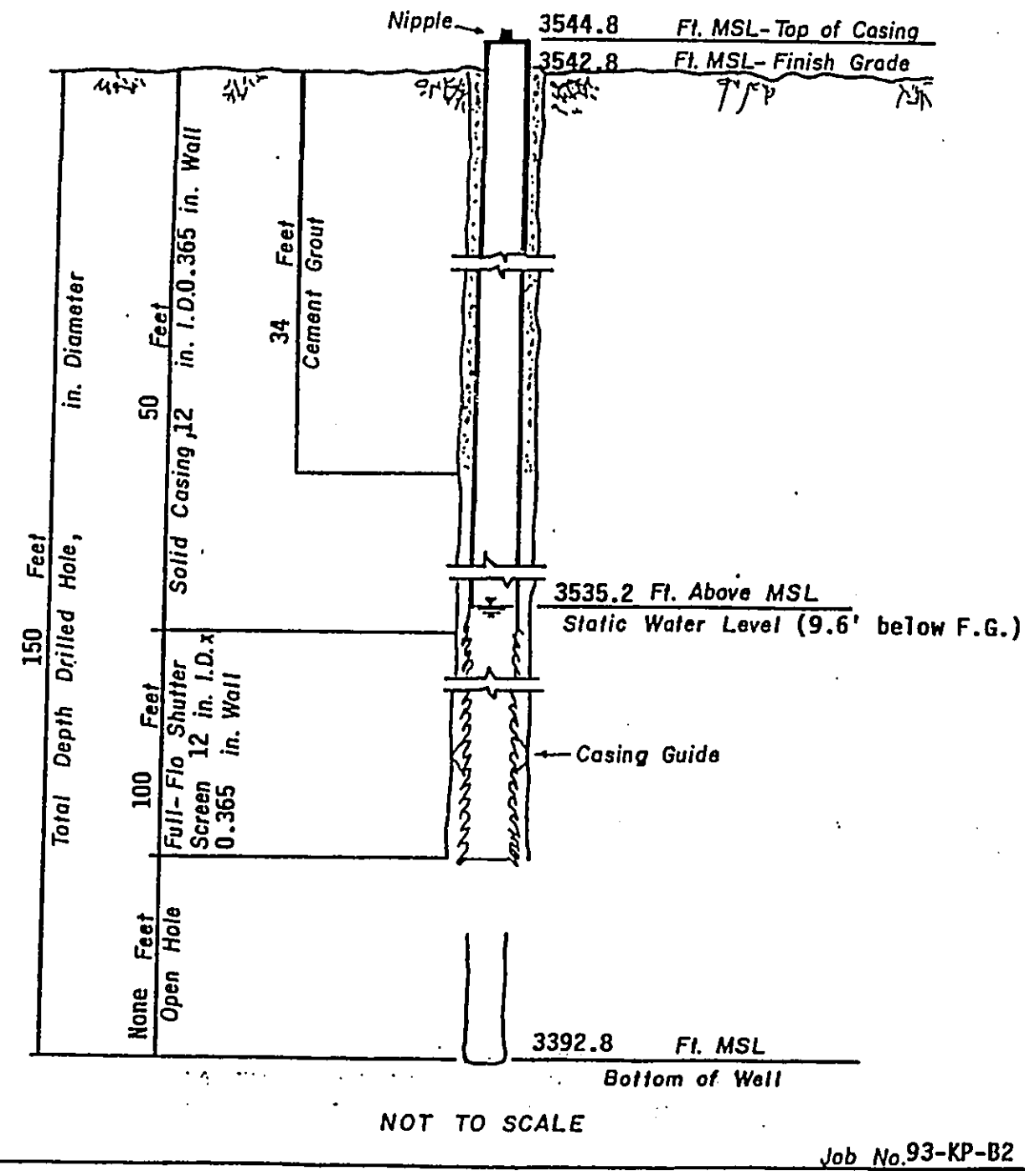
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT

Kokee Exploratory Well (0739-03)
Kokee State Park, Kokee, Kauai

AS BUILT SECTION

Drilled: August, 1996

Driller: Mel's Water Works Hawaii, Inc.

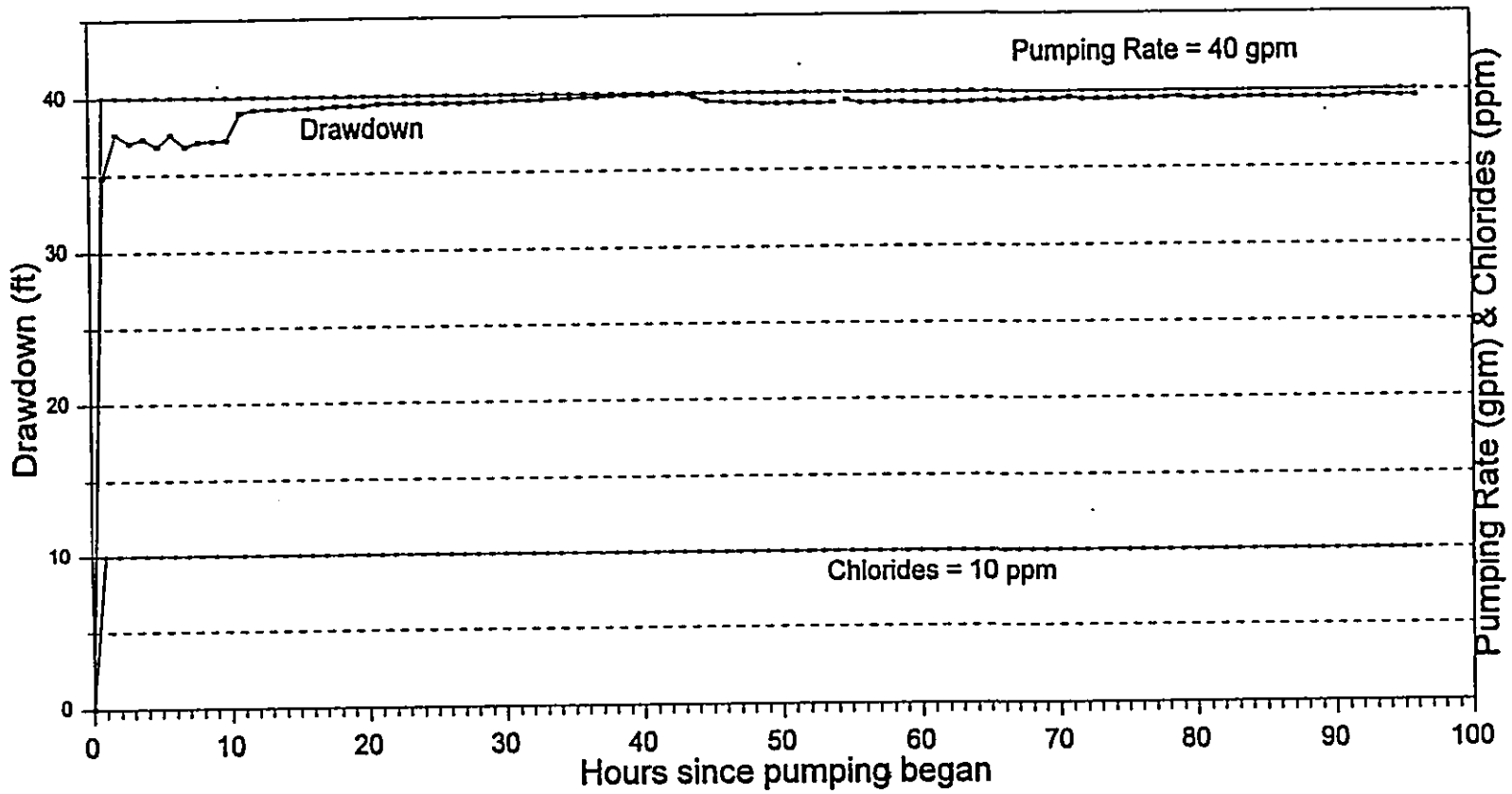


NOT TO SCALE

Job No. 93-KP-B2

PUMPING TEST

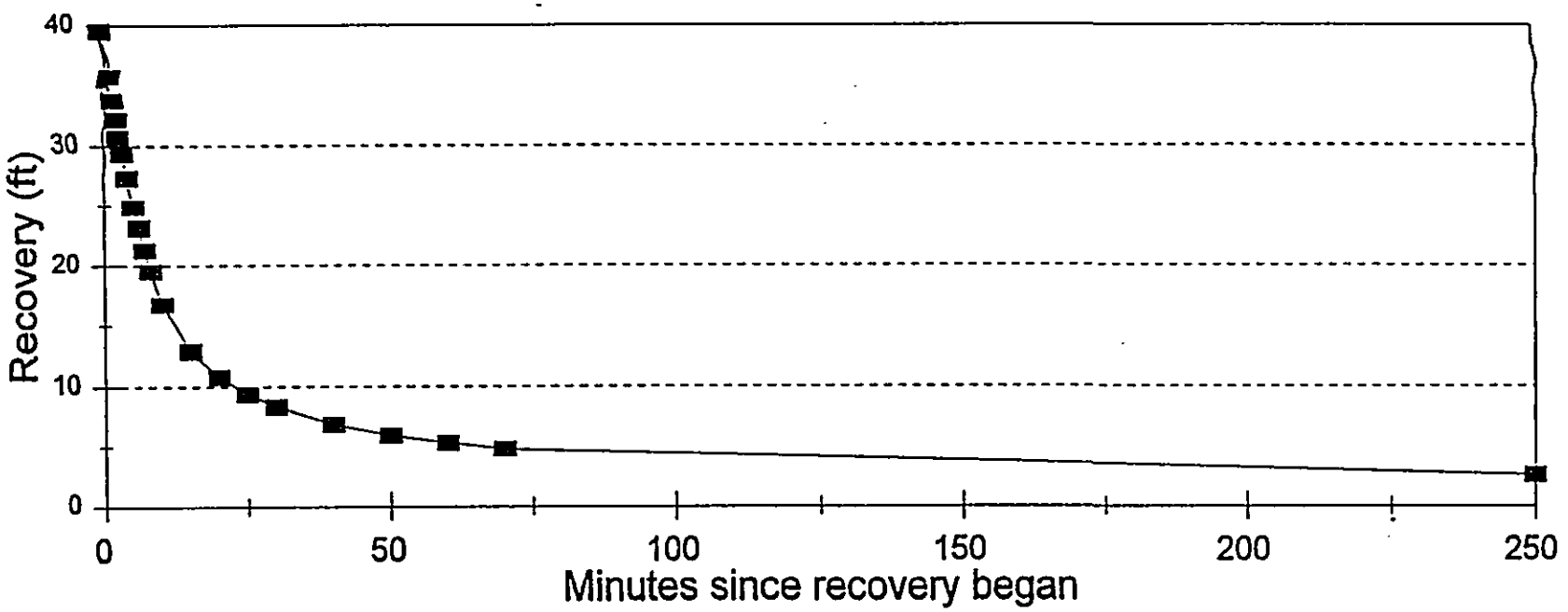
Job No. 93-KP-B2 KOKEE EXPLORATORY WELL No. 0739-03



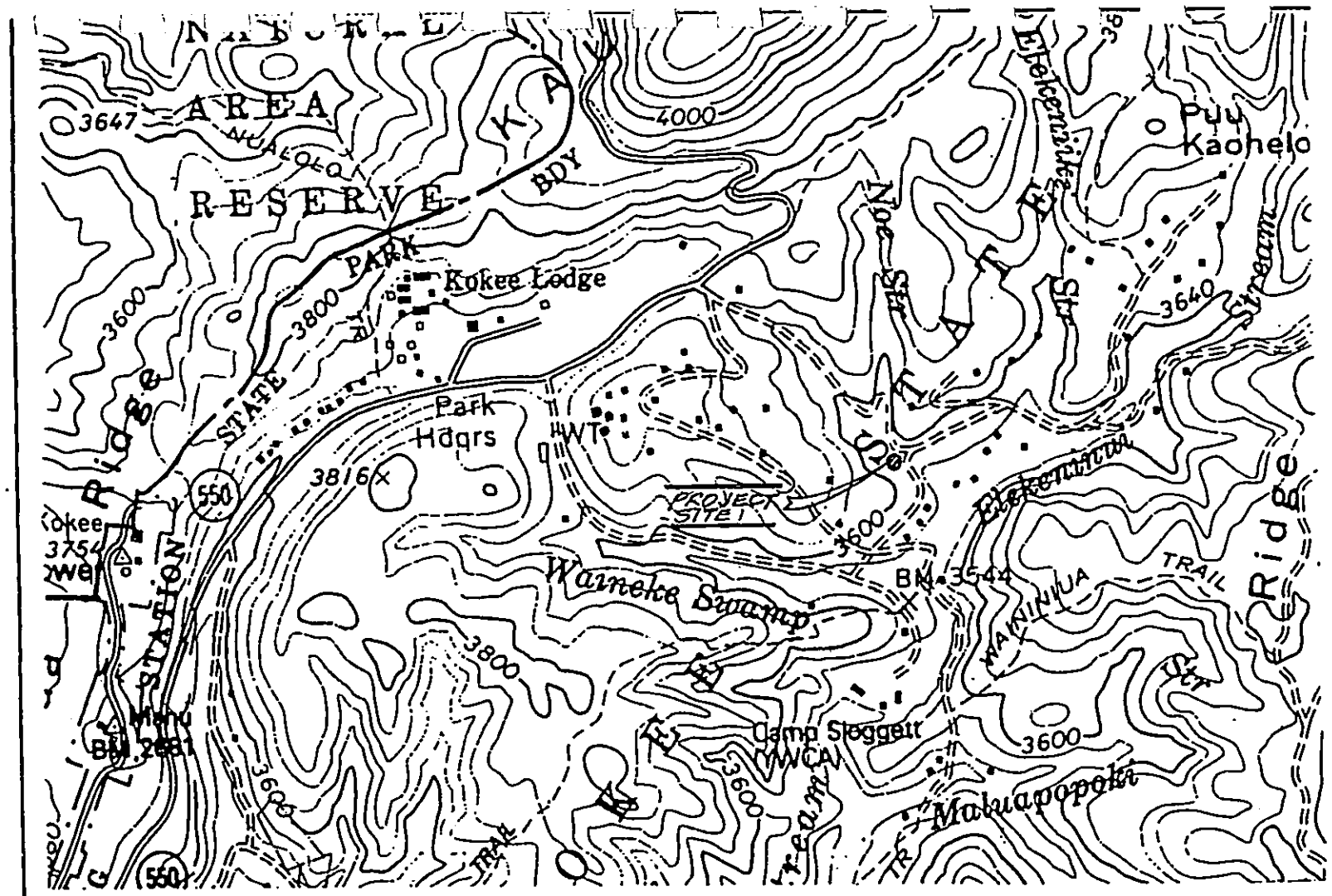
Test date: 8/26/96

RECOVERY TEST

Job No. 93-KP-B2 KOKEE EXPLORATORY WELL No. 0739-03



8/30/96



PROJECT SITE PLAN
SCALE: 1"=300'

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT

KOKEE EXPLORATORY WELL NO. 0289-03
KOKEE STATE PARK
KOKEE, KAUAI, HAWAII

PROJECT SITE PLAN

DESIGNED O.I.	SUBMITTED: L.C.
DRAWN Y.S.	DATE: 12-1-94
CHECKED O.I.	SCALE: AS NOTED
APPROVED	DRAWING NO
MANAGER-CHIEF ENGINEER	DATE 12-13-94

JOB NO. 93-KP-82 SHEET NO. 2 OF 2 SHEETS

Table 1

LONG-TERM AQUIFER TEST DATA

Pumped Well No. 0739-03 (93-KP-B2) Observation well no. N/A

Pumped Well Name Kokee Exploratory Well Distance between Obs.& Pumped Well N/A

Target Q 40 gpm Reference pt. for depth to water 3542.8 ft. msl
Static Water Level @ start of test 11.18 ft. msl

Water level measurements by: ☒ steel tape ☐ pressure transducer ☐ airline

START TEST Date: 8/26/96 Hour of day: 12:00 p.m.

Flow Meter Reading Start: 219,507x10 gals

Suggested elapsed time *t* (min)	Actual elapsed time *t* (min)	Depth to water (nearest 0.01 ft)	Drawdown *d* (unadjusted to nearest 0.01 ft)	Pumping rate Q (gpm)			Temp. x ° F or ° C	Data in this table is for: ☒ Pumped Well ☐ Observation Well Remarks
0	0	11.18	0	0				Meter 219,507.5x10
1	1	18.2	7.02	40				
1.5	1.5	19.68	8.5	40				
2	2	21.5	10.32	40				
2.5	2.5	22.54	11.36	40				
3	3	23.66	12.48	40				
4	4	25.83	14.65	40			59.2	
5	5	27.63	16.45	40				
6	6	29.42	18.24	40				
7	7	30.98	19.8	40				
8	8	32.18	21	40			60.5	
10	10	34.8	23.62	40				
15	15	36.65	25.47	40				
20	20	39.02	27.84	40				
40	38	42.09	30.91	40				
60	60	46.06	34.88	40			62.1	
100	120	48.86	37.68	40			60.9	
200	180	48.3	37.12	40			60.7	
250	240	48.57	37.39	40			60.5	
300	300	48.07	36.89	40			60.9	
400	420	48.05	36.87	40			61.1	
500	480	48.35	37.17	40			61	
600	600	48.45	37.27	40			61.1	Meter 221,847x10@10:40
700	720	50.35	39.17	40			61.3	
800	780	50.39	39.21	40			61.3	
900	900	50.44	39.26	40			61.4	
1000	1020	50.49	39.31	40			61.4	
1500	1500	50.68	39.5	40			60.9	
2000	1980	50.86	39.68	40			61.1	
2500	2520	51.09	39.91	40			61.4	
3000	3000	50.49	39.31	40			60.8	
4000	4020	50.57	39.39	40			61.2	
5000	4980	50.7	39.52	40			61.1	
6000	5760	50.78	39.6	40			61.4	Meter 242,460x10
			Use same ending drawdown figure as start for recovery	0				Begin recovery data next page Flow meter reading at end of pumped period: 242,460x10 gals

m:\wld\const\wp\well\aquitest.kok

Suggested elapsed time *t* (min)	Actual elapsed time *t* (min)	Depth to water (nearest 0.01 ft)	Recovery *d* (unadjusted to nearest 0.01 ft)	Pumping rate Q (gpm)			Temp. X ° F or ___ ° C	Data in this table is for: ☒ Pumped Well ☐ Observation Well Remarks
0	0	0	0	0			61.4	Start recovery
1	1	47	35.82	0				
1.5	1.5	45	33.82	0				
2	2	43.4	32.22	0				
2.5	2.5	41.92	30.74	0				
3	3	40.56	29.38	0				
4	4	38.57	27.39	0				
5	5	36.14	24.96	0				
6	6	34.36	23.18	0				
7	7	32.54	21.36	0				
8	8	30.74	19.56	0				
10	10	28.04	16.86	0			61.0	
15	15	24.14	12.96	0				
20	29	22	10.82	0				
25	25	20.58	9.4	0				
30	30	19.52	8.34	0				
40	40	18.08	6.9	0				
50	50	17.16	5.98	0				
60	60	16.5	5.32	0				
70	70	16.03	4.85	0			61.0	
250	250	13.78	2.60	0				
								☒ 80% recovery achieved ☐ 80% recovery not achieved

END TEST Date: 8/30/96 Hour of day: 12:00

ADDITIONAL REMARKS:

Person in charge of pump test (print): Dickey Lee

Signature: _____

The signature above indicates that the data reported on this form is accurate and true to the best of the person's knowledge who operated this aquifer test.

m:\wld\const\wp\well\recovery.kok

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Water Resources Division
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813

RECEIVED
96 SEP 30 A 8: 36
DIV. OF WATER &
LAND DEVELOPMENT

September 27, 1996

Mr. Andrew Monden
Water and Land Development Branch
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Monden,

At the request of the State Department of Land and Natural Resources, discharge (flow) measurements were made by the U.S. Geological Survey in streams adjacent to the Kokee Exploratory Well, Kokee State Park, Kauai. The measurements were made before, during, and after a pumping test of the Kokee Exploratory Well on August 22, August 28, and September 4, 1996, respectively. Three small streams, Noe, Elekeniiki, and Elekeninui, are located in the vicinity of the well. The discharge (flow) measurement locations were limited by the swampy terrain and are shown on the enclosed map. No measuring sites could be located on Elekeniiki Stream. All measurements are listed in the table below, and were made using a Pygmy meter (sites 2 and 4) or by volumetric techniques (sites 1, 3, and 5).

Table 1. Results of discharge measurements in streams adjacent to Kokee Exploratory Well, in cubic feet per second

Site	Before pumping test, August 22, 1996	During pumping test, August 28, 1996	After pumping test, September 4, 1996
1	0.01	0.01	0.01
2	0.12	0.10	0.10
3	0.02	0.02	0.02
4	0.22	0.23	0.20
5	0.25	0.26	0.24

Although the discharge measurements do not indicate a reduction in streamflow, it should be noted that a significant reduction in the swampy area around the well site was observed during the pumping test. On August 22, we observed the area around the well site to be swampy with water ponded in the channel of Noe Stream. If the water in the channel was moving it was moving very slowly. On August 28, after two days of pumping, we observed the well site area to be significantly drier (less swampy). On September 4, five days after the pumping test, the area around the well site was back to the same swampy condition that was observed prior to the test. It rained on September 1 and 2 as indicated by our enclosed discharge records for a gage on Kawaikoi Stream located less than 2 miles from the Kokee Exploratory Well. As a result, it is not possible to determine if the swampy condition returned owing the termination of the pumping test or because of rainfall.

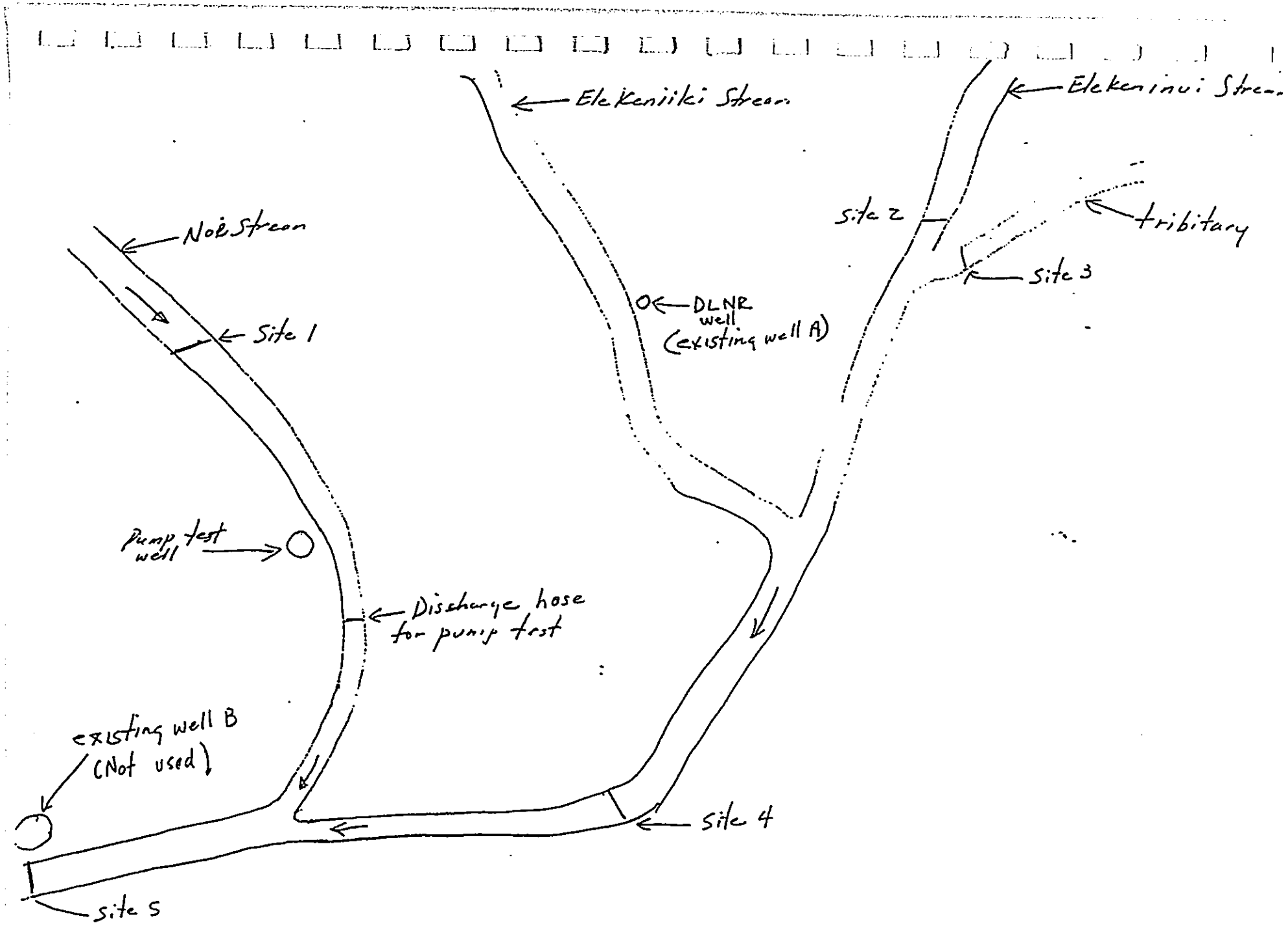
If you have any questions regarding these measurements or additional observations made during the pumping test please contact me at 522-8292.

Sincerely,

Stephen Anthony
Acting Assistant District Chief

Enclosures:

cc: Dickie Lee, DLNR, Honolulu
William Meyer, USGS, Honolulu
Roy Taogoshi, USGS, Kauai


Elekeniiki Stream
Elekeninui Stream
Noe Stream
Site 1
Site 2
tributary
Site 3
DLNR well (existing well A)
Pump test well
Discharge hose for pump test
existing well B (Not used)
site 4
site 5

OK. s1 dv0100

1 UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - HAWAII DISTRICT 09/05/96

STATION NUMBER 16010000 KAWAIKOI STREAM NR WAIMEA, KAUAI. HI STREAM SOURCE AGENCY USGS
LATITUDE 220809 LONGITUDE 1593722 DRAINAGE AREA 3.95 DATUM 3420.00 STATE 15 COUNTY 007
PROVISIONAL DATA SUBJECT TO REVISION

DISCHARGE. CUBIC FEET PER SECOND. WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	21	14	34	19	16	11	8.9	3.3	26	7.6	27
2	9.1	14	14	20	23	72	9.8	6.2	3.0	25	5.5	16
3	6.5	757	12	15	17	439	8.9	5.3	2.8	19	4.9	6.8
4	7.6	76	15	14	14	316	8.4	5.8	2.8	29	4.7	---
5	9.8	26	15	16	13	69	7.6	5.7	2.6	27	4.9	---
6	26	18	11	13	12	43	6.9	5.0	2.6	13	11	---
7	84	15	10	11	15	28	6.5	5.2	117	10	7.7	---
8	181	12	9.7	9.6	13	22	6.3	42	69	10	5.9	---
9	53	289	9.3	281	11	18	6.1	20	55	9.3	4.7	---
10	16	61	8.7	43	54	16	5.8	7.7	22	7.8	4.9	---
11	12	22	8.1	18	14	15	5.9	5.8	10	7.0	31	---
12	10	16	8.8	14	11	14	6.6	4.9	6.7	8.4	42	---
13	9.1	60	23	12	9.5	43	6.1	4.5	14	14	10	---
14	7.5	20	31	11	63	18	7.1	4.2	16	7.8	6.1	---
15	6.6	14	9.8	10	96	13	6.1	4.0	7.1	11	4.9	---
16	5.9	12	7.7	9.4	42	11	5.2	7.3	5.4	29	4.4	---
17	5.4	11	7.2	150	17	11	5.0	5.2	5.6	22	4.1	---
18	5.2	10	6.7	623	13	10	11	3.9	77	79	3.9	---
19	5.3	14	6.3	32	12	10	138	3.7	26	40	3.8	---
20	6.1	39	6.0	36	13	13	25	3.5	13	39	3.6	---
21	7.4	13	5.8	21	20	45	9.6	3.5	11	24	3.5	---
22	6.9	9.8	5.7	16	34	36	7.0	3.4	7.7	12	3.5	---
23	9.6	9.0	5.6	14	21	53	6.0	3.3	21	9.2	3.5	---
24	7.3	8.3	5.4	48	12	31	5.5	3.3	158	8.1	3.5	---
25	9.8	43	282	146	24	26	5.4	3.3	43	7.2	3.3	---
26	31	181	37	33	26	18	5.2	3.2	13	6.8	3.2	---
27	13	128	12	130	251	13	5.1	3.0	9.4	6.5	3.1	---
28	89	37	9.2	94	75	11	4.9	3.9	42	7.0	2.9	---
29	61	19	8.3	19	21	44	17	6.7	51	6.4	2.9	---
30	115	15	246	119	---	36	34	4.5	306	5.5	3.2	---
31	95	---	150	24	---	13	---	3.8	---	5.8	3.8	---
TOTAL	935.1	1970.1	1000.3	2036.0	963.5	1523	393.0	200.7	1123.0	531.8	212.0	---
MEAN	30.2	65.7	32.3	65.7	33.2	49.1	13.1	6.47	37.4	17.2	6.84	---
MAX	181	757	282	623	251	439	138	42	306	79	42	---
MIN	5.2	8.3	5.4	9.4	9.5	10	4.9	3.0	2.6	5.5	2.9	---
AC-FT	1850	3910	1980	4040	1910	3020	780	398	2230	1050	421	---

APPENDIX 2 - WELL CHEMISTRY

Dowald 8/63

CHLORIDE TITRATION RECORD 93-KP-82

for KOKEE ENV. Well 0739-03 (No.)

KAUAI Island Project or Job No. 93-KP-82 1996

Titrations conducted by M. DAYE

Sample No.	Date Taken	Sample (ml)	Burette Rdg Before	Burette Rdg After	$AgNO_3$ (ml)	$AgNO_3$ -.2 ml	Mult. Factor	Chlorides (ppm)
					SOL.	1ml =	.5 x 1L	Cl
		LONG	TERM	PUMPING	TEST	@ 40 GPM		
	August 26, 1996							
1	1400	50	.50	1.50	1.0	—	10	10
	August 27, 1996							
7	1400	50	2.0	3.0	1.0	—	10	10
	August 28, 1996							
13	1400	50	3.10	4.10	1.0	—	10	10
	August 29, 1996							
	1130	50	4.50	5.50	1.0	—	10	10

E.L.Pacific

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Laboratory Report

93-KP B2

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Sample Description: 1, Liquid
Lab Sample ID: 8960754
Work Order #: 9608228

Sampled: Aug 29, 1996
Received: Aug 30, 1996
Extracted: Sep 11, 1996
Analyzed: Sep 12, 1996
Reported: Oct 22, 1996

EDB AND DBCP IN WATER (EPA 504 Modified)*

Analyte	Reporting Limit µg/L	Sample Results µg/L
Dibromochloropropane (DBCP)	0.010	N.D.
Ethylene Dibromide (EDB)	0.020	N.D.
Surrogates	**Control Limit %**	**% Recovery**
1,3-Dibromopropane	50-150	78

Analytes reported as N.D. were not present above the stated reporting limit.

E. L. PACIFIC

Brenda Harding (for)
Kevin Van Slambrook
Project Manager

Please Note:
* Analysis performed by Sequoia Analytical.

9608228.DLN <1>

E.L. Pacific

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
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Phone: 808•831-3090 Fax: 808•831-3098

Laboratory Report

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Sample Description: 1, Liquid
Lab Sample ID: 8960754
Work Order #: 9608228

Sampled: Aug 29, 1996
Received: Aug 30, 1996
Extracted: Sep 10, 1996
Analyzed: Sep 12, 1996
Reported: Oct 22, 1996

EPA 515.1*

Analyte	Reporting Limit µg/L	Sample Results µg/L
Dalapon	10	N.D.
Dicamba (Banvel)	0.12	N.D.
2,4-D	10	N.D.
Pentachlorophenol (PCP)	0.20	N.D.
2,4,5-TP (Silvex)	1.0	N.D.
Dinoseb	2.0	N.D.
Bentazon	2.0	N.D.
Picloram	1.0	N.D.
Surrogates	**Control Limit %**	**% Recovery**
Dichlorophenylacetic acid	30-150	51

Analytes reported as N.D. were not present above the stated reporting limit.

E. L. PACIFIC

Kevin Van Slambrook
Project Manager

Please Note:
* Analysis performed by Sequoia Analytical.

E.L.Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Sample Description: 1, Liquid
Lab Sample ID: 8960754
Work Order #: 9608228

Sampled: Aug 29, 1996
Received: Sep 11, 1996
Analyzed: Sep 12, 1996
Reported: Oct 22, 1996

VOLATILE ORGANICS by GC/MS (EPA 524.2)*

Analyte	Reporting Limit µg/L	Sample Results µg/L
1,1-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
1,1-Dichloropropene	0.50	N.D.
1,1-Dichloropropene	0.50	N.D.
1,2-Dibromoethane	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,3-Dichloropropane	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
2,2-Dichloropropane	0.50	N.D.
2-Chloroethyl vinyl ether	1.0	N.D.
2-Chlorotoluene	0.50	N.D.
4-Chlorotoluene	0.50	N.D.
Benzene	0.50	N.D.
Bromobenzene	0.50	N.D.
Bromochloromethane	0.50	N.D.
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	0.50	N.D.
Carbon tetrachloride	0.50	N.D.
Chloroethane	0.50	N.D.
Chloroform	0.50	N.D.
Chloromethane	0.50	N.D.
cis-1,2-Dichloroeethene	0.50	N.D.
Dibromochloromethane	0.50	N.D.
Dibromoethane	0.50	N.D.
Dibromomethane	0.50	N.D.
Dichlorodifluoromethane	1.0	N.D.
Ethylbenzene	0.50	N.D.
Hexachlorobutadiene	0.50	N.D.
Isopropylbenzene	0.50	N.D.
Methylene chloride	0.50	1.0
Monochlorobenzene	0.50	N.D.
n-Butylbenzene	0.50	N.D.
sec-Butylbenzene	0.50	N.D.
tert-Butylbenzene	0.50	N.D.
Total 1,3-Dichloropropene	0.50	N.D.
Total Trihalomethanes	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.

E. L. PACIFIC

E.L. Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH	Client Project ID: Kokee Expl. Well/93-KP-B2	Sampled: Aug 29, 1996
1151 Punchbowl St, Rm 221	Sample Description: 1, Liquid	Received: Sep 11, 1996
Honolulu, HI 96813	Lab Sample ID: 8960754	Analyzed: Sep 12, 1996
Attention: Dickey Lee	Work Order #: 9608228	Reported: Oct 22, 1996

VOLATILE ORGANICS by GC/MS (EPA 524.2)*

Analyte	Reporting Limit µg/L	Sample Results µg/L
1,1,1,2-Tetrachloroethane	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
1,2,3-Trichlorobenzene	0.50	N.D.
1,2,3-Trichloropropane	0.50	N.D.
1,2,4-Trichlorobenzene	0.50	N.D.
1,2,4-Trimethylbenzene	0.50	N.D.
1,2-Dibromo-3-chloropropane	0.50	N.D.
1,3,5-Trimethylbenzene	0.50	N.D.
m,p-Xylene	0.50	N.D.
Methyl ethyl ketone	5.0	N.D.
Methyl isobutyl ketone	5.0	N.D.
n-Propylbenzene	0.50	N.D.
Naphthalene	0.50	N.D.
o-Xylene	0.50	N.D.
p-Isopropyltoluene	0.50	N.D.
Styrene	0.50	N.D.
Tetrachloroethene	0.50	N.D.
Toluene	0.50	N.D.
Total Xylenes	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	5.0	N.D.
Trichlorotrifluoroethane	10	N.D.
Vinyl chloride	0.50	N.D.

Surrogates	Control Limit %	Sample Results
4-Bromofluorobenzene	69 - 115	85
1,2-Dichlorobenzene-d4	57 - 120	71

Analytes reported as N.D. were not present above the stated reporting limit.

E. L. PACIFIC

Kevin Van Slambrook
Project Manager

Please Note:
* Analysis performed by Sequoia Analytical.

E.L. Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH	Client Project ID: Kokee Expl. Well/93-KP-B2	Sampled: Aug 29, 1996
1151 Punchbowl St, Rm 221	Sample Description: 1, Liquid	Received: Aug 30, 1996
Honolulu, HI 96813	Lab Sample ID: 8960754	Extracted: Sep 5, 1996
Attention: Dickey Lee	Work Order #: 9608228	Analyzed: Sep 12, 1996
		Reported: Oct 22, 1996

SEMIVOLATILE ORGANIC COMPOUNDS (EPA 525)*

Analyte	Reporting Limit µg/L	Sample Results µg/L
Diethylhexylphthalate (DEHP)	3.0	N.D.
Naphthalene	0.50	N.D.
Di (2-ethylhexyl) adipate	5.0	N.D.
Surrogates	**Control Limit %**	**% Recovery**
Perylene-d12	25 - 148	98

Analytes reported as N.D. were not present above the stated reporting limit.

E. L. PACIFIC

Kevin Van Slambrook
Project Manager

Please Note:
* Analysis performed by Sequoia Analytical.

9608228.DLN <5>

E.L. Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Sample Description: 1, Liquid
Lab Sample ID: 8960754
Work Order #: 9608228

Sampled: Aug 29, 1996
Received: Aug 30, 1996
Extracted: Sep 5, 1996
Analyzed: Sep 12, 1996
Reported: Oct 22, 1996

EPA 548*

Analyte	Reporting Limit µg/L	Sample Results µg/L
Endothall	10	N.D.

Analytes reported as N.D. were not present above the stated reporting limit.

E. L. PACIFIC

Kevin Van Slambrook
Project Manager

Please Note:
* Analysis performed by Sequoia Analytical.

9608228.DLN <6>

E.L. Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Sample Description: 1, Liquid
Lab Sample ID: 8960754
Work Order #: 9608228

Sampled: Aug 29, 1996
Received: Sep 11, 1996
Reported: Oct 22, 1996

TOTAL METALS

Analyte	Method	Units	Reporting Limit	Date Analyzed	Sample Result
Digestion	EPA 3010			9/13/96	
Antimony	EPA 200.7	mg/L	0.0050	9/20/96	N.D.
Arsenic	EPA 200.7	mg/L	0.010	9/20/96	N.D.
Barium	EPA 200.7	mg/L	0.010	9/20/96	N.D.
Beryllium	EPA 200.7	mg/L	0.0010	9/20/96	N.D.
Cadmium	EPA 200.7	mg/L	0.0010	9/20/96	N.D.
Chromium	EPA 200.7	mg/L	0.010	9/20/96	N.D.
Copper	EPA 200.7	mg/L	0.010	9/20/96	N.D.
Lead	EPA 200.7	mg/L	0.0050	9/20/96	N.D.
Mercury	EPA 245.1	mg/L	0.00020	9/13/96	N.D.
Nickel	EPA 200.7	mg/L	0.010	9/20/96	N.D.
Selenium	EPA 200.7	mg/L	0.0050	9/20/96	N.D.
Thallium	EPA 200.7	mg/L	0.0020	9/20/96	N.D.

Analytes reported as N.D. were not present above the stated reporting limit.

E.L. PACIFIC

Kevin Van Slambrook
Project Manager

E.L. Pacific

Laboratory Report

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Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Sample Description: 1, Liquid
Lab Sample ID: 8960754
Work Order #: 9608228

Sampled: Aug 29, 1996
Received: Sep 11, 1996
Reported: Oct 22, 1996

LABORATORY ANALYSIS

Analyte	Method	Units	Reporting Limit	Date Analyzed	Sample Result
Fluoride.....	EPA 340.2	mg/L	0.020	9/4/96	N.D.
Nitrogen, Nitrate.....	EPA 353.2	mg/L	0.050	9/5/96	0.15
Turbidity.....	EPA 180.1	mg/L	0.10	8/30/96	0.56
Cyanide*.....	EPA 335.2	mg/L	0.010	9/8/96	N.D.

Analytes reported as N.D. were not present above the stated reporting limit.

E.L. PACIFIC

Kevin Van Slambrook
Project Manager

Please Note:
* Analysis performed by Sequoia Analytical.

9608228.DLN <8>

E.L. Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Matrix: Water
QC Sample Group: 896-0754

Reported: Oct 22, 1996

QUALITY CONTROL DATA REPORT

ANALYTE	2,4-D	2,4,5-TP	2,4,5-T
Method:	EPA 515	EPA 515	EPA 515
Analyst:	DN	DN	DN
MS/MSD Batch#:	090996	090996	090996
Date Prepared:	9/9/96	9/9/96	9/9/96
Date Analyzed:	9/11/96	9/11/96	9/11/96
Instrument I.D.#:	GCPE-05	GCPE-05	GCPE-05
Matrix Spike % Recovery:	106	110	112
Matrix Spike Duplicate % Recovery:	0.0	0.0	0.0
Relative % Difference:	N.A.	N.A.	N.A.
LCS Batch#:	LCS091096	LCS091096	LCS091096
Date Prepared:	9/10/96	9/10/96	9/10/96
Date Analyzed:	9/12/96	9/12/96	9/12/96
Instrument I.D.#:	PE-05	PE-05	PE-05
LCS % Recovery:	94	94	96
% Recovery Control Limits:	30-140	30-140	30-140

E. L. PACIFIC

Brenda Ludwig (for)
Kevin Van Slambrook
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

E.L. Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Matrix: Water
QC Sample Group: 896-0754

Reported: Oct 22, 1996

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichlorothene	Benzene	Toluene	Chloro-benzene	1,4-Dichloro-benzene	1,2,4-Trichloro-benzene
Method:	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2	EPA 524.2
Analyst:	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
MS/MSD Batch#:	090696	090696	090696	090696	090696	090696	090696
Date Prepared:	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	9/6/96	9/6/96	9/6/96	9/6/96	9/6/96	9/6/96	9/6/96
Instrument I.D.#:	H6	H6	H6	H6	H6	H6	H6
Matrix Spike % Recovery:	98	96	98	98	98	94	96
Matrix Spike Duplicate % Recovery:	-	-	-	-	-	-	-
Relative % Difference:	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
LCS Batch#:	-	-	-	-	-	-	-
Date Prepared:	-	-	-	-	-	-	-
Date Analyzed:	-	-	-	-	-	-	-
Instrument I.D.#:	-	-	-	-	-	-	-
LCS % Recovery:	-	-	-	-	-	-	-
% Recovery Control Limits:	80-120	80-120	80-120	80-120	80-120	80-120	80-120

E. L. PACIFIC

Kevin Van Slambrook
Project Manager

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9608228.DLN <10>

E.L.Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Matrix: Water
QC Sample Group: 896-0754

Reported: Oct 22, 1996

QUALITY CONTROL DATA REPORT

ANALYTE	Naphthalene	Bis(2-ethylhexyl) Adipate	Bis(2-ethylhexyl) phthalate	Endothall	EDB	DBCP	Cyanide
Method:	EPA 525	EPA 525	EPA 525	548.1	EPA 504	EPA 504	EPA 335.4
Analyst:	SPE	SPE	SPE	SPE	DN	DN	KS
MS/MSD Batch#:	090596	090596	090596	090496	091196	091196	9609204-2D
Date Prepared:	9/5/96	9/5/96	9/5/96	9/4/96	9/11/96	9/11/96	9/7/96
Date Analyzed:	9/11/96	9/11/96	9/11/96	9/5/96	9/12/96	9/12/96	9/7/96
Instrument I.D.#:	H5	H5	H5	GCHP-11	GCHP-13	GCHP-13	Manual
Matrix Spike % Recovery:	82	86	92	11	94	110	87
Matrix Spike Duplicate % Recovery:	80	90	100	9	93	110	87
Relative % Difference:	2.5	4.5	8.3	20	1.1	0.0	0.0
LCS Batch#:	-	-	-	LCS090596	LCS091196	LCS091196	LCS090796
Date Prepared:	-	-	-	9/5/96	9/11/96	9/11/96	9/7/96
Date Analyzed:	-	-	-	9/9/96	9/12/96	9/12/96	9/7/96
Instrument I.D.#:	-	-	-	GCHP-11	GCHP-13	GCHP-13	Manual
LCS % Recovery:	-	-	-	81	85	110	96
% Recovery Control Limits:	70-130	70-130	70-130	1-150	50-150	50-150	80-120

E. L. PACIFIC

Kevin Van Slambrook
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

9608228.DLN <11>

E.L. Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Matrix: Water
QC Sample Group: 896-0754

Reported: Oct 22, 1996

QUALITY CONTROL DATA REPORT

ANALYTE	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7
Analyst:	NCP	NCP	NCP	NCP	NCP	NCP	NCP
MS/MSD Batch#:	8960754	8960754	8960754	8960754	8960754	8960754	8960754
Date Prepared:	9/19/96	9/19/96	9/19/96	9/19/96	9/19/96	9/19/96	9/19/96
Date Analyzed:	9/20/96	9/20/96	9/20/96	9/20/96	9/20/96	9/20/96	9/20/96
Instrument I.D.#:	Trace-1	Trace-1	Trace-1	Trace-1	Trace-1	Trace-1	Trace-1
Matrix Spike % Recovery:	88	101	107	99	102	101	100
Matrix Spike Duplicate % Recovery:	92	100	108	99	102	102	100
Relative % Difference:	4.4	1.0	0.93	0.0	0.0	1.0	0.0
LCS Batch#:	LCS091996	LCS091996	LCS091996	LCS091996	LCS091996	LCS091996	LCS091996
Date Prepared:	9/19/96	9/19/96	9/19/96	9/19/96	9/19/96	9/19/96	9/19/96
Date Analyzed:	9/20/96	9/20/96	9/20/96	9/20/96	9/20/96	9/20/96	9/20/96
Instrument I.D.#:	Trace-1	Trace-1	Trace-1	Trace-1	Trace-1	Trace-1	Trace-1
LCS % Recovery:	96	102	107	100	103	102	101
% Recovery Control Limits:	80-120	80-120	80-120	80-120	80-120	80-120	80-120

E. L. PACIFIC

Kevin Van Slambrook
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

9608228.DLN <12>

E.L.Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Matrix: Water
QC Sample Group: 896-0754

Reported: Oct 22, 1996

QUALITY CONTROL DATA REPORT

ANALYTE	Nickel	Selenium	Thallium	Beryllium	Mercury	Fluoride	Nitrogen, Nitrate
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 245.1	EPA 340.2	EPA 353.2
Analyst:	NCP	NCP	NCP	NCP	DLL	SCN	TKL
MS/MSD Batch#:	8960754	8960754	8960754	8960754	9960017	8960753	9960017
Date Prepared:	9/19/96	9/19/96	9/19/96	9/19/96	9/13/96	9/4/96	8/30/96
Date Analyzed:	9/20/96	9/20/96	9/20/96	9/23/96	9/13/96	9/4/96	9/5/96
Instrument I.D.#:	Trace-1	Trace-1	Trace-1	Trace-1	CVAA-1	Orion-2	Lachat-1
Matrix Spike % Recovery:	101	104	99	103	101	100	106
Matrix Spike Duplicate % Recovery:	101	102	98	104	103	100	106
Relative % Difference:	0.0	1.9	1.0	1.0	2.0	0.0	0.0
LCS Batch#:	LCS091996	LCS091996	LCS091996	LCS091996	LCS091396	LCS090496	LCS083096
Date Prepared:	9/19/96	9/19/96	9/19/96	9/19/96	9/13/96	9/4/96	8/30/96
Date Analyzed:	9/20/96	9/20/96	9/20/96	9/23/96	9/13/96	9/4/96	9/5/96
Instrument I.D.#:	Trace-1	Trace-1	Trace-1	Trace-1	CVAA-1	Orion-2	Lachat-1
LCS % Recovery:	102	105	98	105	92	98	101
% Recovery Control Limits:	80-120	80-120	80-120	80-120	85-115	80-120	80-120

E. L. PACIFIC

Brenda Nading (for)
Kevin Van Stambrook
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

9608228.DLN <13>

E.L. Pacific

Laboratory Report

Environmental Laboratory of the Pacific
930 Mapunapuna Street, Suite 100
Honolulu, Hawaii 96819
Phone: 808•831-3090 Fax: 808•831-3098

Department of Land & Natural Res./SOH
1151 Punchbowl St, Rm 221
Honolulu, HI 96813
Attention: Dickey Lee

Client Project ID: Kokee Expl. Well/93-KP-B2
Matrix: Water
QC Sample Group: 896-0754

Reported: Oct 22, 1996

QUALITY CONTROL DATA REPORT

ANALYTE	Turbidity
Method:	EPA 180.1
Analyst:	TKL

Date Analyzed:	8/30/96
Instrument I.D.#:	Turb-3
Sample #:	8960745
Sample Concentration:	11 NTU
Sample Duplicate Concentration:	11 NTU
RPD:	0.0
RPD Control Limits:	0-20

E.L. PACIFIC

Kevin Van Slambrook
Project Manager

9608228.DLN <14>

Food Quality Labs

1505 Dillingham Blvd., Suite 220
Honolulu, Hawaii 96817
Tel/Fax: 808-841-4484

For: Hawaii Analytical
930 Mapunapuna St., #100
Honolulu, HI 96819

Case No. 64
Received: 8-30-96
Analyzed: 8-30-96
Completed: 9-01-96

Lab No.	Sample	Total Coliform MPN/100 mL				
150	Water #8960754 Job #9608228 Job Name: DLNR	<2				
	METHOD: Total Coliform SMWW 18 9221 B Standard Total Coliform Fermentation Technique, MRL = 2/100 mL					

Analyzed by:
W Muir

Food Quality Analysts, Inc.
Portland, Oregon

Received: 09/09/96 09/16/96 12:24:46

REPORT TO: ENVIRONMENTAL LABORATORY OF THE PACIFIC
930 MAPUNAPUNA ST., STE. 100
HONOLULU, HI 96819
ATTEN AOLANI JANKOVIAK

PREPARED BY: Environmental Enterprises
10163 Cincinnati-Dayton Rd.
Cincinnati, Ohio 45241
CERTIFIED BY
ATTEN Wayne Collier
PHONE (513) 772-2818 CONTACT LINDA

CLIENT ENVI35 SAMPLES 1
COMPANY ENVIRONMENTAL LABORATORY
FACILITY OF THE PACIFIC

Enclosed are the results of specified samples submitted for analysis. If you have any questions please use Order # for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL #4095, MICROBIOLOGICAL #850

WORK ID 8960754
TAKEN CUSTOMER
TRANS DELIVERED
TYPE DRINKING WATER
P.O. #
INVOICE under separate cover

METHOD # 531.1 - ANALYZED ON 09/12/96

SAMPLE IDENTIFICATION	TEST CODES and NAMES used on this workorder
01 8960754	OH SOC Pesticides/Organic Chem.

SAMPLE ID 8960754 FRACTION 01A TEST CODE OH_SOC NAME Pesticides/Organic Chem.
Date & Time Collected 08/29/96 Category

PARAMETER	RESULT	LIMIT	ANALYST	METHOD	MCL
Alachlor	NR	0.20		525.2	2
Aldicarb	BDL	0.50	BD	531.1	7*
Aldicarb Sulfone	BDL	0.50	BD	531.1	7*
Aldicarb Sulfoxide	BDL	0.50	BD	531.1	7*
Aldrin	NR	0.010		508	**
Atrazine	NR	0.10		525.2	3
Benzo(a)pyrene	NR	0.020		550.1	0.2
Butachlor	NR	2.0		525.2	**
Carbaryl	BDL	2.0	BD	531.1	**
Carbofuran	BDL	0.90	BD	531.1	40
Chlordane (total)	NR	0.10		508	2
Dalapon	NR	1.0		515.1	200
Dibromochloropropane	NR	0.020		504.1	0.2
Dicamba	NR	5.0		515.1	**
Dieldrin	NR	0.020		508	**
Di(2-ethylhexyl)adipate	NR	0.60		525.2	400
Di(2-ethylhexyl)phthalate	NR	0.60		525.2	6
2,4-D	NR	0.10		515.1	70
Dinoseb	NR	0.20		515.1	7
Diquat	NR	0.40		549.1	20
Endothall	NR	9.0		548.1	100
Endrin	NR	0.010		508	2
Ethylene Dibromide	NR	0.010		504.1	0.05
Glyphosate	NR	6.0		547	700
Heptachlor	NR	0.010		508	0.4
Heptachlor Epoxide	NR	0.010		508	0.2
Hexachlorobenzene	NR	0.010		508	1
Hexachlorocyclopentadiene	NR	0.10		525.2	50
3-Hydroxycarbofuran	BDL	2.0	BD	531.1	**
Lindane	NR	0.010		508	0.2
Methomyl	BDL	5.0	BD	531.1	**
Methoxychlor	NR	0.010		508	40
Metolachlor	NR	2.0		525.2	**
Metribuzin	NR	2.0		525.2	**
Oxamyl (Vydate)	BDL	2.0	BD	531.1	200
Pentachlorophenol	NR	0.040		515.1	1
Picloram	NR	0.10		515.1	500
PCB's (total)	NR	0.10		508	0.5
Aroclor 1016	NR	0.10		508	0.5
Aroclor 1221	NR	0.10		508	0.5
Aroclor 1232	NR	0.10		508	0.5
Aroclor 1242	NR	0.10		508	0.5
Aroclor 1248	NR	0.10		508	0.5
Aroclor 1254	NR	0.10		508	0.5
Aroclor 1260	NR	0.10		508	0.5
Propachlor	NR	2.0		525.2	**
Simazine	NR	0.070		525.2	4
Toxaphene	NR	0.50		508	3
2,4,5-TP (Silvex)	NR	0.20		515.1	50

EBI REPORT ork Order # 96-09-167
Results by Sample Continued From Above

SAMPLE ID 8960754

FRACTION 01A TEST CODE OH SOC NAME Pesticides/Organic Chem.
Date & Time Collected 08/29/96 Category

Notes and Definitions for this Report:

UNITS ug/l
BDL = Below Detectable Limit
NR = Not Required
LIMIT = Reporting Limit
MCL = Maximum Contaminant Level
* Unregulated, MCL is not established yet.
** None

Sample # 9609167-01A

METHOD 531.1 CARBOMATES						
DAILY CALIBRATION CHECK STANDARD						
	Exp. Value	True Value	% Rec	QC Limits		
Aldicarb	15.079	12.5 UG/L	120	80-120		
Aldicarb Sulfoxide	12.484	12.5 UG/L	100	80-120		
Aldicarb Sulfone	9.941	12.5 UG/L	80	80-120		
Oxamyl	10.425	12.5 UG/L	83	80-120		
Methomyl	10.61	12.5 UG/L	85	80-120		
3-Hydroxycarbofuran	10.213	12.5 UG/L	82	80-120		
Carbofuran	9.978	12.5 UG/L	80	80-120		
Carbaryl	10.385	12.5 UG/L	83	80-120		
LABORATORY FORTIFIED SAMPLE						
	Exp. Value	True Value	% Rec	QC Limits		
Aldicarb	5.707	5.0 UG/L	114	70-130		
Aldicarb Sulfoxide	4.427	5.0 UG/L	89	70-130		
Aldicarb Sulfone	3.591	5.0 UG/L	72	70-130		
Oxamyl	3.83	5.0 UG/L	77	70-130		
Methomyl	3.891	5.0 UG/L	78	70-130		
3-Hydroxycarbofuran	4.039	5.0 UG/L	81	70-130		
Carbofuran	3.734	5.0 UG/L	75	70-130		
Carbaryl	3.891	5.0 UG/L	78	70-130		
SPIKE/DUPLICATE SPIKE						
	True Value	Spike Value	% Rec	Dup Spike	% Rec	Range
Aldicarb	5.0 UG/L	7.365	147	8.37	167	70-130
Aldicarb Sulfoxide	5.0 UG/L	5.978	120	6.712	134	70-130
Aldicarb Sulfone	5.0 UG/L	4.767	95	5.367	107	70-130
Oxamyl	5.0 UG/L	5.197	104	5.873	117	70-130
Methomyl	5.0 UG/L	5.155	103	5.724	114	70-130
3-Hydrocarbofuran	5.0 UG/L	4.905	98	5.488	110	70-130
Carbofuran	5.0 UG/L	4.979	100	5.736	115	70-130
Carbaryl	5.0 UG/L	5.18	104	5.743	115	70-130

Environmental Health Laboratories

110 S. Hill Street
South Bend, IN 46617-2702
(219) 233-4777
(219) 233-3272
FAX (219) 233-8207

LABORATORY REPORT

Client: Sequoia Analytical
Attn: Camille Alcayde
680 Chesapeake Drive
Redwood City, CA 94063

Report: 231372-74a
Priority: Rush Written
Status: Amended

Project / Site: DLNR 8960754/9608228 - Work Order# 9609058 / Fraction# 01

Samples Submitted: Three drinking water samples

Copies to: None

Collected: 08-29-96 By: Client Received: 09-06-96

REPORT SUMMARY

None of the analytes included in the detailed parameter list were detected in the sample submitted for analysis. Other compounds detected: Butylbenzylphthalate at a concentration of 2.4 ug/L. There is no MCL for this parameter.

Note: The sample submitted for Method 549.1 analysis was received beyond the 7 day holding time. The client was notified of the situation, and analysis was authorized by Camille Alcayde of Sequoia Analytical.

Note: The sample submitted for Method 525.2 analysis was broken in the laboratory, therefore the sample analyzed for Method 525.2 was from the container submitted for Method 549.1 analysis. 874 mL of sample were extracted for Method 525.2 analysis, which was sufficient to meet EHL reporting limits.

Note: This report was amended on 09-20-96 to add results for chlorothalonil analysis at the request of the client.

Detailed quantitative results are presented on the following page.

Results of all associated quality control samples were within acceptance limits, except where noted. No project specific quality control was requested.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call us at (219) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from Environmental Health Laboratories (div. of MAS Technology Corporation).

Reviewed By: _____ Date: 9-20-96

Finalized By: _____ Date: 09-20-96

Client: Sequoia Analytical Report: 231372-74a

Project / Site: DLNR 8980754/9608223 - Work Order# 9609058 / Fraction# 01

PARAMETER	SDWA Method	MDL* (ug/L)	Results (ug/L)	MCL (ug/L)	Analysis Date	Lab Number
Alachlor (Lasso)	525.2	0.1	< 0.1	2	09-10-96	231372
Aldicarb				3		
Aldicarb Sulfone				2		
Aldicarb Sulfoxide				4		
Aldrin	525.2	0.1	< 0.1	---	09-10-96	231372
Arocior 1016				£		
Arocior 1221				£		
Arocior 1232				£		
Arocior 1242				£		
Arocior 1248				£		
Arocior 1254				£		
Arocior 1260				£		
Atrazine	525.2	0.1	< 0.1	3	09-10-96	231372
Benzo(a)pyrene	525.2	0.02	< 0.02	0.2	09-10-96	231372
Butachlor	525.2	0.1	< 0.1	---	09-10-96	231372
Carbaryl				---		
Carbofuran				40		
alpha-Chlordane	525.2	0.1	< 0.1	---	09-10-96	231372
gamma-Chlordane	525.2	0.1	< 0.1	---	09-10-96	231372
Chlordane				2		
Chlorothalonil	525.2	0.1	< 0.1	---	09-10-96	231372
2,4-D				70		
Dalapon				200		
1,2-Dibromo-3-chloropropane				0.2		
Dicamba				---		
Dieldrin	525.2	0.1	< 0.1	---	09-10-96	231372
Di (2-ethylhexyl) adipate	525.2	0.6	< 0.6	400	09-10-96	231372
Di (2-ethylhexyl) phthalate	525.2	0.6	< 0.6	6	09-10-96	231372
Dinoseb				7		
Diquat	549.1	0.4	< 0.4	20	09-06-96	231374
Endothall				100		
Endrin	525.2	0.01	< 0.01	2	09-10-96	231372
Ethylene dibromide (EDB)				0.05		
Glyphosate (Round-up)	547	6.0	< 6.0	700	09-06-96	231373
Heptachlor	525.2	0.04	< 0.04	0.4	09-10-96	231372
Heptachlor epoxide	525.2	0.02	< 0.02	0.2	09-10-96	231372
Hexachlorobenzene	525.2	0.1	< 0.1	1	09-10-96	231372
Hexachlorocyclopentadiene	525.2	0.1	< 0.1	50	09-10-96	231372
3-Hydroxycarbofuran				---		
Lindane (gamma-BHC)	525.2	0.02	< 0.02	0.2	09-10-96	231372
Methoxychlor	525.2	0.1	< 0.1	40	09-10-96	231372
Methomyl				---		
Metolachlor (Dual)	525.2	0.1	< 0.1	---	09-10-96	231372
Metribuzin (Sencor)	525.2	0.1	< 0.1	---	09-10-96	231372
Oxamyl (Vydate)				200		
Pentachlorophenol				1		
Picloram (Tordon)				500		
Propachlor	525.2	0.1	< 0.1	---	09-10-96	231372
2,4,5-TP (Silvex)				50		
Simazine	525.2	0.07	< 0.07	4	09-10-96	231372
2,3,7,8-TCDD (Dioxin)				0.00003		
Toxaphene				3		

* EHL has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

£ Any positive Arocior result would require analysis for total PCB as decachlorobiphenyl by method 508A (MCL = 0.5 ug/L).

ALTA

Section I: Sample Inventory Report

Date Received: 9/ 4/96

Alta Lab. ID	Client Sample ID
2837-0001-SA	8960754

SECTION II.

Westmont, NJ 609-585-4800 | Piscataway, NJ 908-981-0550 | Carle Place, NJ 516-997-7251 | Smyrna, GA 404-333-6066 | Melbourne, Fl 407-725-5223 | Ann Arbor, MI 313-668-6810 | San Mateo, CA 415-570-5101

EMSL

Friday, September 13, 1996

Ref Number: CA967800

Environmental Laboratory of The Pacific
930 Mapunapuna St.
Suite 100
Honolulu, HI 96819

Asbestos Analysis in Water by Transmission Electron Microscopy (TEM) Performed by Method EPA-100.2

Project: DLNR - #9608228

Sample I	#Asbestos Structures (<10um)	(>10um)	#Non-Asbestos Fibrous Structures	Type(s) of Asbestos	Concentration of Asbestos Structures (Millions/Liters) (>10um)	(Total)	95% Confidence Limits (Lower-Upper) (Millions/Liters) (>10um)	(Total)	Detection Limit
8960754	0	0	1	ND	<0.18	<0.18	0.0 - 0.66	0.0 - 0.66	0.18
EMSL Blank	0	0	0	ND	<0.18	<0.18	0.0 - 0.66	0.0 - 0.66	0.18

Special Note: Samples which have high levels of particulate that require diluting lower than the minimum volume recommend by this method will necessarily have higher detection limits. Refer to Sections 11.10 and 13.6 of EPA/60/R-94/134, "Method 100.2" for further explanation.

Peter Frasca, Ph.D
Director

Joe Centifonti
Analyst

Laboratory
Supervisor

Other Approved
Signatory

ALTA

TCDD

EPA METHOD 8280

Method Blank | **Date Received:** NA | **ICAL ID:** I8280
Lab ID: 2837-0001-MB | **Date Extracted:** 9/12/96 | **QC Lot:** LC0912A
Matrix: Aqueous | **Sample Amount** 1.000 L | **Units:** ng/L

Compound	Conc.	D.L.	Ratio	S/N Ratio	Qualifier
2,3,7,8-TCDD	ND	0.010			

Isotopic Recovery Results

Internal Standard:	% R	Ratio	Qualifier
^{13}C-2,3,7,8-TCDD	98	0.79	

Clean-up Recovery Standard:			
^{37}Cl-2,3,7,8-TCDD	92	NA	

Dates Analyzed:

DB-5: 9/20/96

Analyst: _____ **Page 1 of 1** **Reviewer:** _____

ALTA

TCDD

EPA METHOD 8280

LCS1/LCS2 RESULTS		**Date Received:**	NA	**ICAL ID:**	I8280
Lab ID:	2837-LCS1/LCS2	**Date Extracted:**	9/12/96	**QC Lot:**	LC0912A
Matrix:	Aqueous	**Sample Amount**	1.000 L	**Units:**	NA

Compound	LCS1 %R	LCS2 %R	RPD %
2,3,7,8-TCDD	92	107	15

Isotopic Recovery Results

Internal Standard:	LCS1 %R	LCS2 %R
^{13}C-2,3,7,8-TCDD	95	93

Clean-up Recovery Standard:		
^{37}Cl-2,3,7,8-TCDD	93	106

Dates Analyzed:

DB-5: 9/20/96

Analyst: [signature] **Page1 of 1** **Reviewer:** [signature]

ALTA

TCDD

EPA METHOD 8280

Sample ID	8960754	**Date Received:**	9/4/96	**ICAL ID:**	I8280
Lab ID:	2837-0001-SA	**Date Extracted:**	9/12/96	**QC Lot:**	LC0912A
Matrix:	Aqueous	**Sample Amount**	1.026 L	**Units:**	ng/L

Compound	Conc.	D.L.	Ratio	S/N Ratio	Qualifier
2,3,7,8-TCDD	ND	0.0075			

Isotopic Recovery Results

Internal Standard:	% R	Ratio	Qualifier
^{13}C-2,3,7,8-TCDD	96	0.78	

Clean-up Recovery Standard:			
^{37}Cl-2,3,7,8-TCDD	91	NA	

Dates Analyzed:

DB-5: 9/20/96

Analyst: _____ **Page 1 of 1** **Reviewer:** _____

APPENDIX

ALTA

DATA QUALIFIERS & ABBREVIATIONS

A	**The amount detected is below the Method Calibration Limit.**
B	**This compound was also detected in the blank.**
C	**The amount detected is less than five times the Method Quantitation Limit.**
D	**The amount reported is the maximum possible concentration.**
E	**The detection limit was raised above the Method Quantitation Limit due to chemical interferences.**
F	**This result has been confirmed on a DB-225 column.**
G	**This result has been confirmed on a SP-2331 column.**
H	**The signal-to-noise ratio is greater than 10:1.**
I	**Chemical Interference**

Conc.	**Concentration**
D.L.	**Detection Limit**
NA	**Not applicable**
S/N	**Signal-to-noise**
*****	**See Cover Letter**
ND	**Not Detected**
MPC	**Maximum Possible Concentration**

ENVIRONMENTAL LABORATORY OF THE PACIFIC

930 Mapunapuna St., Suite 100
Honolulu, Hawaii 96819
Tel: (808) 831-3090 • Fax: (808) 831-3098

1 of 2

LAB JOB NO. #9608228
LAB DUE DATE
LOCATION 6, 16
CONTAINERS 9-1LA 2-1LN 2-500A 1-250A 12-VOAs

Chain of Custody / Analysis Request Form

Project Manager: DICKEY LEE

Name STATE OF HI - DLNR
Address 1151 PUNCHBOWL ST. RM 221
HONOLULU, HI 96813
Phone 587-0280 FAX 587-0283
Sampled by (Please Print): TATS NISHI
# of Samples in Shipment: 8

Project I.D.
Job Name KOKEE Expl. WELL
Job Number 93-KP-82
P.O. Number C22487
Date of Sample Shipment: 8-30-96
Date Results Needed: 9-20-96

Indicate Analysis Requested: ASBESTOS TEM; COLIFORMS, TOTAL MPN 9221 B; CYANIDE 335.2; FLUORIDE 340.2; NITROGEN, NITRATE 353.2; MERCURY 245.1; TOTAL METALS 200.7; TURBIDITY 180.1; 12-VOAs

Item No.	SAMPLE NO. / SAMPLE ID	COMP	GRAB	Matrix: Water	Soil	Sludge	Liquid	Solid	Oil	Other	Preservation Method	Sampling: Date	Time	Number of Containers	Laboratory Number
1	1		X	X								8-29-96		32	8960754
2															
3															
4															
5															
6															
7															
8															
9															
10															

Released by (Signature)	Date / Time Released	Delivery Method	Received by (Signature)	Company / Agency Affiliation	Date / Time Received	Condition Noted
	/	Hawaii Air		ELP	8-30-96 1145pm	good / 20°
	/		Michelle Ichiji		/	

Comments:

Please Check Box
- ☐ Dispose by Lab (Fee)
- ☐ Return to Client
- ☐ Archive

FILE COPY

ENVIRONMENTAL LABORATORY OF THE PACIFIC

930 Mapunapuna St., Suite 100
Honolulu, Hawaii 96819
Tel: (808) 831-3090 • Fax: (808) 831-3098

2 of 2

LAB JOB NO. 9608288
LAB DUE DATE
LOCATION 6, 16
CONTAINERS 4-1LA 2-1LN 1-250PN 2-500N 2-VOAs

Chain of Custody / Analysis Request Form

Project Manager: DICKEY LEE
Name STATE OF HI - DLNR
Address 1151 PUNCHBOWL ST. RM 221
HONOLULU, HI 96813
Phone 587-0280 FAX 587-0283

Project I.D.
Job Name KOKEE EXPL. WELL
Job Number 93-KP-82
P.O. Number C224487

Sampled by (Please Print)	# of Samples in Shipment	Date of Sample Shipment	Date Results Needed
TATS NISHI	10	8-30-96	9-20-96

Indicate Analysis Requested: EDB/DBCP 504; CHLORINATED PEST. 508; SYNTHETIC ORG. 525.2; GLYPHOSATE 547; CHLOROPHENOX 515.1; VOLATILE ORG. 524.2; CARBAMATE 531.1; DIQUAT 549; ENDOTHALL 548; DIOXIN 1613A; 12-VOAs

Item No.	SAMPLE NO. / SAMPLE ID	COMP	GRAB	Matrix: Water	Soil	Sludge	Liquid	Solid	Oil	Other	Preservation Method	Sampling: Date	Time	Number of Containers	Laboratory Number
1	1		X	X								8-29-96			8960764
2															
3															
4															
5															
6															
7															
8															
9															
10															

Released by (Signature)	Date / Time Released	Delivery Method	Received by (Signature)	Company / Agency Affiliation	Date / Time Received	Condition Noted
	/	Hawn Air		EAP	8-30-96 1445pm	good/20°
	/		Nikki Fehy		/	

Comments:
NCM 6 Rad 500s, 1613, Asbestos, Coliform, CN subbed.

Please Check Box
- ☐ Dispose by Lab (Fee)
- ☐ Return to Client
- ☐ Archive

FILE COPY

DRAFT ENVIRONMENTAL ASSESSMENT COMMENT AND RESPONSE

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

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

August 10, 1999

Mr. Tim Johns, Chair
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Johns:

Subject: Draft Environmental Assessment for the Kokee Well Development, Kauai

Thank you for the opportunity to review the subject document. We have the following questions and comments.

1. **Orientation Maps**

Please provide maps with the appropriate scale and coverage to analyze the aquifer or hydrologic unit that show the following:

a) known or assumed groundwater flowpaths, and known or assumed water level contours.

b) points or regions of known contamination, points of potential contamination (landfills, individual wastewater disposal systems, hazardous waste sites, dry wells and injection wells), and likely wellhead protection area for the proposed well.

2. **Contamination Analysis and Vulnerability Assessment**

Please summarize the details of the contamination analysis performed for the project. The analysis shows that several contaminants were detected. How do the contaminant levels compare with state and federal drinking water standards?

3. **Hydrologic Impact Analysis**

Please discuss the reasons for the observed significant reduction in the swampy area near the well site during pump testing. What is the likelihood that the drying may be caused

by the water withdrawal? Is further study warranted to address this issue?

4. **Alternative Analysis**

Please provide a more comprehensive list of alternatives to new groundwater development and discuss their related costs and benefits. The list should include but not be limited to wastewater reuse, rainfall catchment, non-potable water supplies, water conservation and Demand Side Management or Integrated Resources Planning. Show why developing a new source is more cost efficient than water conservation programs (slow-flow and low-flush retrofits, leak detection, etc.).

5. **Impacts of Accessory Facilities**

Please provide a plan or diagram showing the well's permanent production facilities including pumps, distribution pipelines, control devises, storage facilities, access roads and accessory structures. What are the impacts of these facilities?

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Genevieve Salmonson
Director

c: Land Division

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

SEP 29 1999

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
ENGINEERING BRANCH
PLANNING BRANCH
TECHNICAL & SUPPORT BRANCH
STATE PARKS

TO: Genevieve Salmonson, Director
Office of Environmental Quality Control

FROM: for Timothy E. Johns, Chairperson Janet E. Kawelo

SUBJECT: **Job No 93-KP-B7, Development of Water Well No. 0739-03, Kokee State Park, Kokee, Kauai**

Thank you for your August 10, 1999 letter regarding the draft Environmental Assessment (EA) for the subject project. All of your comments are noted and will be taken into consideration in our preparation of the Final Environmental Assessment.

We appreciate the time you spent reviewing the document. Should you have any further questions, please contact Mr. Andrew Monden, Chief Engineer of the Engineering Branch at Ext. 7-0230.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS, CHAIRPERSON
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LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

April 1, 1999

MEMORANDUM

LOG NO: 23150
DOC NO: 9903NM18

TO: Andrew Monden, Chief Engineer
Land Division

FROM: Don Hibbard, Administrator
State Historic Preservation Division

SUBJECT: **Historic Preservation Review -- DEA Job No. 93-KP-B7, Kokee Exploratory Well No. 0739-03, Kokee, Kauai**

Previous exploratory wells in the Kokee area have had "no effect" on significant historic sites. The map submitted with this application, shows that this well is located near the residential area, roads and near existing exploratory wells. Therefore, we believe that this project will have "no effect" on significant historic sites.

If you have any questions, please call Nancy McMahon 742-7033.

NM:amk

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

RECEIVED
DIVISION OF
STATE PARKS

APR 8 9 20 AM '99

MAR 30 1999

MAR 23 1998

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
ENGINEERING BRANCH
P.O. BOX 373
HONOLULU, HAWAII 96809
MAR 10 1999

TO:
- ADMINISTRATOR
- ASST. ADMIN.
- [illegible] BR.
- PLAN BR.
- RES. MGT. BR.
- PROJ. CONTROL
- SW. REC. PLAN.
- CLERICAL STAFF
- ADMIN. ASST.
- INTERP. BR.

Last pls.

FOR:
- CIRCULATE/POST/STAFF RM
- COMMENTS & REC.
- DRAFT REPLY
- FILE
- FOLLOW UP
- INFO.
- RUSH /DUE_____
- SEE ME
- SEND COPY TO:_____

~~TO:~~ From
Division of Forestry and Wildlife
Division of Historic Preservation
Division of State Park ✓
Division of Aquatic Resources
Division of Conservation and Resources Enforcement

~~FROM:~~ To:
Andrew Monden, Chief Engineer Andrew Monden

SUBJECT: Draft Environmental Assessment, Job No. 93-KP-B7, Kokee Exploratory Well No. 0739-03 Development, Kokee, Kauai

Transmitted for your review and comments is a copy of the Draft Environmental Assessment for the subject project. Please submit your comments by March 31, 1999. If we do not receive your comments by then, we will assume there are no comments or objections to this project.

If there are any questions on this matter, please have your staff contact Mr. Hiram Young of the Design Section at 7-0260.

HMY:ssk
Enclosure

~~NO COMMENTS~~/COMMENTS WE STRONGLY SUPPORT THIS PROJECT.

Date: 3/15/99
By: [illegible]

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

DIVISION OF AQUATIC RESOURCES		
DIRECTOR	X	Suspense Date:
COM FISHERIES		Draft Reply ☐
AQ RES/ENV		Reply Direct ☐
AQ RES/MGMT		Comments ☐
STAFF SVCS		Information ☐
FISH DEV		Comp Act & File ☐
STATISTICS		Return to:
AFRC		Copies to:
EDUCATION		Remarks:
SECRETARY		
OFFICE SVCS		99-1489
FED AID		

LRS/MY

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
ENGINEERING BRANCH
P.O. BOX 373
HONOLULU, HAWAII 96809
MAR 10 1999

TIMOTHY E. JOHNS, CHAIRPERSON
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RECEIVED
MAR 11 1999
DIV. AQUATIC RESOURCES

TO: Division of Forestry and Wildlife
Division of Historic Preservation
Division of State Park
Division of Aquatic Resources ✓
Division of Conservation and Resources Enforcement

FROM: Andrew Monden, Chief Engineer Andrew Monden

SUBJECT: Draft Environmental Assessment, Job No. 93-KP-B7, Kokee Exploratory Well No. 0739-03 Development, Kokee, Kauai

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If there are any questions on this matter, please have your staff contact Mr. Hiram Young of the Design Section at 7-0260.

HMY:ssk
Enclosure

~~NO COMMENTS~~/COMMENTS

Date: 3-29-99
By: [signature]

State of Hawaii
Department of Land and Natural Resources
DIVISION OF AQUATIC RESOURCES
March 29, 1999

MEMORANDUM

To: Dean Y. Uchida, Acting Administrator
Land Division
From: William Devick, Acting Administrator
Division of Aquatic Resources
Subject: Comments on __x__ Draft Environmental Assessment, Job No. 93-KP-B7

Comments Requested By: Andrew Monden

Date of Request: 3/10/99 Date Received: 3/11/99

Summary of Project

Title: Kokee Exploratory Well No. 0739-03
Proj. By: Engineering Branch, Land Division
Location: Kokee, Kauai, Hawaii

Brief Description:

The Kokee State Park was originally serviced by surface water pumped from Elekeninui Stream. This water, however, often did not meet minimum water quality standards set by DOH. To resolve these problems and meet the water quality standards, two wells were drilled and developed. Located at an elevation of 3,560 feet, Well 'A' is located near the intersection of Elekeninui and Elekeniiki Streams. Well 'B' is located approximately 500 feet from the park's pumphouse, which lies on the opposite bank of Elekeninui Stream. Currently, Well 'A' is the primary source and produces 40 gallons per minute. Well 'B' , due to its location in a dense basalt geological formation, has limited water production and is used as a standby source.

The existing system is inadequate to meet the needs of Kokee State Park. It is unreliable, and has required the delivery of supplemental water by tanker truck during extreme dry periods to avoid park closure. The development of a supplemental source of water is necessary for drinking, sanitation and fire protection.

The proposed solution is to develop a third well, the existing Kokee Exploratory Well No. 0739-03, located within the park, as a supplemental source of drinking water. The project calls for the installation of a 40 gpm submersible pump, pump controls, connecting 3-inch pipeline to the existing 4-inch transmission water line, chlorination system and related electrical improvements. A monitoring report prepared by the U.S. Geological Survey indicated that there appeared to be no reduction in stream flow during a pump test of Well No. 0739-03. The yield of the well will be limited to 40 gpm or less.

Comments:

We have no objection to the proposed project.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
JANET E. KAWELO

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
ENGINEERING BRANCH
P.O. BOX 373
HONOLULU, HAWAII 96809
MAR 10 1999

TO: Division of Forestry and Wildlife ✓
Division of Historic Preservation
Division of State Park
Division of Aquatic Resources
Division of Conservation and Resources Enforcement

FROM: Andrew Monden, Chief Engineer Andrew Monden

SUBJECT: Draft Environmental Assessment, Job No. 93-KP-B7, Kokee Exploratory Well No. 0739-03 Development, Kokee, Kauai

Transmitted for your review and comments is a copy of the Draft Environmental Assessment for the subject project. Please submit your comments by March 31, 1999. If we do not receive your comments by then, we will assume there are no comments or objections to this project.

If there are any questions on this matter, please have your staff contact Mr. Hiram Young of the Design Section at 7-0260.

HMY:ssk
Enclosure

RECEIVED
'99 MAR 10 P3:52
FORESTRY & WILDLIFE
STATE OF HAWAII

NO COMMENTS COMMENTS

Date:
By: