TO ____________________________

DATE ________________________ TIME ______________________

WHILE YOU WERE OUT

M. Wade Kagawa
of [Redacted]
Phone [Redacted]

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RETURNED YOUR CALL

Message: CHEVOLI 5LD

Done

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<td>E. Hirano</td>
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FOR YOUR:

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<td>S. Kokubun</td>
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</table>

COMMISSION ON RESOURCE MANAGEMENT

FROM: [Signature]  DATE: 9/10  FILE IN: [Signature]
Mr. Karl O. Mohn
Manager
Hawaiian Refinery
Manufacturing Department

Dear Mr. Mohn:

We acknowledge receipt of your request for approval to close Recovery Site 1, an area along Kalaeloa Boulevard, which consists of 60 wells (15 recovery + 45 monitoring). We appreciate the recovery efforts you have made from March 1987 to the present.

By this letter we are approving your request to close Recovery Site 1 in an environmentally responsible manner. Thank you for keeping us informed.

Sincerely,

RAE M. LOUI
Deputy Director

ES:ky
State of Hawaii
Department of Land & Natural Resources

Attention: Ms. Rae Loui
Deputy Director
Commission on Water Resource Management

Dear Ms. Loui:

At this time, Chevron U.S.A. Products Company is formally requesting approval to close Recovery Site 1, an area along Kalaeloa Boulevard, which consists of 60 wells (15 recovery + 45 monitoring). Site history and well closure plans are described below.

A leak was discovered on Chevron's White Oil Pipeline in March 1987 at milepost 1.4, along Kalaeloa Boulevard at the entrance to Campbell Industrial Park. The material was analyzed and found to be comprised of a volatile mixture of motor gasoline and jet fuel. The pipeline was shut down and the leak was repaired.

Chevron's Corporate Hydrogeologist and Industrial Hygienist were immediately notified and a team leader was flown in for site assessment. Plans were drawn up and Dames & Moore was contracted to delineate the plume by installing a large number of monitoring wells, commencing March 16, 1987. A plume of volatile hydrocarbon was found below the surface underlying Oahu Sugar Company field 004. This hydrocarbon was found floating on brackish, non-potable water. An array of oil recovery wells with associated gravitational skimmers was installed to intercept and recover the hydrocarbon.

Intensive recovery efforts have continued from March 1987 to the present. Periodic monitoring of hydrocarbon levels indicate a sharp decline in the recoverable hydrocarbon and we feel, after five years of active recovery effort, that we have reached the practical limits of liquid hydrocarbon recovery. The December 1991 data shows non-detectable levels in most of the monitoring wells. See attached Figures 1a to 1g. A few wells (5 of 38 wells) show trace amounts of hydrocarbon averaging 0.02 feet (< 1/4 inches).

Also provided for your reference is Drawing No. HB-523-03, showing the locations of all wells at Recovery Site 1.
We have sampled the groundwater from selected monitoring wells at the site and the results indicate only trace amounts of BTEX (benzene, toluene, ethylbenzene and xylene). Please refer to attached Figures 2a to 2f. We feel that the remaining trace amount of hydrocarbon does not pose a health risk to personnel or the environment and does not, in any manner, affect the use of this land for agriculture or industrial development. Oahu Sugar Company has told us that they and Campbell Estates, the landowner, want to use the land for sugarcane production, as Oahu Sugar Company had done before the leak.

We greatly appreciate your consideration in granting us approval to close Recovery Site 1, as we have successfully done for the former Site 2C (allowing construction of a drainage canal adjacent to the Villages at Kapolei). Once again, we intend to close this site in an environmentally responsible manner. We intend to utilize similar well closure methods as for the former Site 2C. Sketch SK 10246 shows a typical well closure diagram for this project.

If you have any questions, please contact Stan Sato at [redacted].

Very truly yours,

[Signature]

Karl O. Mohn

SYS:jmk
Enclosures

cc: Mr. Bruce Schlieman
Department of Health
Hazard Evaluation & Emergency Response Office
## SITE #1 COMPARISON OF BEGINNING AND END DATA

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1. **ALL READINGS IN HUNDREDTHS OF A FOOT.**

2. **BLANK SPACES IN DEC.'91 COLUMNS**
   DENOTE READINGS NOT TAKEN FOR THAT PERIOD, WELLS
   DESTROYED/DAMAGED PREVIOUSLY. CAN NOT GAIN ACCESS
   TO THE CASINGS FOR READINGS.

3. **REBOUNDS IN WELL H/C THICKNESSES AT WELLS #29, #37**
   AND #42 ARE DUE TO THEIR LOCATIONS DOWNSTREAM OF THE
   MAIN PLUME.
SITE #1 COMPARISON OF BEGINNING AND END DATA

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1. ALL READINGS IN HUNDREDTHS OF A FOOT.

2. BLANK SPACES IN APR.'87 COLUMN DENOTE READINGS NOT TAKEN FOR THAT PERIOD, THESE WELLS WERE NOT YET INSTALLED.

3. REBOUNDS IN WELL H/C THICKNESSES AT WELLS #29, #37 AND #42 ARE DUE TO THEIR LOCATIONS DOWNSTREAM OF THE MAIN PLUME.

Figure 1b
BEGINNING VS END DATA COMPARISON

Figure 1d
Figure 1e
BEGINNING VS END DATA COMPARISON

WELL NUMBERS

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Figure 1f
BEGINNING VS END DATA COMPARISON

![Graph showing well numbers and thickness comparison between April 1987 and December 1991.](image)

Figure 1g
Figure 2a

Located nearest to leak site.
SITE 1: WELL #21

Figure 2b
Figure 2c
Figure 2d

SITE 1: WELL #43

PPM

YEAR

4/88 8/88 1992

BENZENE
TOLUENE
XYLENE
SITE 1: WELL #45

Figure 2f
NOTES

1. STEEL WELL CASINGS ARE TO BE REMOVED AND MANUFACTURED ROCK BACKFILL REMOVED BY REDRILLING THE WELL.

2. ALL CONCRETE AND VENT GROUT SHALL BE APPLIED BY TREMMY TUBE. VENT SEAL SHALL BE CURED FOR 48 HOURS BEFORE CONCRETE IS APPLIED. CONCRETE SHALL BE CURED FOR 48 HOURS PRIOR TO FINAL CORAL BACKFILL.
WELL CONSTRUCTION/PUMP INSTALLATION PERMIT

for

Chevron U.S.A. Hawaiian Refinery
Oil Recovery Wells
Barbers Point, Oahu

TO: Chevron U.S.A. Inc.

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your request for a "blanket" application to construct oil recovery wells at the refinery is approved subject to the following conditions:

1. The Division of Water Resource Management (DWRM), shall be notified, in writing, before any work covered by this permit commences.

2. The permit shall be for construction and installation of oil recovery pumps in the wells.

3. The proposed use shall not adversely affect existing or future legal uses in the area.

4. The applicant shall comply with all applicable laws, rules, and ordinances.

Aug 2 1991

WILLIAM W. PATY, Chairperson
Commission on Water Resource Management

Date of Issuance

cc: USGS
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Honolulu Board of Water Supply
State of Hawaii
Department of Land and Natural Resources
Deputy Director
Commission on Water Resource Management

Attn: Mr. M. Tagomori

Dear Mr. Tagomori:

Enclosed is our "blanket" application to construct oil recovery wells on the Chevron U.S.A. Inc. Hawaiian Refinery site for the purpose of continuing oil recovery from existing underground plumes. Also enclosed is a sketch (SK 10-076-2) which shows typical oil recovery well construction. Please note that these wells will be used strictly for hydrocarbon recovery and the Selective Oil Skimmer (SOS) Pumps used will selectively recover only oil and not water.

If you have any questions pertaining to these proposed oil recovery wells, please contact Mr. Stan Sato at [redacted]

Very truly yours,

K. O. MOHN

SYS:myw
Enclosures

cc: DWK
MKA
CJK
24" x 24" well vault to provide security to wellhead.

Coral cuttings as backfill around well vault.

2" PVC housing air supply and recovered HC return lines.

NOTES

1. 8" SCH 40 PVC pipe well casing
2. 8" SCH 40 PVC well casing w/.040 perforations on 1/2" spacing
3. Silt sump at well bottom
4. 8" PVC sup cap

10' perf zone
7' sump
24" hole drilled 25' deep
APPLICATION FOR

X WELL CONSTRUCTION PERMIT
X PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 273, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable filing fee of $15.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 548-1543. Hydrology/Geology section for assistance.

1. WELL LOCATION
   Island Oahu
   Address
   Tax Map Key
   (Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER
   Firm Name Chevron U.S.A. Inc.
   Contact Person K. O. Mohr
   Address
   Phone

3. LANDOWNER
   Firm Name
   Contact Person
   Address
   Phone

4. PROPOSED CONTRACTOR FOR: X Well Drilling  O Pump Installation
   Name Foundation International, Inc.
   Address
   Phone
   Contractor's License No. C-8008

5. PROPOSED USE
   X Municipal (including hotels, stores, etc.)  O Military
   O Domestic (individual, noncommercial water systems)  O Industrial
   O Irrigation (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL
   ___________ gallons per day (oil recovery only)

7. PROPOSED PUMP INFORMATION
   Pump Type: O Vertical Turbine
   Motor: O Diesel  O Gas
   Submersible  O Electric:  O Centrifugal
   Rated Pump Capacity 1 gallons per minute (gpm) skimming ejector pump (pneumatic)

Well Owner (print) Chevron U.S.A. Inc.
Signature
Date 7/12/91

Landowner (print) Chevron U.S.A. Inc.
Signature
Date 7/12/91

For Official Use Only:
Field Checked By__________________________ Latitude ____________ Hydrologic Unit ____________
Date__________________________ Longitude ____________ State Well No.____________________
Briefly describe the proposed work:

Up to 250 wells to be constructed. See sketch SK 10-076-2. The purpose of these wells is to provide access to a plume of free-floating hydrocarbon. Selective skimming pumps will be installed to remove hydrocarbon floating on the water table.

PROPOSED SECTION OF WELL

Elevation at top of casing ft., msl. Ground Elev. ft., msl*

Cement Grout ft. Solid Casing:

Hole Dia. in. Material Length ft.

Wall thickness in.

Total Depth ft. Casing: /Perforated /Screen

Material Length ft.

Wall thickness in.

Openings sq. in./L.F.

Rock Packing ft. Open Hole:

Length

Diameter in.

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
Chevron U.S.A. Inc.
Honolulu, Hawaii

DEPARTMENT OF LAND AND NATURAL RESOURCES

Chevron U.S.A. Inc. $25 and 00/100

First Hawaiian Bank
Ewa Beach Branch

Oil Recovery Wells

Issued 8-2-91

Date
Month 07
Day 19
Year 91

No.

Refinery Working Fund Account

S.A. Hengel
Two signatures required if $10,000 or mo

80-2201-HAW-3 (DS-3)
Mr. K. O. Mohn  
Manager  
Hawaiian Refinery  
Manufacturing Department  
Chevron U.S.A.  

Dear Mr. Mohn:

Sealing of Oil Recovery Wells

We acknowledge receipt of (1) your letter informing us of the completion of the sealing of the oil recovery wells (Well Nos. 1806-14M to 25M) near Hanua Street, Campbell Industrial Park, and (2) your request to proceed to redrill, seal, and cap the wells at Site 2C adjacent to the Barbers Point Naval Air Station.

By this letter we are approving your request to proceed with sealing the wells. Please submit a Well Abandonment Report form within thirty days after completion of the work.

Call the Regulation Branch at [Redacted] if you have any questions.

Sincerely,

[Signature]

MANABU TAGOMORI  
Deputy Director

ES:bm
DIVISION OF WATER RESOURCE MANAGEMENT

FROM:                     DATE:       FILE IN: 1806-14h to 25h
TO:  INITIAL:          PLEASE:          REMARKS:

G. AKITA  L. Nanbu
E. Sakoda  G. Matsumoto  E. Lau
L. Chang  Y. Shiroma

See Me  Take Action By
Route to Your Branch  Review & Comment
Draft Reply  Acknowledge Receipt
Xerox ___ copies  File
Mail

FOR YOUR:

Approval  Signature
Information

Get location maps from Kim B.

12-26-90
State of Hawaii  
Department of Land and Natural Resources  
Deputy Director  
Commission on Water Resource Management  

Attention: Mr. M. Tagomori  

Per conversations between Mr. Ed Sakoda of your Department and Mrs. Maureen K. Appleton of our Design group we are sending you Sketch SK #28-243 showing the oil recovery well capping profile used to remove and seal the recovery wells at the TDC Site on Hanua St. One change was made per the land owners request. The top two to three foot section of fill was changed from crushed coral to 2500 PSIG concrete to facilitate future construction at the site. We want to report that the work to redrill, seal and cap these wells is now complete.

Also enclosed is Sketch SK #28-244 which shows the proposed method by which our recovery wells located within former Campbell Estate land directly adjacent to the Barbers Point Naval Air Station would be removed. The State of Hawaii, Housing, Finance and Development Corporation has plans to install a flood control drainage canal to protect the Kapolei Village development area. They are requesting that our recovery wells in the future canal area be removed. The depth of the sealing plug per our sketch is designed to accommodate the State’s plans to excavate this area to twenty five feet below existing grade. We would like permission to proceed to redrill, seal and cap those wells in accordance with attached plan.

If you have any questions in your review of the attached Design Sketches or procedure for removal of the Kapolei site wells, please contact Mr. Kim Beasley at [redacted]

Very truly yours,

K. O. MOHN

KPB  
Attachments
1. All well casing and manufactured rock backfill is to be removed by redrilling the well.

2. All concrete and vent grout shall be applied by tremmy tube. Vent seal shall be cured for 48 hours before concrete is applied. Concrete for 48 hrs prior to final coral backfill.

Chevron U.S.A. Inc.
Hawaiian Refinery

OIL RECOVERY SITE 2-C
CAMPBELL ESTATE LAND - NEAR
B/PT. NAS - FUTURE KAPOLEI
WELL SEALING & CAPPING PROFILE

SK 28-244
NON SHRINK VENT SEAL

CRUSHED CORAL

2' 4' 4' 1' 3' 11'

2500 PSIG CONCRETE TO SUPPORT FUTURE FOUNDATION

HIGH-HIGH GROUND WATER ELEVATION BELOW EXISTING GRADE

NOTES

1. PRIMARY BACKFILL SHALL BE CRUSHED CORAL.

2. VENT PLUG SHALL BE A 1:1:1 MIXTURE OF SAND, BENTONITE AND SECA 212 NON-SHRINK GROUT.

3. ALL WELL CASING AND MANUFACTURED ROCK BACKFILL IS TO BE REMOVED BY REDRILLING THE WELL.
CHEVRON U.S.A. INC.
HAWAIIAN REFINERY
91-480 MALAKOLE STREET
EWABEACH, HAWAII 96707

FAX No: RAPICOM 120 (808) 682-2214

TELECOPY TRANSMISSION

TO: 
STATE OF HAWAII
WATER RESOURCES

MR ED SAKODA

FROM: 
DESIGN ENGINEERING
MR. KIM BEASLEY

NUMBER OF PAGES (including cover): 3

SPECIAL INSTRUCTIONS:

MR. SAKODA,

I HOPE THESE SKETCHES SHOW
THE TWO LOCATIONS TO YOUR SATISFACTION.
IF FURTHER DETAIL IS REQUIRED PLEASE
CONTACT ME.

******************************
Thanks.

If you do not receive all pages, please call ___________ immediately.

Operator's Name ___________ Date & Time Transmitted ___________

Return original to: ____________________________
CHECKLIST

**WELL CONSTRUCTION PERMIT**

**WELL NAME or LOCATION:** Chevron Hanna St. Oil Recovery Wells

**WELL NUMBER:** 1806-14 M+, 25 M

**OWNER or OPERATOR:** Chevron U.S.A. Inc.

**TELEPHONE (contact person):** K.O. Mohn

Date application received: 11-21-89
Date acknowledged receipt/request more info: NA
Date application accepted: NA
Suspense date (90 days): NA
Date filing fee deposited: 11-28-89

Application sent to following:

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Date agenda due: NA
Date submittal due: NA
Date submittal sent to applicant: NA
Date application **_approved or _disapproved:** SIGNED 11-30-89
Date applicant notified of decision: Sent 12-5-89

**REMARKS:** Categorize as monitor test holes (even with ODA Csg.) since holes are temporary and for oil recovery only.
Mr. Manabu Tagomori  
Deputy Director  
Commission on Water  
Resource Management  
Department of Land and  
Natural Resources  
State of Hawaii

Dear Mr. Tagomori:

Subject: Well Construction Permit for Chevron-Hanua Oil  
Recovery Wells No. 1806-14M to 25M, Ewa Beach

We do not have any comments or objections to these wells.

We would appreciate a copy of the as-built drawings,  
geological logs, and hydrological information when you  
receive these data from the driller.

Very truly yours,

KAZU HAYASHIDA  
Manager and Chief Engineer
HONOLULU WATER MANAGEMENT AREA

WELL CONSTRUCTION PERMIT
for
Chevron-Hanua Street Oil Recovery Wells
Well Nos. 1806-14M to 25M
Ewa Beach, Oahu

TO: Chevron U.S.A. Inc.

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your application to construct twelve shallow, oil recovery wells along Hanua Street at Campbell Industrial Park (see attached map) is approved, subject to the following conditions:

1. The Division of Water and Land Development (DOWALD), Geology-Hydrology Section, shall be notified at [redacted], before any work covered by this permit commences.

2. The wells shall be used for oil recovery only.

3. The following shall be submitted to DOWALD, [redacted] Honolulu, [redacted] within 30 days after completion of the wells:
   a. Plot plan and map showing the exact locations of the wells if not as proposed.
   b. Periodic reports of results of recovery operations.

4. The applicant shall comply with all applicable laws, rules, and ordinances.
WELL CONSTRUCTION PERMIT
Well Nos. 1806-14M to 25M

5. This permit may be revoked if work is not started within six months of date of issuance or if work is suspended or abandoned for six months. The work shall be completed within two years of the date of issuance.

6. Upon completion of recovery operations, the applicant shall obtain a well construction permit to seal the wells with cement grout in a manner approved by the Department.

WILLIAM W. PATY, Chairperson
Commission on Water Resource Management

NOV 30 1989
Date of Issuance

Enc.
cc: USGS
Department of Health,
Drinking Water Branch
Ground Water Protection Program
Honolulu Board of Water Supply
Categorize with similar text holes since wells are temporary in nature and for oil recovery only. Ed 11-28-89.
WELL CONSTRUCTION PERMIT APPLICATION

Department of Land & Natural Resources
Division of Water and Land Development

Gentlemen:

Enclosed is a completed Application for Well Construction Permit and the $25.00 filing fee. Chevron intends to construct shallow wells on property along Hanua Street in the Campbell Industrial Park. These wells will be used for underground oil recovery. Pursuant to a telephone discussion on October 5, 1989 (Ed Sakoda/Virg Carvalho), your office indicated it is requiring only one application in this instance.

Sketch SK 10-075 delineates the proposed well locations and associated recovery piping network. Sketch SK 10-076 shows the typical well design. A site-specific copy of the (U.S. Geological Survey) Ewa Quadrangle map is also enclosed. The work will be coordinated by our Mr. Kim Beasley. Please contact him at [contact information redacted] if you have any questions regarding the application or the work.

Very truly yours,

K. O. MOHN

VAC
Enclosures
APPLICATION FOR

X WELL CONSTRUCTION PERMIT

X PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 372, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 548-1542, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island Oahu
Tax Map Key 1-9-1-14-18; 1-9-1-14-20; 1-9-1-14-15
Address Hanua Street, Campbell Industrial Park

(Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER

Firm Name Chevron U.S.A. Inc.
Contact Person K. O. Mohn
Address
Phone

3. PROPOSED CONTRACTOR FOR:

☐ Well Drilling ☐ Pump Installation

Name Foundation International Inc.
Address
Phone
Contractor's License No. C-8088

4. PROPOSED WORK

☐ Drill New Well ☐ Deepen ☐ Redrill
☐ Alter ☐ Seal ☐ Abandon
☐ Install New Pump ☐ Replace Pump ☐ Modify Pump

(Briefly describe the proposed work and fill in the diagram on the back of this form.)

5. PROPOSED USE

☐ Municipal (including hotels, stores, etc.) ☐ Military
☐ Domestic (individual, noncommercial water systems) ☐ Industrial
☐ Irrigation (specify) ☐ Other (specify) - Liquid Hydrocarbon Recover

6. PROPOSED AMOUNT OF WITHDRAWAL ___________ gallons per day (oil recovery only)

7. PROPOSED PUMP INFORMATION

Pump Type: ☐ Vertical Turbine ☐ Submersible
Motor: ☐ Diesel ☐ Gas ☐ Electric: NA
Rated Pump Capacity 1 gallons per minute (gpm) Skimming ejector pump (pneumatic)

Well Owner (print) Chevron U.S.A.
Signature
Date 1-1-97

Landowner (print) Shirl and Kay Curci
Signature
Date 10-25-87

For Official Use Only:
Field Checked By
Latitude
Hydrologic Unit
Longitude
State Well No.
Briefly describe the proposed work:

Twelve wells to be constructed. See sketch SK10-075. The purpose of these wells is to provide access to a plume of free floating hydrocarbon. Selective skimming pumps will be installed to remove hydrocarbon floating on the water table.

PROPOSED SECTION OF WELL

Elevation at top of casing ________ ft., msl.

Ground Elev. ________ ft., msl*

Cement Grout ________ ft.

Solid Casing:
Material _______________________
Length ________________________ ft.
Diameter ______________________ in.
Wall thickness __________________ in.

Hole Dia. ________ in.

Casing: / /Perforated / /Screen
Material _______________________
Length ________________________ ft.
Diameter ______________________ in.
Wall thickness __________________ in.
Openings ________ sq. in./L.F.

Total Depth ________ ft.

Rock Packing ________ ft.

Open Hole:
Length _______________________
Diameter ______________________ in.

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
Chevron U.S.A. Inc.
Honolulu, Hawaii

THE DEPT. OF LAND AND NATURAL RESOURCES

First Hawaiian Bank
Ewa Beach Branch

Refinery Working Fund Account

NUA ST. OIL RECOVERY WELLS (Well Nos. 1806-14M, 125M)

Date
Month 11
Day 14
Year 89

Two signatures required if $10,000 or more

GO-200-HAW-3 (OS-2-88)
PLUME DEFINITION NOT FULLY DETERMINED.

1. An approximately 30' x 50' fenced compound will be installed along our fenceline. This will contain a 3,000 gal recovery tank, 2 control stations and an air compressor.

2. Two 6 well arrays will be installed. One recovery array and one barrier array.

3. Pneumatic floating head product only specific gravity skimmer ejector pumps will be used.

4. Except for the compound all recovery activity will be below grade.

CHEVRON U.S.A. INC.
MFG. DEPT. HAWAIIAN REFINERY.

SCALE 1/8" = @ 28'

REFERENCE Dwg's
SK 10-076-1

NOTES

1. An approximately 30' x 50' fenced compound will be installed along our fenceline. This will contain a 3,000 gal recovery tank, 2 control stations and an air compressor.

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REV

CHEVRON U.S.A. INC.
MFG. DEPT. HAWAIIAN REFINERY.

SCALE 1/8" = 28' DATE 10/10/99

W.O. SK 10-075-1

ENG' R. DEPT.
30" x 15" WELL VAULT TO PROVIDE SECURITY TO WELL HEAD.

CONCRETE/BENTONITE SEAL

3/8" BASALT CHIP BACKFILL

20" 15" 36"

15"

10' PERF ZONE

WATER TABLE @ 13'4"

7' SUMP

12" HOLE DRILLED 22' DEEP

Coral cuttings as backfill around well vault.

2" PVC HOUSING AIR SUPPLY AND RECOVERED HC RETURN LINES.

NOTES

1. 6" SCH 40 PVC PIPE WELL CASING

2. 8" SCH 40 PVC WELL CASING W/ 0.40 PERFORATIONS ON 1/2" SPACING.

3. SILT SUMP AT WELL BOTTOM.

4. 6" PVC SUP CAP

CHEVRON U.S.A. INC.
MFG. DEPT. HAWAIIAN REFINERY.

HYDROCARBON RECOVERY PROGRAM
PROPOSED WELL DESIGN - TDC SITE

SCALE: NONE DATE 10/10/89

SK 10-076-1

Printed in U.S.A.