

**GROUNDWATER
TECHNOLOGY**

Consulting Groundwater Geologists

A Division of Oil Recovery Systems, Inc.

5047 CLAYTON ROAD • CONCORD, CA 94521 • (415) 671-2387

MONITORING WELL RESULTS
CHEVRON - CASTRO VALLEY
5269 CROW CANYON ROAD

A [REDACTED]

Prepared for:

John Randall
Chevron U.S.A., Inc.
2 Annabel Lane, Suite 200
San Ramon, Ca. 94583

Prepared by:

Groundwater Technology
A Division of Oil Recovery
Systems Inc.
Concord, Ca.

Philip Walsh
Project Manager

William Smith
Manager, Western Region

GROUNDWATER
TECHNOLOGY

Hydrogeologists

TEL: (415) 238-2387

MONITORING WELL RESULTS
CHEVRON - CASTRO VALLEY
5269 CROW CANYON ROAD

April 1, 1985

Prepared by:

Groundwater Technology
A Division of Oil Recovery
Systems Inc.
Concord, Ca.

Philip Walsh
Project Manager

William Smith
Manager, Western Region

200
34083

INTRODUCTION

As part of a standing assessment contract with Groundwater Technology, Chevron U.S.A. authorized an evaluation program to be performed at its service station at 5269 Crow Canyon Road in Castro Valley, California.

This report offers the results of Groundwater Technology's initial site characterization, monitoring well placements and overall investigations on site.

The Chevron Station (#95607) is located on the south side of Crow Canyon Road approximately one mile north of route 580. The site is underlain by cut/fill which overlies Quaternary Alluvium, which rests on fractured marine shales of the Panoche Formation from the Upper Cretaceous (see Figure 1).

INVESTIGATIVE PROCEDURES

Station inventory records indicated a loss of product from underground storage tanks. On March 5, Groundwater Technology arrived on site to begin installation of three monitoring wells. These wells were constructed to determine the extent of contamination and to establish the local groundwater gradient. The location of monitoring wells is shown in Figure 2. These wells were drilled using a 10" hollow stem auger under the direction of a Groundwater Technology project geologist.

Well #1 was drilled to a depth of 55 feet (bedrock at 48 feet). Initial readings from the finished well showed .02 feet of free product with degraded water below.

The second well drilled adjacent to the failed underground tank was placed to a depth of 46 feet (bedrock at 35 feet). Initial readings showed only a trace of product.

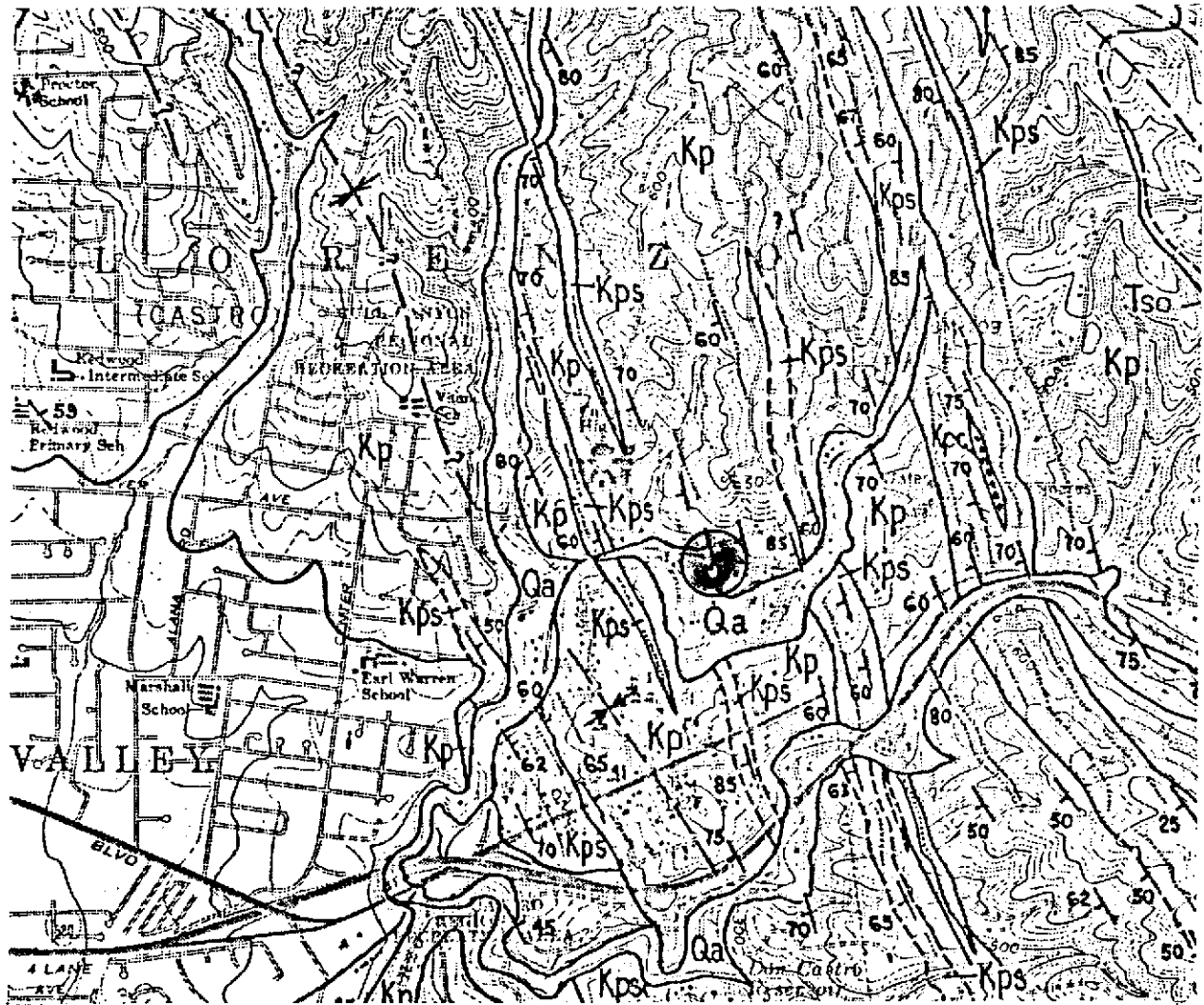
Well #3 was drilled down gradient of the tanks to a depth of 55 feet but did not encounter bedrock. Initial readings after completion of the well showed 4.30 feet of free floating product.

Chevron immediately requested additional monitoring wells to fully define the extent of contamination and a zero (no product) gradient perimeter. It was also agreed that any product should be bailed off on a regular basis. The liquid reaction to this bailing effort was noted on a long term basis.

Due to the nature of inadvertantly lost hydrocarbons below ground, Chevron and Groundwater Technology took precautions to protect the surrounding properties adjacent to the station. Down gradient wells were installed and monitored three times a week to indicate if movement of product had occurred. Results showed that any product loss has apparently been contained on Chevron's property.

A total of eight monitoring wells were installed around the site. The logs and positions of these wells are shown in Table 1. Existing product in Well #3 was bailed twice daily. The results of this monitoring are shown Table 2.

A continued vapor and groundwater monitoring program will be conducted by Groundwater Technology once a week for the next month, at this time re-evaluation of this program will be discussed with Chevron.



QA Surficial deposits

QOA Older alluvium

TMSL Light gray Miocene siltstone

TMSH Siliceous shale

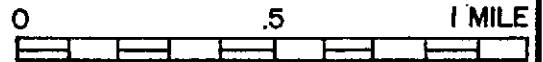
TSO Sobrante Sandstone

KPS Arkosic sandstone

KP Gray micaceous clay/shale

 **SITE LOCATION**

SCALE 1:24000



CONTOUR INTERVAL 20 FEET



GROUNDWATER TECHNOLOGY, INC.

CONSULTING GROUNDWATER GEOLOGISTS

SOURCE: DIBBLEE 1980
U.S.G.S. O.F.R. 80-540
HAYWARD QUADRANGLE

FIGURE 1

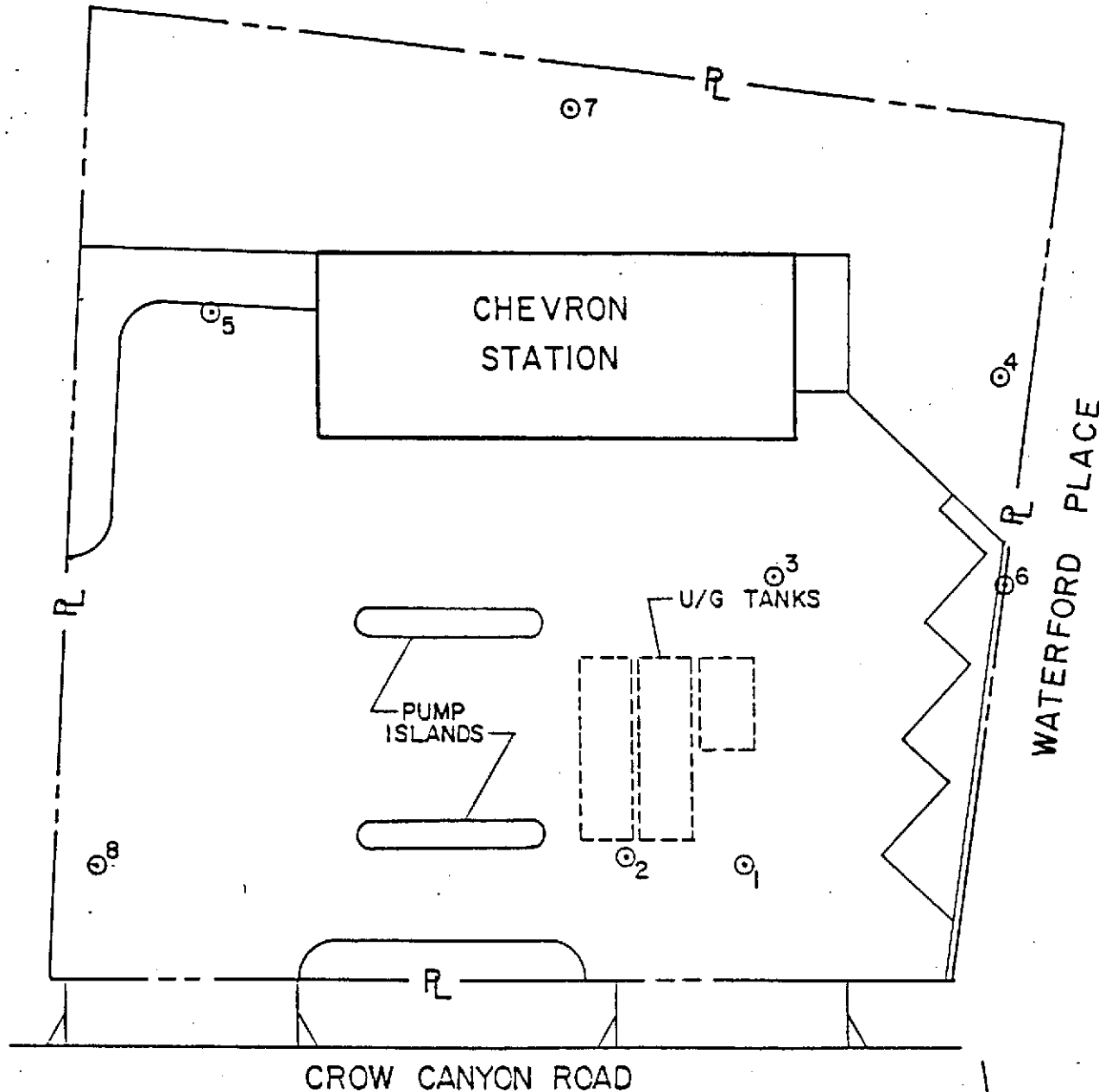
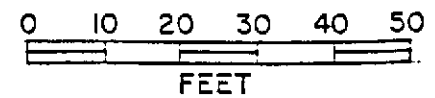


FIGURE 2
SITE MAP WITH
WELL LOCATIONS

LEGEND
 ⊙ EXISTING WELL
 LOCATIONS




**GROUNDWATER
 TECHNOLOGY, INC.**
 CONSULTING GROUNDWATER GEOLOGISTS

CHEVRON SERVICE STATION
CASTRO VALLEY, CALIFORNIA



GROUNDWATER TECHNOLOGY

Division of Oil Recovery Systems, Inc.

TABLE I
WELL LOGS

Drilling Log

Well Number _____

Project Chevron/Castro Valley Owner _____

Location 5269 Crow Canyon Rd. Project Number 20-3231

Date Drilled 3-5-85 Total Depth of Hole 55' Diameter 4"

Surface Elevation _____ Water Level, Initial 42' 24-hrs. 23.26'

Screen: Dia. 4" Length 30' Slot Size .020

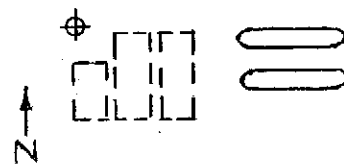
Casing: Dia. 4" Length 25' Type PVC

Drilling Company Kleinfelder Drilling Method HSA

Driller John/Doug Log by P.J. Walsh

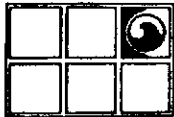
Sketch Map

CROW CANYON RD.



Notes

| Depth (Feet) | Well Construction | Notes | Sample Number | Graphic Log | Description/Soil Classification (Color, Texture, Structures) |
|--------------|-------------------|-------|---------------|-------------|---|
| 3" | | | | | Asphalt |
| 4" | | | | | Gravel base (slight gas odor) |
| 7' | | | | | Gray clay with gravel |
| 10 | | | | | Brown clay with some gravel |
| | | | | | Alternating layers of brown clay and graveley clay to 30 feet |
| 20 | | | | | |
| 25 | | | | | Intermittant moist clay and gravel Initial depth to water |
| 30 | | | | | Tighter gray brown clay, no pebbles and odors are present |
| 40 | | | | | |
| 42 | | | | | |
| 48 | | | | | Hit bedrock. Spoils indicate gray weathered shale to bottom |
| 50 | | | | | |
| 55 | | | | | Bottom of well |



GROUNDWATER TECHNOLOGY

Division of Oil Recovery Systems, Inc.

Drilling Log

Well Number _____

Project Chevron/Castro Valley Owner _____

Location 5269 Crow Canyon Rd. Project Number 20-3231

Date Drilled 3-6-85 Total Depth of Hole 46' Diameter 4"

Surface Elevation _____ Water Level, Initial _____ 24-hrs. 26.10'

Screen: Dia. 4" Length 25' Slot Size .020

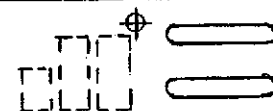
Casing: Dia. 4" Length 21' Type PVC

Drilling Company Kleinfelder Drilling Method HSA

Driller Paul/Doug Log by P. Walsh

Sketch Map

CROW CANYON RD



Notes

| Depth (Feet) | Well Construction | Notes | Sample Number | Graphic Log | Description/Soil Classification (Color, Texture, Structures) |
|--------------|-------------------|-------|---------------|-------------|--|
| 4" | | | | | Asphalt and concrete |
| 6' | | | | | Gravel base with brown soil |
| 1' | | | | | Gray brown soil |
| 5 | | | | | Gray soil 60% rounded pebbles |
| 8 | | | | | Gray clay with pebbles |
| 9 | | | | | Very dark gray clay with occasional white dust |
| 10 | | | | | Slight odor at 10 feet |
| | | | | | Reddish brown clay with some pebbles |
| 20 | | | | | |
| 23 | | | | | Light brown dry soil with rounded pebbles, slight odor |
| 25 | | | | | Intermittant layers of gravel and light brown clayey soils with auger occasionally bringing up very moist clay. Bedrock reached at 35 feet |
| 30 | | | | | |
| 35 | | | | | Bedrock |
| 40 | | | | | |
| 46 | | | | | Refusal BOTTOM OF WELL |
| 50 | | | | | |



GROUNDWATER TECHNOLOGY

Division of Oil Recovery Systems, Inc.

Drilling Log

Well Number _____

Project Chevron/Castro Valley Owner _____

Location 5269 Crow Canyon Rd. Project Number 20-3231

Date Drilled 3-6-85 Total Depth of Hole 55' Diameter 4"

Surface Elevation _____ Water Level, Initial _____ 24-hrs. 26.30'

Screen: Dia. 4" Length 30' Slot Size .020

Casing: Dia. 4" Length 25' Type PVC

Drilling Company Kleinfelder Drilling Method HSA

Driller Paul/Doug Log by P. Walsh

Sketch Map
CROW CANYON RD.

Notes

| Depth (Feet) | Well Construction | Notes | Sample Number | Graphic Log | Description/Soil Classification (Color, Texture, Structures) |
|--------------|-------------------|-------|---------------|-------------|--|
| 4" | | | | | Asphalt |
| 1' | | | | | Gravel |
| | | | | | Dark gray clay |
| -10 | | | | | |
| -15 | | | | | Continue dark gray clayey soil |
| -20 | | | | | Reddish brown clayey soil |
| -25 | | | | | Light brown clayey soil Slight odor at 25 feet |
| -30 | | | | | |
| -40 | | | | | |
| -50 | | | | | Pulled augers indicate moist clay from 30 feet to wet clay at 40 feet to bottom of well at 55' |
| 55 | | | | | |



GROUNDWATER TECHNOLOGY

Division of Oil Recovery Systems, Inc.

Drilling Log

Well Number _____

Project Chevron/Castro Valley Owner _____

Location 5269 Crow Canyon Rd. Project Number 20-3231

Date Drilled 3-9-85 Total Depth of Hole 35' Diameter 4"

Surface Elevation _____ Water Level, Initial 17.80' 24-hrs. _____

Screen: Dia. 4" Length 25' Slot Size .020

Casing: Dia. 4" Length 10' Type PVC

Drilling Company Kleinfelder Drilling Method HSA

Driller _____ Log by P. Walsh

Sketch Map

CROW CANYON RD.

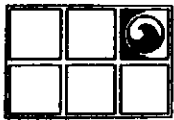
FENCE →

⊕

↑ N

Notes

| Depth (Feet) | Well Construction | Notes | Sample Number | Graphic Log | Description/Soil Classification (Color, Texture, Structures) |
|--------------|-------------------|-------|---------------|-------------|--|
| 1 | | | | | Dark brown soil |
| 2 | | | | | Light brown sandy soil |
| 5 | | | | | Light brown soil with some gravel |
| 7 | | | | | Dark brown clayey soil |
| 8 | | | | | Dark gray clay |
| 10 | | | | | |
| 15 | | | | | Dark brown clay |
| 18 | | | | | Very wet light brown mud |
| 20 | | | | | |
| 35 | | | | | Rejection in gray weathered shale Bottom of well. |



GROUNDWATER TECHNOLOGY

Division of Oil Recovery Systems, Inc.

Drilling Log

Well Number _____

Project Chevron/Castro Valley Owner _____

Location 5269 Crow Canyon Rd. Project Number 20-3231

Date Drilled 3-9-85 Total Depth of Hole 45' Diameter 4"

Surface Elevation _____ Water Level, Initial 25' 24-hrs. _____

Screen: Dia. 4" Length 30' Slot Size .020

Casing: Dia. 4" Length 15' Type _____

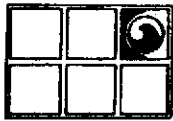
Drilling Company KLIENFELDER Drilling Method HSA

Driller _____ Log by P. Walsh

Sketch Map
CROW CANYON RD

Notes

| Depth (Feet) | Well Construction | Notes | Sample Number | Graphic Log | Description/Soil Classification (Color, Texture, Structures) |
|--------------|-------------------|-------|---------------|-------------|---|
| 3 | | | | | Asphalt |
| 1 | | | | | Reddish brown soil |
| 3 | | | | | Clayey reddish soil with gravel |
| 5 | | | | | |
| 7 | | | | | Clayey brown soil with some gravel |
| 10 | | | | | Brown clay |
| 11 | | | | | Dark brown clay |
| 15 | | | | | Dark brown clay with gravel |
| 20 | | | | | Lighter brown clayey soil |
| 25 | | | | | Saturated light brown clayey mud |
| 35 | | | | | |
| 45 | | | | | Liquid surfaced with augers at 45 feet Bottom of well |



GROUNDWATER TECHNOLOGY

Division of Oil Recovery Systems, Inc.

Drilling Log

Well Number _____

Project Chevron/Castro Valley Owner _____

Location 5269 Crow Canyon Rd. Project Number 20-3231

Date Drilled 3-14-85 Total Depth of Hole 35' Diameter 4"

Surface Elevation _____ Water Level, Initial 18.51' 24-hrs. _____

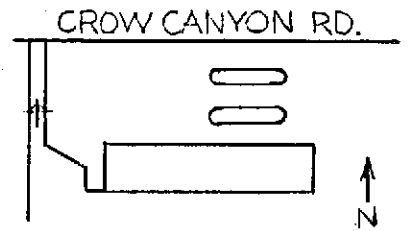
Screen: Dia. 4" Length 25' Slot Size .020

Casing: Dia. 4" Length 10' Type PVC

Drilling Company Kleinfelder Drilling Method HSA

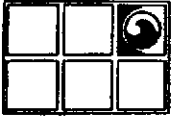
Driller _____ Log by P. Walsh

Sketch Map



Notes

| Depth (Feet) | Well Construction | Notes | Sample Number | Graphic Log | Description/Soil Classification (Color, Texture, Structures) |
|--------------|-------------------|-------|---------------|-------------|--|
| 5' | | | | | Dark brown top soil |
| 8' | | | | | Dark gray clay |
| 13' | | | | | Lighter brown clay |
| 15' | | | | | |
| 20' | | | | | Initial depth to water |
| 25' | | | | | Light brown clay water saturated |
| 30' | | | | | |
| 35' | | | | | Bottom of well. |



GROUNDWATER TECHNOLOGY

Division of Oil Recovery Systems, Inc.

Drilling Log

Well Number 63

Project Castro Valley Owner Chevron

Location Waterford Place Project Number 20-3231

Date Drilled 3-13-85 Total Depth of Hole 11' Diameter _____

Surface Elevation _____ Water Level, Initial _____ 24-hrs. _____

Screen: Dia. _____ Length _____ Slot Size _____

Casing: Dia. _____ Length _____ Type _____

Drilling Company Sierra Pacific Drilling Method HSA

Driller _____ Log by P. Walsh

| |
|---------------------------|
| Sketch Map |
| Notes Abandoned |

| Depth (Feet) | Well Construction | Notes | Sample Number | Graphic Log | Description/Soil Classification (Color, Texture, Structures) |
|----------------|-------------------|-------|---------------|-------------|---|
| 3 ^u | | | | | Asphalt |
| 4 ^u | | | | | Gravel bed |
| 6 ^u | | | | | Brown sandy soil |
| 5 ⁺ | | | | | Sandy clay |
| 10 | | | | | Refusal at 11 feet powder on end of bit white limey dust |
| 11 | | | | | <i>boulders? bedrock??</i> |
| | | | | | Backfilled hole and re-surfaced road |



GROUNDWATER TECHNOLOGY

Division of Oil Recovery Systems, Inc.

Drilling Log

Well Number 7

Project Chevron/Castro Calley Owner _____

Location 5269 Crow Canyon Rd. Project Number 20-3231

Date Drilled 3-21-85 Total Depth of Hole 35' Diameter 2"

Surface Elevation _____ Water Level, Initial _____ 24-hrs. _____

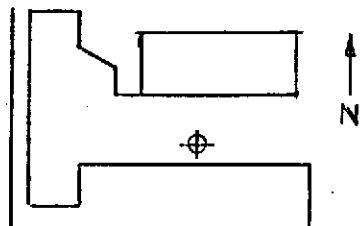
Screen: Dia. 2" Length 15' Slot Size 020

Casing: Dia. 2" Length 15' Type PVC

Drilling Company Layne Western Drilling Method HSA

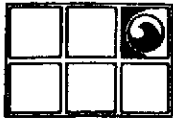
Driller Mike/Mark Log by P. Walsh

Sketch Map



Notes

| Depth (Feet) | Well Construction | Notes | Sample Number | Graphic Log | Description/Soil Classification (Color, Texture, Structures) |
|--------------|-------------------|-------|---------------|-------------|--|
| 4" | | | | | Top soil with gravel |
| 5' | | | | | Light brown soil |
| 1' | | | | | Dark brown clay |
| 4 | | | | | Some gravel |
| 7 | | | | | Back into dark brown clay |
| 8 | | | | | 1" of wet clay |
| 11 | | | | | Back into dark brown clay |
| 15 | | | | | Lighter brown clay |
| 20 | | | | | Water 21 feet |
| 28 | | | | | Firmed up a bit, flowing water at 30 feet |
| 30 | | | | | Bottom of well |



GROUNDWATER TECHNOLOGY

Division of Oil Recovery Systems, Inc.

Drilling Log

Well Number _____

Project Chevron/Castro Valley Owner _____

Location 5269 Crow Canyon Rd. Project Number 20-3231

Date Drilled 3-21-85 Total Depth of Hole 29' Diameter 2"

Surface Elevation _____ Water Level, Initial 23.50' 24-hrs. _____

Screen: Dia. 2" Length 20' Slot Size .020

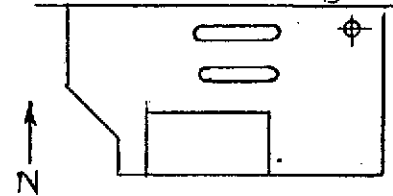
Casing: Dia. 2" Length 9' Type PVC

Drilling Company Layne Western Drilling Method HSA

Driller Gunner Log by P. Walsh

Sketch Map

CROW CANYON RD



Notes

| Depth (Feet) | Well Construction | Notes | Sample Number | Graphic Log | Description/Soil Classification (Color, Texture, Structures) |
|--------------|-------------------|-------|---------------|-------------|--|
| 5' | | | | | Asphalt over concrete |
| 4' | | | | | Light brown clayey soil |
| 5 | | | | | Light brown clay |
| 7 | | | | | |
| 8 | | | | | Dark brown moist clay |
| 12 | | | | | |
| 13 | | | | | Light brown sandy clayey fill (dry) mixed with some gravel at 13 feet |
| 20 | | | | | Very sandy light brown slightly |
| 21 | | | | | Clayey soil |
| 23 | | | | | Tight clay |
| 23.5 | | | | | Initial depth to water |
| 25 | | | | | |
| 29 | | | | | Weathered bedrock |
| 31 | | | | | Bedrock rejection (gray shale) |



GROUNDWATER
TECHNOLOGY, INC.

CONSULTING GROUNDWATER GEOLOGISTS

PROJECT: CHEVRON
LOCATION: Castro Valley
DATE: 3-26-85

| | | WELL | WELL | WELL | WELL | WELL | WELL | WELL | WELL | WELL | WELL |
|---------------------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| DATE | ELEV. | | | | | | | | | | |
| 03-06-85 | DTW | 23.26 | 26.10 | 30.00 | - | - | - | - | - | | |
| | DTP | 23.24 | - | 26.30 | - | - | - | - | - | | |
| | PT | 0.02 | - | 3.70 | 0 | 0 | 0 | 0 | 0 | | |
| 03-08-85 | DTW | 22.18 | 17.91 | 26.59 | - | - | - | - | - | | |
| | DTP | 22.15 | - | 25.24 | - | - | - | - | - | | |
| | PT | 0.03 | 0 | 1.35 | 0 | 0 | 0 | 0 | 0 | | |
| 03-09-85 9:30 am | DTW | 22.01 | 17.48 | 26.35 | - | - | - | - | - | | |
| | DTP | 21.99 | - | 25.01 | - | - | - | - | - | | |
| | PT | 0.02 | 0 | 1.34 | 0 | 0 | 0 | 0 | 0 | | |
| 03-09-85 7:00 pm | DTW | 21.90 | 17.33 | 26.29 | 14.84 | 26.94 | - | - | - | | |
| | DTP | 21.89 | - | 24.98 | - | - | - | - | - | | |
| | PT | 0.01 | 0 | 1.31 | 0 | 0 | 0 | 0 | 0 | | |
| 03-11-85 | DTW | 21.59 | 16.97 | 25.93 | 14.14 | 24.82 | - | - | - | | |
| | DTP | - | - | 24.66 | - | - | - | - | - | | |
| | PT | 0 | 0 | 1.27 | 0 | 0 | 0 | 0 | 0 | | |
| 03-13-85 | DTW | 21.46 | 16.85 | 24.85 | 13.88 | 24.34 | - | - | - | | |
| | DTP | - | - | 24.74 | - | - | - | - | - | | |
| | PT | 0 | 0 | 0.11 | 0 | 0 | 0 | 0 | 0 | | |

TABLE 2
MONITORING SUMMARY

