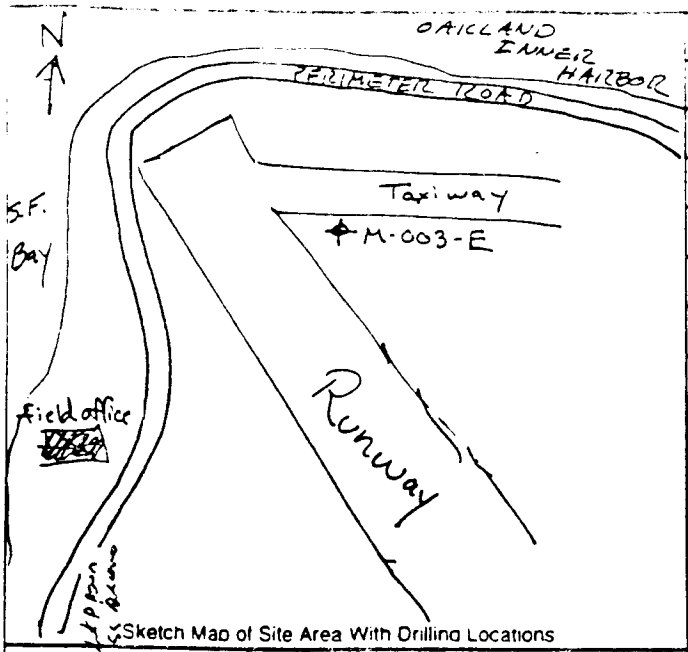
# ATTACHMENT H

# BORING LOGS AND WELL CONSTRUCTION DIAGRAMS




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-003E |
| Sheet | of 2 |
| Project: | NAS Alameda CTO 200 |
| Job # | 2935 1404 |
| Site: | C1 |
| Logged By: | DFK |
| Proj. Eng: | SMH |
| Edited By: | |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | Mobile B57 |
| Drillers Name: | ERIK FORSSTROM |
| Borehole Diam./Drill Bit Type | 8.5" auger |
| Total Depth | 22 |
| Ref. Elev. | |
| Hammer Wt: | 140 lb |
| Drop: | 30" |
| Start Time: | 1315 |
| Date: | 8-15-94 |
| Completion Time: | 1350 |
| Date: | 8-15-94 |
| Backfill Time: | 1452 |
| Date: | 8 15 94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.25' | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1330 | | | |
| Date | 8 15 94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in | Advance (in.) | Recovered (in.) | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | | 37 | | | | | | | | | silty gravelly silt, GM, loose dry, tan |
| | | 18 | | | | | X | 1315 | 1 | | |
| | | 19 | | | | | X | 1315 | | | |
| | | 7 | | | | | | | 2 | SP/SC | SP/SC sand / clayey sand, |
| | | 4 | | | | | | | | | tan, med sand to fine sand, trace |
| 0.2 | | 3 | | | | | X | 1320 | 3 | SP | black tar-like material, moist |
| | | 2 | | | | | X | 1320 | | GM | Gravelly silt, tan, loose, moist, |
| | | 1 | | | | | | | 4 | | gravel = pebble size, trace sand, trace |
| 2 | | 2 | | | | | | | | | tar-like material |
| 2 | | 5 | | | | | X | 1330 | 5 | SP | |
| 3 | 0.1 | 6 | | | | | X | 1330 | | | SP, sand, tan, loose, saturated |
| 9 | | 4 | | | | | | | 6 | | fine sand and med sand, localized |
| | | | | | | | | | | | layer of shell fragments (increased |
| | | | | | | | | | 7 | | at 5½-6') with tan clay layers |
| | | | | | | | | | | SP | Aa to 7' w/ black staining |
| | | | | | | | | | 8 | | SP, sand, blk, loose, saturated |
| | | | | | | | | | | | fine sand w/ abundant shell hash |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | | | | | | | | 11 | | |
| | | 2 | | | | | | | | | SP Aa to trace shells |
| | | 2 | | | | | X | Geotech | 12 | | |

Drill Ahead

Casing Type & Size: PVC Black

Annulus Filler: Grout - Neat cement

Bentonite pellets

2/Hemostatic pellets

Cold Strength

Sample Rec. Analyses: Geotech

Depth: 1 2 3 4 5 6 7 8 9 10 11 12

Boring # MW# [illegible] Sheet 2 of [illegible]

Project: [illegible]

Job # 2135 1404 Site: 01

| PID/OVA | Sample Type | Blow Counts | Advance (in.) | Revd (in.) | Casing | Annulus | Sample No. | Analyses | Depth | Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2 | | | | | X | Grouted | 12 | | |
| | | 4 | | | | | X | Grouted | 13 | | |
| | | | Drill Ahead | | | | | | 14 | | |
| | | 4 | | | | | | | 15 | SP | An SP, sand, ~~fine~~ - greenish gray loose, saturated, med to fine sand, trace sea shells. |
| | | 9 | | | | | | | | | |
| | | 14 | | | | | | | 16 | | |
| | | 19 | | | | | | | | | |
| | | 4 | | | | | | | 17 | | |
| | | 9 | | | | | | | | | |
| | | 13 | | | | | | | 18 | | |
| | | 14 | | | | | | | | | |
| | | | Drill out | | | | | | 19 | SP | SC/ML sandy clay/sandy silt blk, med dense, saturated, fine to v fine sand |
| | | 1 | | | | | | | 20 | SC | |
| | | 2 | | | | | | | | | |
| | | 4 | | | | | | | 21 | CL | CL Clay, blk, soft, moist |
| | | 5 | | | Bentonite | | | | 22 | | |

TD = 22'

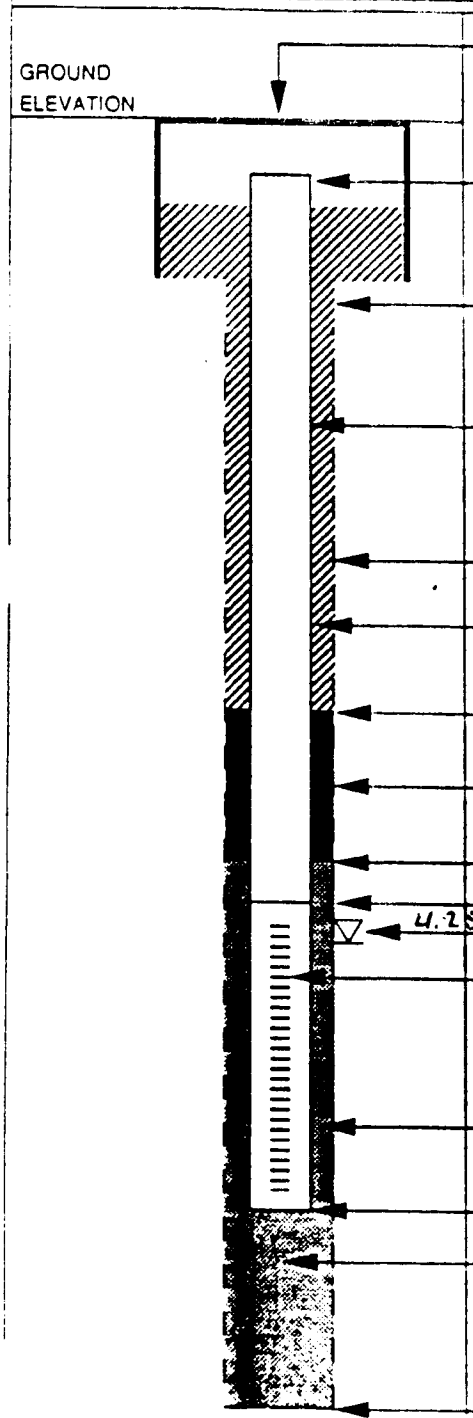
Screen = ~~19 1/4~~
21 1/4 - 11 1/4
Sand 9 1/4 - 21 1/4
bentonite 9 1/4 - 7 1/4
grout 7 1/4 to 0'

BORING NO. M-003-F

# MONITORING WELL SHEET

PROJECT NAS ALAMEDA [illegible] LOCATION Site 01
PROJECT NO. 2778 1404 BORING M-003 E
ELEVATION DATE 8-15-94
FIELD GEOLOGIST DANIEL KRAMER JOHN VALLETT

DRILLER ERIC FORSSTROM
DRILLING METHOD USA MOBILE B57
DEVELOPMENT METHOD Bail, Swab, Pump




ELEVATION OF GROUND SURFACE:

ELEVATION OF TOP OF WELL CASING:

I.D. OF SURFACE CASING: 2"
TYPE OF SURFACE CASING: Blank Sch 40 PVC

RISER PIPE I.D.: NA
TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8.5"

TYPE OF BACKFILL: Neat cement grout

ELEVATION / DEPTH OF SEAL: 7.25'

TYPE OF SEAL: BENTONITE PELLETS

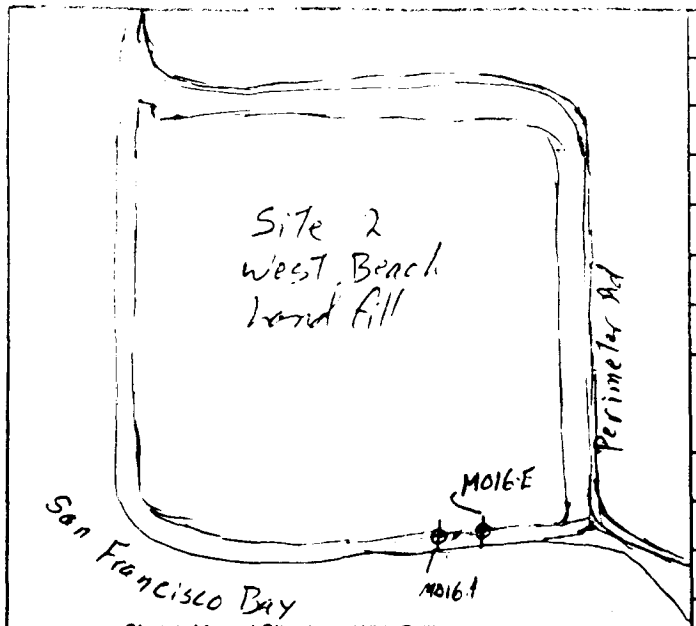
DEPTH TOP OF SAND PACK: 9.25'
ELEVATION / DEPTH TOP OF SCREEN: 11.25
FIRST ENCOUNTERED SATURATED ZONE
TYPE OF SCREEN: Sch 40 PVC slotted
SLOT SIZE x LENGTH 0.01 x 10
I.D. OF SCREEN 2"

TYPE OF SAND PACK: 2/10 MONTEREY SAND

ELEVATION / DEPTH BOTTOM OF SCREEN: 21.25

ELEVATION / DEPTH BOTTOM OF SAND PACK: 21.25
TYPE OF BACKFILL BELOW OBSERVATION WELL: BENTONITE PELLETS

ELEVATION / DEPTH OF HOLE: 22'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M016-E Sheet 1 of 2 |
| Project: | NAS Alameda CTO-0280 |
| Job # | 2738.1404 Site: 2 |
| Logged By: | DK/SV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | HSA Mobile B57 |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | 8.5" Total Depth 24.0 Bgl Elev |
| Hammer Wt: | 140 LB Drop: 30" |
| Start Time: | 1730 Date: 8/15/94 |
| Completion Time: | 1820 Date: 8/15/94 |
| Backfill Time: | 19 5 Date: 8/15/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 | | | | | | | | | | |
| | | 26 | | | | | | X | 1732 | 1 | | Sand (SP) brown 10YR(5/3) |
| | | 17 | | | | | | X | | | | dense, dry, f-gr high K. |
| | | | | | | | | | | 2 | | |
| | | 6 | | | | | | X | 1735 | | | |
| | | 7 | | | | | | X | | 3 | | |
| | | 11 | | | | 2" sch 40 PVC casing (solid) | Neat Cement grout | | | | SP | Sand (SP), gray (2.5Y N5), med. |
| | | | | | | | | | | 4 | | dense, slightly moist, fine |
| | | | | | | | | | | | | grain high K. Traces of |
| | | 4 | | | | | | | | 5 | | Cobbles + pebbles |
| | | 6 | | | | | | | | | | |
| | | 8 | | | | | | | | 6 | | |
| | | | | | | | | | | | | Trace birck + Plastic |
| | | | | | | | | | | 7 | | |
| | | 5 | | | | | | | 1750 | 8 | | |
| | | 6 | | | | | | X | | | | |
| | | 6 | | | | | | X | | 9 | | Sand (SP) gray (2.5Y N5) |
| | | | | | | | | | | | | med dense, Saturated, fine |
| | | | | | | | | | | 10 | | grained. |
| | | 5 | | | | | Bentonite Pellets | | | | | |
| | | 5 | | | | | | | | 11 | | |
| | | 7 | | | | | | | | 12 | | |

Boring # MW# MC16-E Sheet 2 of 2

Project: NAS Alameda CTC-28C

Job # 2738.1404 Site: 2

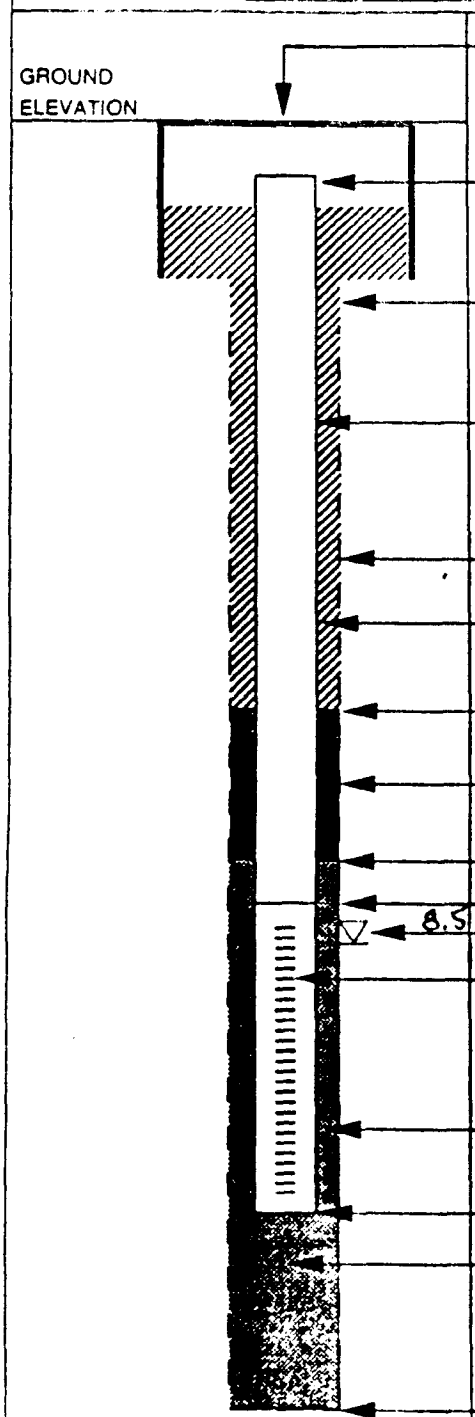
| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | SP | Sand (SP) As above |
| | | | | | | | | | 15 | | |
| | | 2 | | | | | | | | | |
| | | 3 | | | | | | | | | |
| | | 3 | | | | 2" Sch 40 PVC Casing | #2/12 Monterey Sand | | 16 | SC | Clayey Sand (SC) gray (2.5Y N/5) Loose, saturated, fine grained med K. |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | SP | |
| | | 2 | | | | | | | 20 | | Sand (SP) gray (2.5Y N/5) Loose Saturated, fine grained high K. Trace clay |
| | | 3 | | | | | | | | | |
| | | 4 | | | | | | | 21 | | |
| | | | | | | | | | 22 | SP | |
| | | | | | | | | | 23 | | |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | | 24 | CL | Clay (CL), gray brown (2.5Y 5/2) firm Plastic, wet, f-gr. w/ low K. |
| | | 3 | | | | | Bentonite | | | | |
| | | | | | | | | | 25 | | TD = 24.5' |
| | | | | | | | | | | | wellset @ 24' |
| | | | | | | | | | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | | | | | | | | 30 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. M-016-E

# MONITORING WELL SHEET

PROJECT NAS ALAMEDA LOCATION Site 2
PROJECT NO. 2738 1405 BORING M-016E
ELEVATION DATE 8-15-94
FIELD GEOLOGIST DANIEL KRAMER JOHN VALLETT

DRILLER ERIK FORSSTROM
DRILLING METHOD HSA B-57
DEVELOPMENT METHOD Surge, bail, pump




ELEVATION OF GROUND SURFACE:

ELEVATION OF TOP OF WELL CASING:

I.D. OF SURFACE CASING: 2"
TYPE OF SURFACE CASING: ~~Neat cement grout~~ PVC Sch 40 Blank

RISER PIPE I.D.: NA
TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8.5"

TYPE OF BACKFILL: NEAT CEMENT GROUT

ELEVATION / DEPTH OF SEAL: 10'

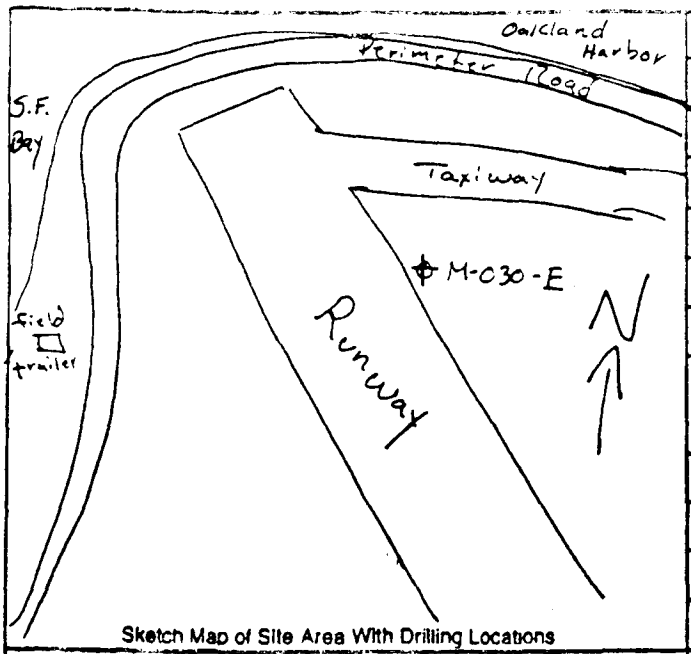
TYPE OF SEAL: Bentonite pellets

DEPTH TOP OF SAND PACK: 12.0
ELEVATION / DEPTH TOP OF SCREEN: 14
FIRST ENCOUNTERED SATURATED ZONE
TYPE OF SCREEN: Sch 40 PVC Slotted
SLOT SIZE x LENGTH 0.01 x 10
I.D. OF SCREEN 2"

TYPE OF SAND PACK: Monterey sand 2/12

ELEVATION / DEPTH BOTTOM OF SCREEN: 24
ELEVATION / DEPTH BOTTOM OF SAND PACK: 24
TYPE OF BACKFILL BELOW OBSERVATION WELL: Bentonite pellets

ELEVATION / DEPTH OF HOLE: 24.5




Sketch Map of Site Area With Drilling Locations

Boring # MW# M-030 E Sheet 1 of 2

Project: NAS Alameda CTO 0200 CTC-0200

Job # 6777 1404 Site: 01

Logged By: DE Proj. Eng: SMH Edited By:

Drilling Contractor: Underground Drilling Inc.

Drill Rig Type/Method: HSA Model B57

Drillers Name: Earl Forsstrom

Borehole Diam./Drill Bit Type: 8 1/2" auger

Lot: 16

Hammer Wt: 140 Drop: 30"

Start Time: 1020 Date: 8-15-94

Completion Time: 1115 Date: 8-15-94

Backfill Time: 1300 Date: 8-15-94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.75 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1045 | | | |
| Date | 8-15-94 | | | |

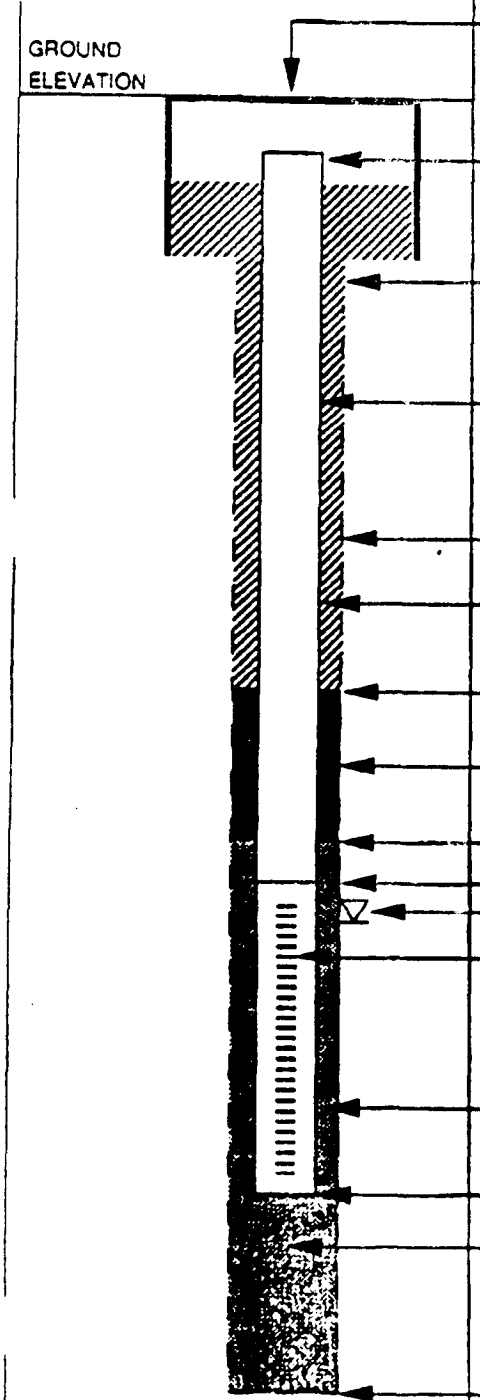
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | | 3 | | | | | | | | | SM | Silty sand SM, dk brown, loose |
| | | 4 | | | | | | X | 0025 | 1 | | dry, fine sand, few gravel |
| | | 1 | | | | | | X | | | SP | Sil. sand, tan, loose, dry, fine sand du |
| | | 4 | | | | | Grout | X | 1030 | 2 | | |
| | | 3 | | | | | | X | | | | Si. lin - moist |
| | | 5 | | | | | | | Grab | 3 | | geo tech collected 2½-4' |
| 0.0 | | 5 | | | | | | | Grab | | SP | |
| | | 4 | | | | | | | Grab | 4 | CL | Clay, dk brown, stiff, moist to |
| | | 5 | | | | | | X | 1045 (X) | 5 | CL/SP | dry, soil stained reddish black |
| | | 5 | | | | PVC Blank | | X | 1045 | | | Si. sand, tan, loose, saturated, mod |
| | | 4 | | | | | | X | 1045 dup | | | odor |
| | | 2 | | | | | | X | 1055 dup | 6 | SP | |
| | | 4 | | | | Disc Sand | Bentonite Seal | | | 7 | | Air - sp 280-501-275 = duplicate |
| | | 6 | | | | | | | | | SP | |
| | | | | | | 0.01" slot Well | Pellet | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 10 | | |
| | | | | | | | | | | 11 | GW | Grout or cement - from 11.13' |
| | | | | | | | | | | 12 | GW | based on rig action |

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample No. | Analysis | Depth Feet | | Boring # MW# M 030E Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: [illegible] |
| | | | | | | | | | | | | Job # [illegible] 1404 Site: 01 |
| | | | Decon | | | | | | | 2 | Gw | |
| | | | | | | | | | | 3 | | |
| | | 3 | | | | [illegible] | [illegible] | X | Geotech | 4 | | SP, sand black, loose, saturated, fine grained sand. trace to locally abundant sea shells. |
| | | 6 | | | | | | X | Geo | 5 | | |
| | | 8 | | | | | | X | Geo | | SP | |
| | | 10 | | | | | | | | 16 | ML | Clayey ML silty black, soft, saturated, trace to locally abundant sea shells. |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | TD = 16' |
| | | | | | | | | | | 9 | | Screen = 16 - 6 |
| | | | | | | | | | | 0 | | Sand = 16 - 4 |
| | | | | | | | | | | | | bentonite = 4 - 2 |
| | | | | | | | | | | 1 | | grout = 2 - 0 |
| | | | | | | | | | | 2 | | |
| | | | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

BORING NO. M-030-E

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT [illegible] | LOCATION S.# 1 | DRILLER [illegible] |
| PROJECT NO. 2739.004 | BORING M-030 E | DRILLING METHOD [illegible] |
| ELEVATION | DATE 5/15/99 | DEVELOPMENT METHOD Bail, Surge, Pump |
| FIELD GEOLOGIST DANIEL KRAMER JOHN VALETT | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Sch 40 blank PVC

RISER PIPE I.D.: N/A

TYPE OF RISER PIPE: N/A

BOREHOLE DIAMETER: 8.5"

TYPE OF BACKFILL: Neat cement grout

ELEVATION / DEPTH OF SEAL: 2' bgs

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 4' bgs

ELEVATION / DEPTH TOP OF SCREEN: 6' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 x 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey #2/12 Sand

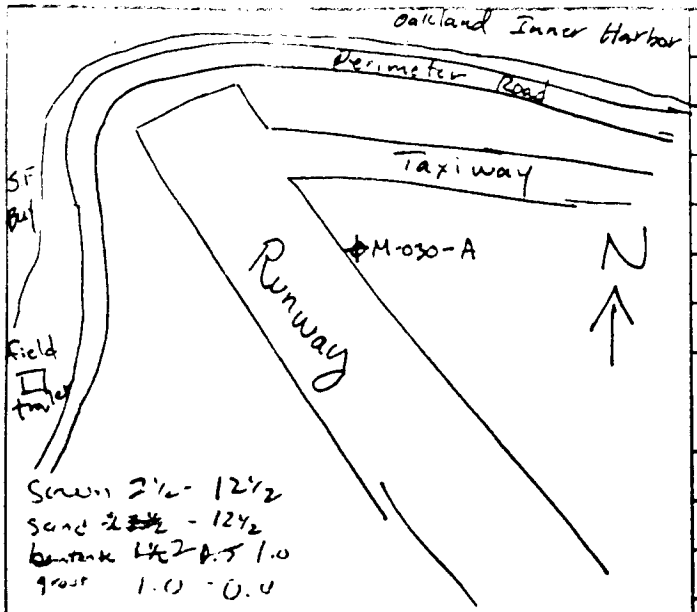
ELEVATION / DEPTH BOTTOM OF SCREEN: 16' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 16' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 16' bgs

M-030-A




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-030-A Sheet 1 of 1 |
| Project: | LAS ALAMEDA GTP 2000 |
| Job # | 2738 1404 Site: 01 |
| Logged By: | DEK Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co. |
| Drill Rig Type/Method: | HSA Mobil B57 |
| Drillers Name: | Erik Forsstrom |
| Borehole Diam./Drill Bit Type | Total Depth 12.5 |
| 8.5" auger | Reference |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 0900 Date: 8-15-94 |
| Completion Time: | 1000 Date: 8-15-94 |
| Backfill Time: | 1005 Date: 8-15-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.75 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | 5.5' | | |
| Time | 0920 | | | |
| Date | 8-15-94 | | | |

| PID/OVA ppm | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth (Feet) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | | 6 | | | | Grout | | | | SM | Fill, sand and dk brown, loose dry, organic - humus. |
| | | 12 | | | PVC Blank | | Clean X | 0910 | 1 | | |
| | | 13 | | | | Bentonite | X | 0910 Metals | | SP | |
| 0.5 | | 19 | | | | | | | 2 | | SP sand, tan, loose, dry, med sand, hot sand |
| | | 26 | | | | | X | | | | |
| | | 27 | | | | | X | 0915 | 3 | | |
| cotcth and push 4 to 7 | | 5 | | | | | | | | GP | GP sandy gravel, dense, dry, med sand angular gravel to ~½" diam |
| | | 12 | | | | | | | | GP | |
| 0.5 | | 4 | | | | | | | 4 | GM | |
| | | 9 | | | | | X | 0925 | 5 | SP | GM, gravelly silt, dk brown, med. oily, moist |
| | | 11 | | | | | X | | | | |
| | | 12 | | | | | | | | | |
| | | | | | 0.01 slotted screen | Monterey Sand 2/10 | | | 6 | | SP, sand, tan, loose, saturated fine and med sand, trace fines (beach sand). |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | 3 | | | | | | | | | Geotechnical sample at 4½'-6' (refusal 5' HSA) and 8½'-10' |
| | | 4 | | | | | X | Geotech | 9 | | |
| | | 6 | | | | | X | | | | |
| | | 7 | | | | | X | | | | |
| | | | | | | | | | 10 | | |
| | | | | | | | | | 11 | | Grout based on driller's comment. |
| | | | | | | | | | 12 | | |

12.5

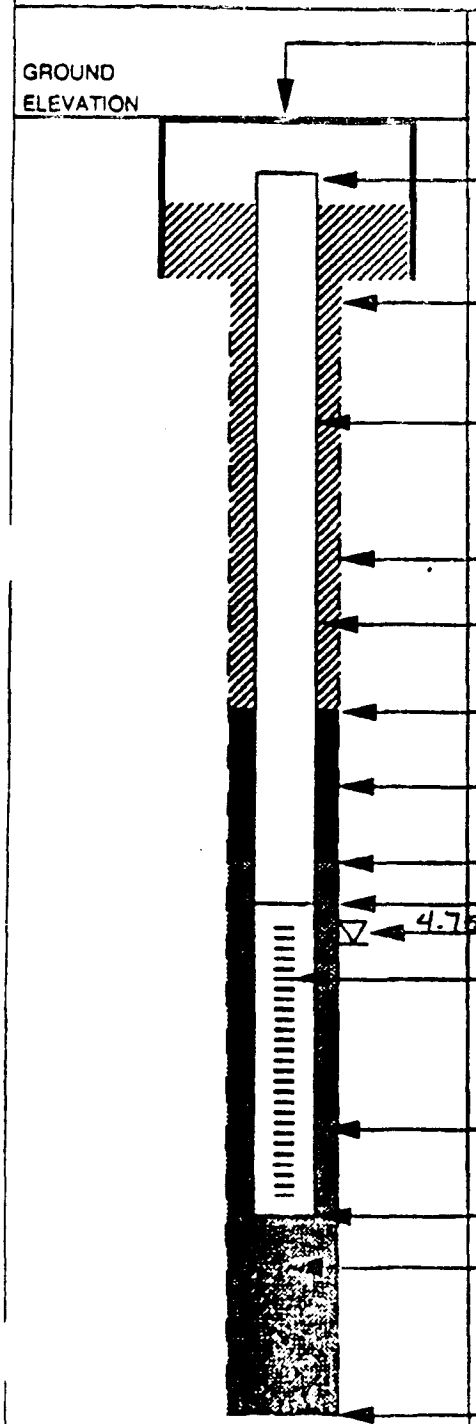
TD = 12.5'

BORING NO. M-030-A

# MONITORING WELL SHEET

PROJECT NAS ALAMEDA CTO 200 LOCATION Site 1
PROJECT NO. 2738 14-4 BORING M-030A
ELEVATION _____ DATE 8-15-94
FIELD GEOLOGIST DANIEL KRAMER / JOHN VALETT

DRILLER Erik Forsstrom
DRILLING METHOD HSA Mobile 57
DEVELOPMENT METHOD Bail, Surge, Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 2"
TYPE OF SURFACE CASING: Sch 40 PVC

RISER PIPE I.D.: NA
TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8.5"

TYPE OF BACKFILL: Neat cement grout

ELEVATION / DEPTH OF SEAL: 1.0

TYPE OF SEAL: Bentonite pellets

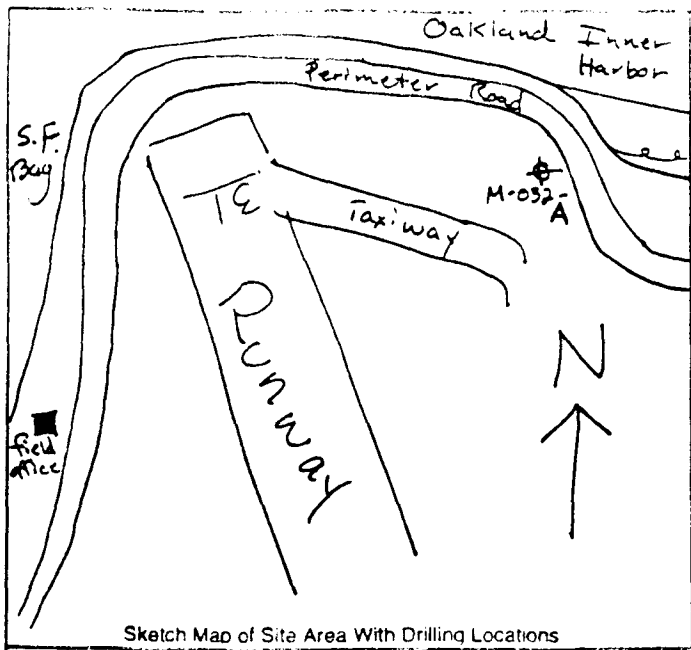
DEPTH TOP OF SAND PACK: 2.0
ELEVATION / DEPTH TOP OF SCREEN: 2½
FIRST ENCOUNTERED SATURATED ZONE
TYPE OF SCREEN: Sch 40 PVC slotted
SLOT SIZE x LENGTH 0.01 x 10"
I.D. OF SCREEN 2"

TYPE OF SAND PACK: 2/16 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12½
ELEVATION / DEPTH BOTTOM OF SAND PACK: 12½
TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

ELEVATION / DEPTH OF HOLE: 12.5

M-032-4




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-032-A Sheet 1 of 1 |
| Project: | NAS ALAMEDA CTO 280 |
| Job # | 2738.1404 Site: 01 |
| Logged By: | DEK Proj. Eng: Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | HSA |
| Drillers Name: | ERIL FORSSTROM |
| Borehole Diam./Drill Bit Type | 11.25" auger |
| Total Depth | 12.5' |
| Ref. | |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 0920 Date: 8-11-94 |
| Completion Time: | 0945 Date: 8-11-94 |
| Backfill Time: | 1000 Date: 8-11-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.25 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | 4.8 measured downhole | | | |
| Time | 0940 | | | |
| Date | 8-11-94 | | | |

| PID/OVA ppm | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Analyses | Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1 | | 13 | | | | Blank PVC | Neat cement grout | X | 0930 | | | Silty sand SM, brown, loose, dry |
| | | 18 | | | | | | X | 280 Sol. 62 | | | med sand |
| | | 20 | | | | | Bentonite | | | 1 | SM | |
| | | | | | | | | | | 2 | | Silty sand, dk brown, loose, dry |
| 0.1 | | 3 | | | | | | X | 0935 | | | med sand, trace shells |
| | | 4 | | | | | | X | 280 Sol. 063 | | | |
| | | 6 | | | | | | | | 3 | SP | Sand, SP, loose, moist, med sand |
| 0.1 | | 4 | | | | | | | | | | trace shells, silty content |
| | | 6 | | | | | | X | 0942 | 4 | SM | increases to SM, brown, soft/loose |
| | | 9 | | | | 0.01 slotted Screen | 2/16 monterey sand | X | 280 Sol. 64 | 5 | SP | |
| | | | | | | | | | | | | SP, grey, loose, saturated @ 4.25' |
| | | | | | | | | | | | | coarse, w/ abundant shell fragments |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | Screen 2.5 - 12.5 |
| | | | | | | | | | | | | Sand 2.0 - 12.5 |
| | | | | | | | | | | 8 | | bentonite 2.0 - 1.5 |
| | | | | | | | | | | | | grout 1.5 - 0.0 |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 10 | | |
| | | | | | | | | | | 11 | | |
| | | | | | | | | | | 12 | | |

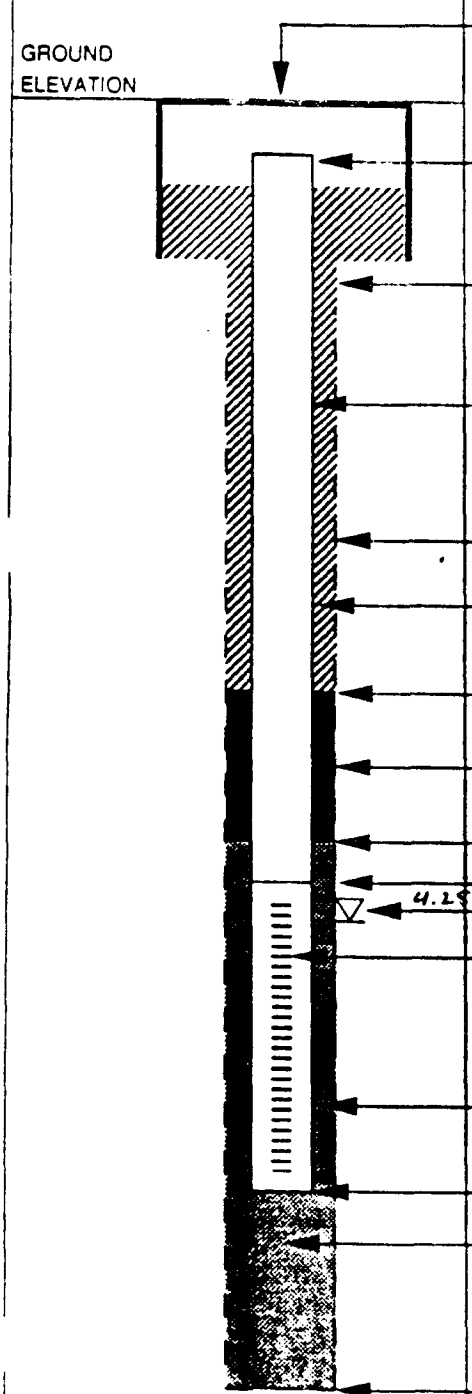
12.5

TD = 12.5'

BORING NO. M-032 A

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS ALAMEDA CTO 250 | LOCATION Site 01 | DRILLER Erik Forsstrom |
| PROJECT NO. 2738 1404 | BORING M-032 A | DRILLING METHOD HSA |
| ELEVATION | DATE 8-11-94 | DEVELOPMENT METHOD Bail, Surge, Pump? |
| FIELD GEOLOGIST DANIEL KRAMER | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 11.25"

TYPE OF BACKFILL: Neat cement grout

ELEVATION / DEPTH OF SEAL: 2.0

TYPE OF SEAL: Bentonite pellets

DEPTH TOP OF SAND PACK: 2.0

ELEVATION / DEPTH TOP OF SCREEN: 2.5 — 2.5

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH 0.01 X 10

I.D. OF SCREEN 2"

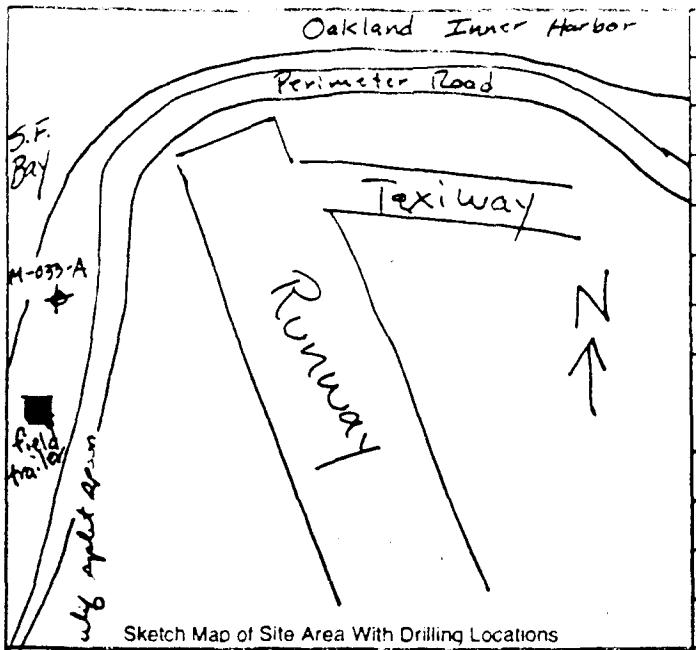
TYPE OF SAND PACK: 2/12 Monterey sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12.5

ELEVATION / DEPTH BOTTOM OF SAND PACK: —

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12.5




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-033A Sheet 1 of 1 |
| Project: | NAS ALAMEDA CTO 280 |
| Job # | 2738 1404 Site: 01 |
| Logged By: | DEK Proj. Eng: Edited By: |
| Drilling Contractor: | WOODWARD DRILLING INC |
| Drill Rig Type/Method: | HSA MOBILE B57 |
| Drillers Name: | ERIK FORSSTROM |
| Borehole Diam./Drill Bit Type | 11.5" auger bit |
| Total Depth | 12.5 |
| Ref. Elev. | |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 1115 Date: 8-10-94 |
| Completion Time: | 1205 Date: 8-10-94 |
| Backfill Time: | 1240 Date: 8-10-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.25 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1145 | | | |
| Date | 8-10-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 30 | | | | PVC Blank | Grout | X | 1120 | | Sandy Gravel GW, brown, med |
| | | 40 | | | | | | X | 280-501-065 | | Sand, pea-gravel |
| | | 40 | | | | | | | | 1 | |
| | | | | | | | Bent | | | 2 | |
| | | 2 | | | | | | X | 1135 | | Clayey sand, brown loose, |
| | | 2 | | | | | | X | 280-501-066 | | fine sand |
| | | 3 | | | | | | | | 3 | |
| | | | | | | | | | | 4 | |
| | | 3 | | | | | | X | 1145 | | Sand SW, brown w/ some gray |
| | | 4 | | | | | | X | 280-501-064 | 5 | layers. med-sand |
| | | 5 | | | | | | | | 6 | |
| | | | | | | | | | | | Screen - 2½ - 12½ |
| | | | | | | | | | | 7 | Sand - 12½ - 2 |
| | | | | | | | | | | | bentonite 2-1.5 |
| | | | | | | | | | | 8 | grout 1.5-0 |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

DRILL OUT

Screen 0.01-inch PVC

Monterey Sand 2/16

12.5

TD = 12.5'

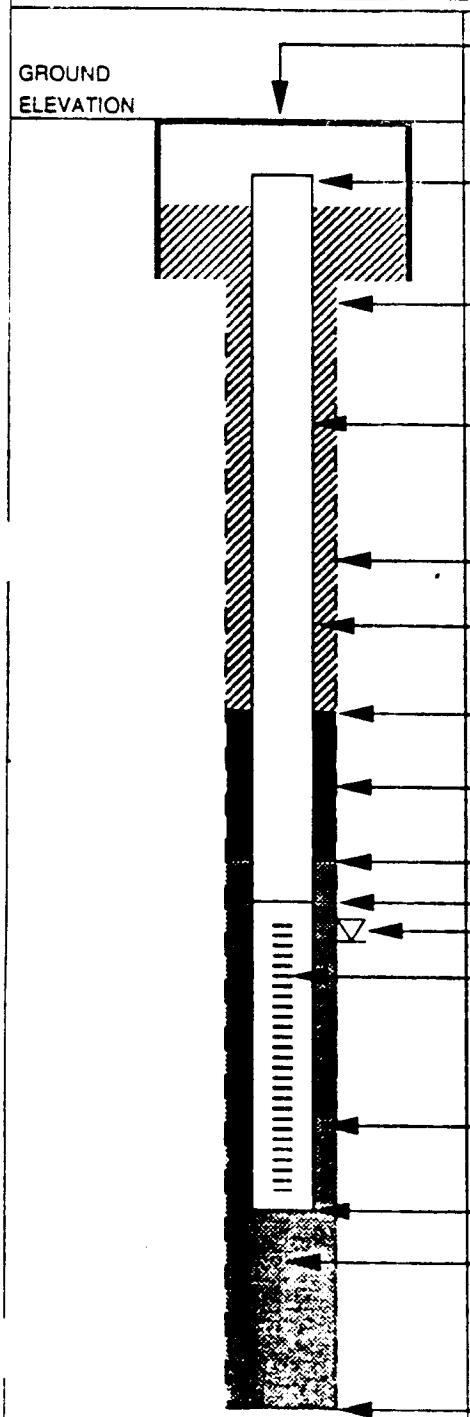
BORING NO. M-033A

# MONITORING WELL SHEET

PROJECT CTO 280 NAS ALAMEDA
PROJECT NO. 2738.1404
ELEVATION
FIELD GEOLOGIST D. KRAMER

LOCATION S.K 01
BORING M-033 A
DATE 8 10 94

DRILLER ERIK FORSSTRAN
DRILLING METHOD HSA
DEVELOPMENT METHOD Bail, Surge, Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: 0.0' bgs

I.D. OF SURFACE CASING: 2"
TYPE OF SURFACE CASING: PVC blank

RISER PIPE I.D.: NA
TYPE OF RISER PIPE: _____

BOREHOLE DIAMETER: 11.25"

TYPE OF BACKFILL: Cement grout

ELEVATION / DEPTH OF SEAL: 1.5 bgs

TYPE OF SEAL: Bentonite

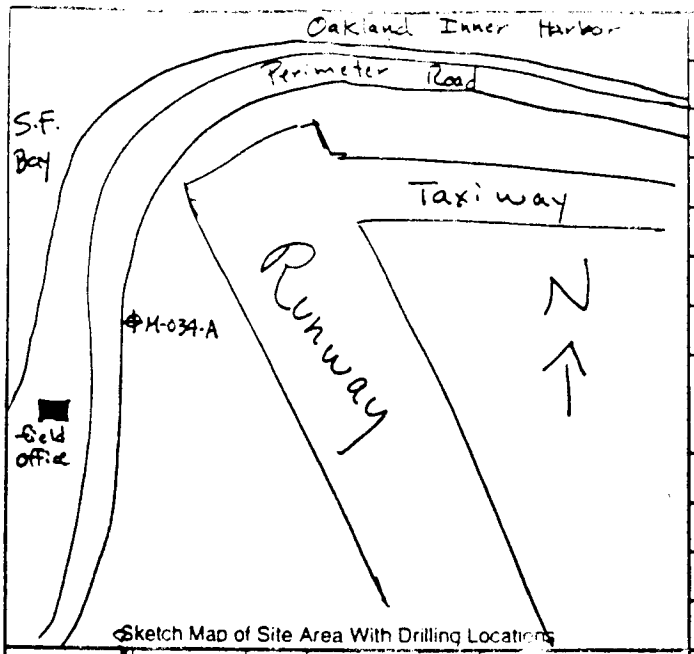
DEPTH TOP OF SAND PACK: 2.5 bgs
ELEVATION / DEPTH TOP OF SCREEN: 4.25 bgs
FIRST ENCOUNTERED SATURATED ZONE
TYPE OF SCREEN: 0.01 Slotted PVC
SLOT SIZE x LENGTH 0.01 x 10
I.D. OF SCREEN 2"

TYPE OF SAND PACK: 2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12.5 bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: _____
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12.5 bgs




Sketch Map of Site Area With Drilling Locations

Boring # M34A MW# M34A Sheet 1 of 1

Project: NAS ALAMEDA CTO-280

Job # 2738 1404 Site: 01

Logged By: DFK Proj. Eng: SMH Edited By:

Drilling Contractor: Woodward Drilling

Drill Rig Type/Method: 11SA

Drillers Name: ERIK FORSSTROM

Borehole Diam./Drill Bit Type: 11.25-inch auger

Total Depth: 12.5'

Ref. Elev.:

Hammer Wt: 140 lb Drop: 30"

Start Time: 10:00 Date: 8/10/94

Completion Time: 1035 Date: 8/10/94

Backfill Time: 1105 Date: 8/10/94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.5 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1025 | | | |
| Date | 8/10/94 | | | |

| PID/OVA | Sampler Type & Depth SS Sleeve | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2 4 4 | | | | Blank PVC | Cement Chips | X X | 240 SOL-69 | 0 | Crawdly sand SW, lt brown, fine sand, trace silt, dry, slight odor ~ similar to petroleum |
| | | 50 | | | | | BENT ONITE | | | 1 | |
| | | 4 3 | | | | | | X X | 1022 240 SOL-69 | 2 | clay, CL, black, moist, soft |
| | | 4 | | | | | | | | 3 | |
| | | 2 3 3 | | | | SCREEN - 0.01" | SAND 8/16 | X X | 240 SOL 70 1035 | 4 5 | Sand SW, black fine and med sand wet, 1/2 volume of 2nd sleeve. |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | screen 2 - 12½ sand 2 - 12½ bentonite 2 - 15 grout 15 - 0 |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

DRILL ATTEMPT

12.5'

TD=12.5'

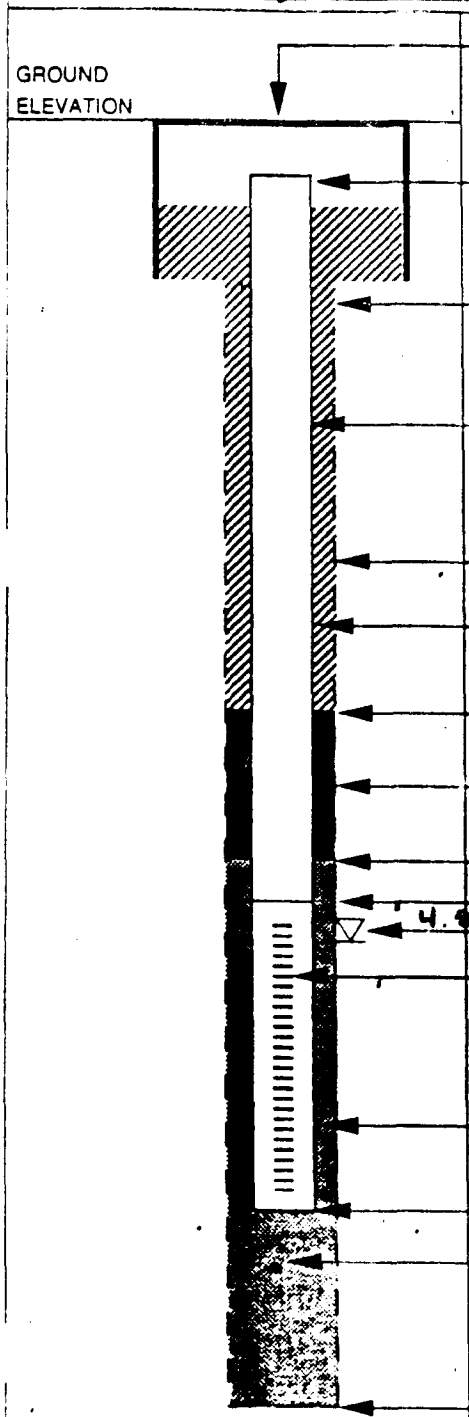
BORING NO. m-034A

# MONITORING WELL SHEET

M-034A

PROJECT CTO 280 NAS RAMGO LOCATION Site 01
PROJECT NO. 2738.1404 BORING M034A
ELEVATION DATE 9-10-94
FIELD GEOLOGIST D. KRAMER

DRILLER ERIK FORSSTROM
DRILLING METHOD HSA
DEVELOPMENT METHOD Bail, Surge, Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: 0.0

I.D. OF SURFACE CASING: 2"
TYPE OF SURFACE CASING: PVC

RISER PIPE I.D.: NA
TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 11.25

TYPE OF BACKFILL: Cement grout

ELEVATION / DEPTH OF SEAL: 1.5 bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 2.5 bgs
ELEVATION / DEPTH TOP OF SCREEN: 4.25 bgs
FIRST ENCOUNTERED SATURATED ZONE

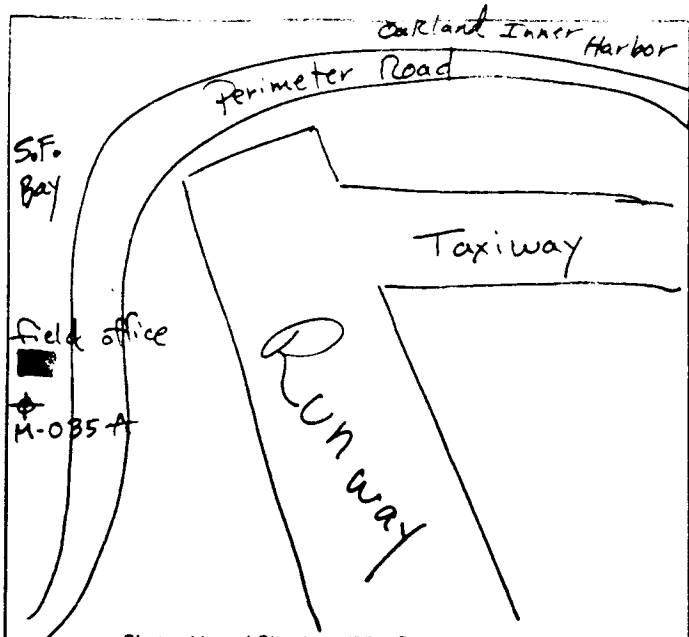
TYPE OF SCREEN: 0.01 slotted PVC
SLOT SIZE x LENGTH 0.01 x 10'
I.D. OF SCREEN 2"

TYPE OF SAND PACK: #1 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12.5 bgs
ELEVATION / DEPTH BOTTOM OF SAND PACK: 12.5 bgs
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12.5 bgs

M-035-A




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# m-035A |
| Sheet | 1 of 2 |
| Project: | CTO 280 NAS Alameda |
| Job # | 2738.1404 |
| Site: | 01 |
| Logged By: | DEK |
| Proj. Eng: | |
| Edited By: | |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | HSA - mobile drill |
| Drillers Name: | ERIK FORSTROM |
| Borehole Diam./Drill Bit Type | 11.25" auger |
| Total Depth | 14 |
| Ref. Elev. | |
| Hammer Wt: | 140 lb |
| Drop: | 30" |
| Start Time: | 1300 |
| Date: | 8-10-94 |
| Completion Time: | 1345 |
| Date: | 8-10-94 |
| Backfill Time: | 1415 |
| Date: | 8.10.94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6.0 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1310 | | | |
| Date | 8.10.94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size 2" | Annulus Filler | Depth: Sample Rec. | Analyses | Feet | | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3 | | | | | grout | X | 1305 | | | Gravelly sand, brown, fine to med sand |
| | | 4 | | | | | | X | 280 Sol.071 | | | loose, dry |
| | | 7 | | | | Blank PVC | Bentonite | | | 1 | | |
| | | | | | | | | | | 2 | | |
| | | 7 | | | | | | X | 1310 | | | Sand, SW yellow brown, med sand loose, dry |
| | | 7 | | | | | | X | 280 Sol.072 | | | |
| | | 6 | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | 5 | | | | | | X | ~~1320~~ | | | 6" recovered - Sandy Clay, grey |
| | | 7 | | | | | | X | ~~280 Sol.073~~ | 5 | | with red (iron oxide) coloring |
| | | 7 | | | | | | | | | | Soft, trace gravels, moist - |
| | | 5 | | | | | | X | 1325 | 6 | | Note - no water in open borehole @ 6' |
| | | 6 | | | | | | X | 280 Sol.073 | | | |
| | | 8 | | | | | Sand Monterey 2/16 | | | 7 | | Sand, SW/SP black, saturated, fine/med |
| | | | | | | | | | | 8 | | med dense, becomes clayey at |
| | | | | | | | | | | | | 7-7½ ft |
| | | | | | | 0.01 Slotted PVC Screen | | | | 9 | SW/SP | |
| | | | | | | | | | | | | Screen - 14 to 4' |
| | | | | | | | | | | 10 | | Sand 14 to 2½' |
| | | | | | | | | | | | | bentonite 2½ - 1½ |
| | | | | | | | | | | 11 | | grout 1½ to 0 |
| | | | | | | | | | | 12 | | |

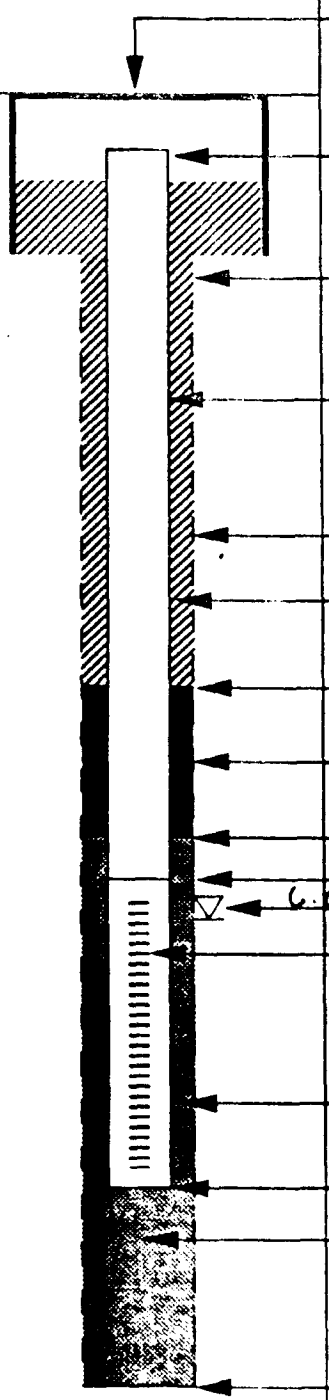
| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | | Boring # MW# M035A Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: CTO 280 NAS ALAMEDA |
| | | | | | | | | | | | | Job # 2738.1404 Site: 01 |
| | | | | | | Slotted Screen 0.01 | Sand 2/10 | | | 12 | SW/SP | |
| | | | | | | | | | | 13 | | |
| | | | | | | | | | | 14 | | TD = 14' |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |
| | | | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

MF

BORING NO. M-035A

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT CTO 280 | LOCATION NAS ALAMEDA | DRILLER ERIK FORSTROM |
| PROJECT NO. 2738.1404 | BORING M-035A | DRILLING METHOD HSA |
| ELEVATION | DATE 8-10-94 | DEVELOPMENT METHOD Bail, Surge, Pump |
| FIELD GEOLOGIST DANIEL KRAMER | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: 0.0 bgs

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: PVC Blank

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 11.25"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 1½' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 2½' bgs

ELEVATION / DEPTH TOP OF SCREEN: 4'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH 0.01 X 10'

I.D. OF SCREEN 2"

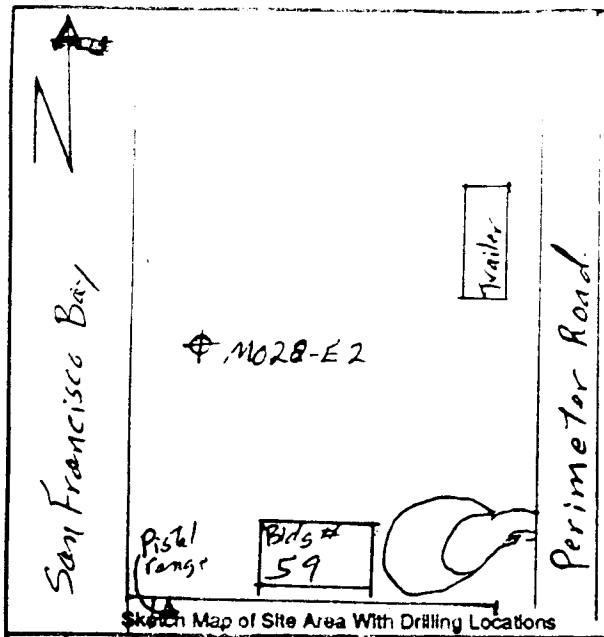
TYPE OF SAND PACK: Monterey Sand #/16

ELEVATION / DEPTH BOTTOM OF SCREEN: 14

ELEVATION / DEPTH BOTTOM OF SAND PACK: NA

TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

ELEVATION / DEPTH OF HOLE: ~~NA~~ 14



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MO28-E2 Sheet 1 of 2 |
| Project: | NAS Alameda CTO-0280 |
| Job # | 2738.1405 Site: 1 |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B53 HSA |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | 8" Total Depth 21 Ref. Elev. |
| Hammer Wt: | 140 Lb Drop: 30" |
| Start Time: | 1650 Date: 11-23-94 |
| Completion Time: | 1730 Date: 11-23-94 |
| Backfille Time: | 1820 Date: 11-23-94 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Disturbed surface soils - Silty Sand with gravels to 1½" Ø |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | S8 | Fine grained Sand (SP) moist, grayish brown 10YR (5/2) Traces of Silt, Clay, rootlets, shells and concrete. Trace black with orange mottling. |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | 10 | | | | 2" Sch 40 Solid PVC Casing | Neat Cement | | 5 | S8/S9 | fine grained Sand (SP) and Silty Sand (SM) ~~yellow~~ Very moist to Saturated, med. dense, yellowish brown 10YR (5/6) and very dark grayish brown 10YR (3/2) mottled, Trace gravels to 2" Ø. Trace precipitate |
| | | 12 | | | | | | | | | |
| | | 10 | | | | | | ▽ | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | bentonite | | 8 | | Concrete rubble encountered. |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | 12 | | | | | | | 11 | S8 | fine to med. grained Sand (SP) Saturated, med. dense, dark gray 7.5YR ~~N4~~ (N4/) Trace clay |
| | | 9 | | | | | | | 12 | | |

Boring # MW# M028-E2 Sheet 2 of 2

Project: NAS Alameda CTO-0280

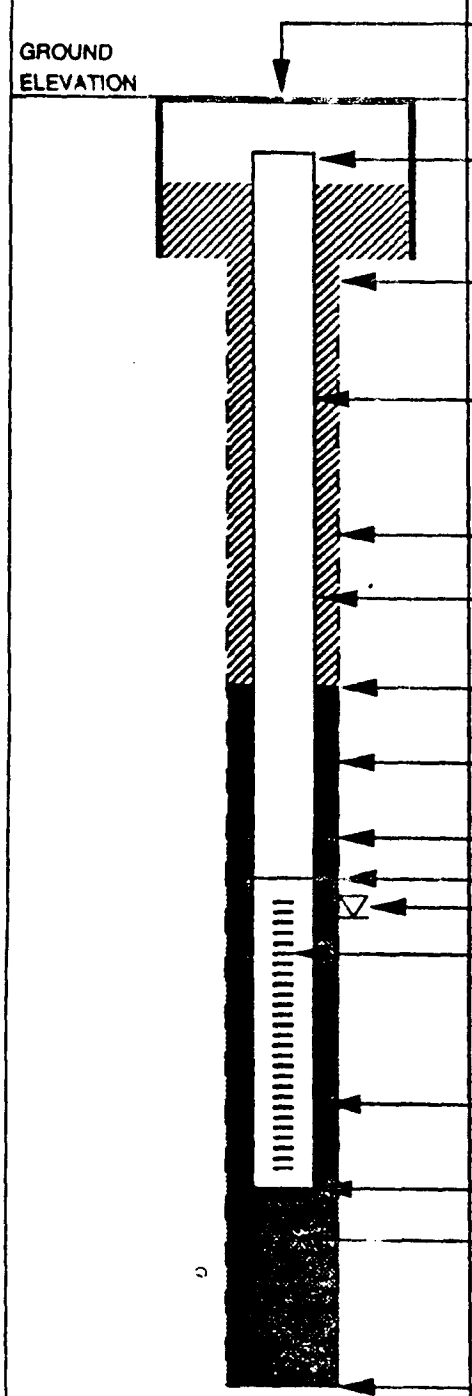
Job # 2738.1405 Site: ~~Run~~ 1

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | | Casing | Annulus | Depth Sample Rec | Feet | Graph | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 16 | ↓ | ↓ | | 2" sch 40 PVC #0.01 factory slot | #2/12 monterey Sand | | 12 | | Trace silt, sea shells common. Traces of light brownish gray 2.5Y (6/2) mottling. |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | 6 | | | | | | | 15 | | Fine grained Sand, Saturated med. dense, Reddish brown 5YR 5/3 and gray 5YR (5/1) mottled, Trace silt, sea shells common. 5-10% med. sand. Trace concrete. |
| | | 8 | | | | | | | | | |
| | | 10 | ↓ | ↓ | | | | | 16 | | |
| | | | | | | | | | 17 | SP | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | | Fine to med. grained Sand (SP) Saturated, med dense, gray 5YR (5/1), Trace silt, sea shells common up to 25%. |
| | | 6 | | | | | | | | | |
| | | 8 | | | | | | | 20 | | |
| | | 12 | ↓ | ↓ | | | | | | | |
| | | | | | | | | | 21 | | TD = 21' |
| | | | | | | | | | 22 | | |
| | | | | | | | | | 23 | | |
| | | | | | | | | | 24 | | |
| | | | | | | | | | 25 | | |
| | | | | | | | | | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | | | | | | | | 30 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. MC28-E2

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT Alameda-CTC-0280 | LOCATION Site 1 | DRILLER Woodward |
| PROJECT NO. 2738.1405 | BORING MC28-E2 | DRILLING METHOD HSA |
| ELEVATION | DATE 11-23-94 | DEVELOPMENT METHOD Surge ball Pump |
| FIELD GEOLOGIST WPW Wade Weston | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 7'

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 9'

ELEVATION / DEPTH TOP OF SCREEN: 11'

FIRST ENCOUNTERED SATURATED ZONE 6'

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH 0.01 Factory Slot

I.D. OF SCREEN 2"

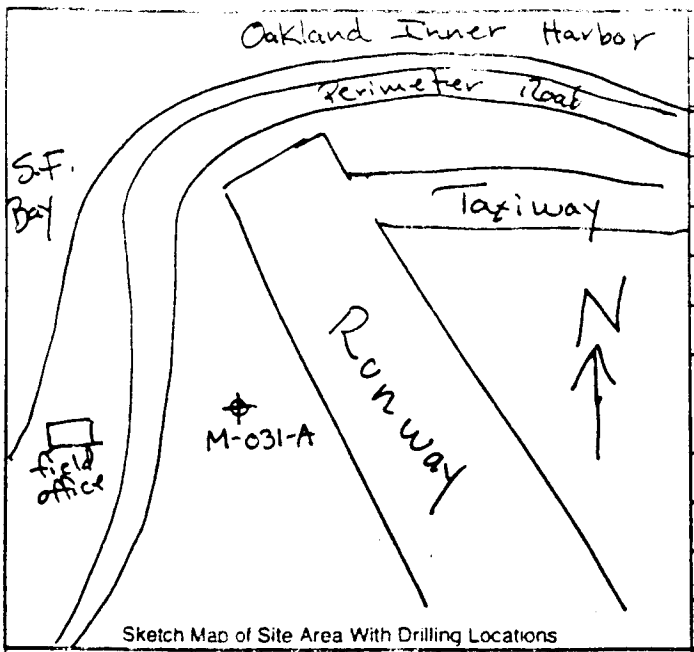
TYPE OF SAND PACK: 2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 21'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 21'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 21'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#M031A |
| Sheet | 1 of |
| Project: | Alameda CTO 290 |
| Job # | 2738.1404 |
| Site: | 01 |
| Logged By: | DEK |
| Proj. Eng: | |
| Edited By: | |
| Drilling Contractor: | Woodland Drilling Co |
| Drill Rig Type/Method: | HSA Mob. 6 |
| Drillers Name: | Erik F |
| Borehole Diam./Drill Bit Type | 11.5" auger |
| Total Depth | 12.5 |
| Ref. Elev. | |
| Hammer Wt: | 140 lb |
| Drop: | 30 |
| Start Time: | 1430 |
| Date: | 8-10-94 |
| Completion Time: | 1445 |
| Date: | 8-10-94 |
| Backfill Time: | 1515 |
| Date: | 8-10-94 |

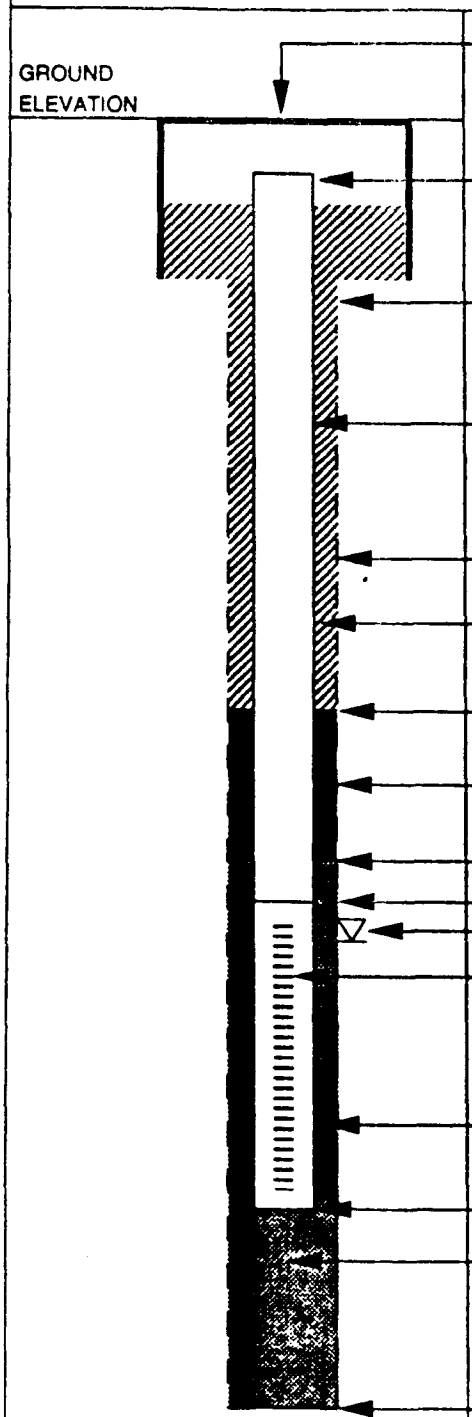
| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.45' | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1445 | | | |
| Date | 8-10-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 17 | 17 | | | PVC Blank | Cement Grout | X | 1435 | | Silty sand SM, brown, loose, dry |
| | | 24 | | | | | | X | 280.501.052 | 1 | fine to very fine sand |
| | | 50 | | | | | Bent | | | 2 | |
| | | 20 | | | | | | X | 1440 | | Sand, SP, brown, fine to v fine |
| | | 19 | | | | | | X | 280.501.053 | 3 | loose dry |
| | | 14 | | | | | | | | | |
| | | | | | | | | | | 4 | Sand, SP, black, med to fine, |
| | | | | | | | | | | | wet at 3.5 ft |
| | | 2 | | | | | | X | 1445 | 5 | |
| | | 3 | | | | | | X | 280.501.054 | | Ma, saturated, clay layers ≈ 1" thick |
| | | 4 | | | | | | | | | trace shells |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | 0.01 Slotted Screen PVC | Monterey Sand 2/12 | | | 8 | |
| | | | | Drill out | | | | | | 9 | screen: 12½ - 2½ |
| | | | | | | | | | | | sand 12½ - 2 |
| | | | | | | | | | | 10 | bentonite 2 - 1½ |
| | | | | | | | | | | | grout 1½ - 0 |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |
| | | | | | | | | | | 12.5 | TD = 12.5' |

BORING NO. M-031-A

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT CTO 280 | LOCATION S.K.I | DRILLER Eric Forsstrom |
| PROJECT NO. 2738.1404 | BORING M-031A | DRILLING METHOD HSA |
| ELEVATION — | DATE 8-10-94 | DEVELOPMENT METHOD Bail, Surge, Pump |
| FIELD GEOLOGIST DANIEL KRAMER | | |




ELEVATION OF GROUND SURFACE: —

ELEVATION OF TOP OF WELL CASING: 0.0' bgs

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: PVC Blank

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 11.25"

TYPE OF BACKFILL: Neat cement grout

ELEVATION / DEPTH OF SEAL: 1½'

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 2'

ELEVATION / DEPTH TOP OF SCREEN: 2½

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH 0.01 x 10'

I.D. OF SCREEN 2"

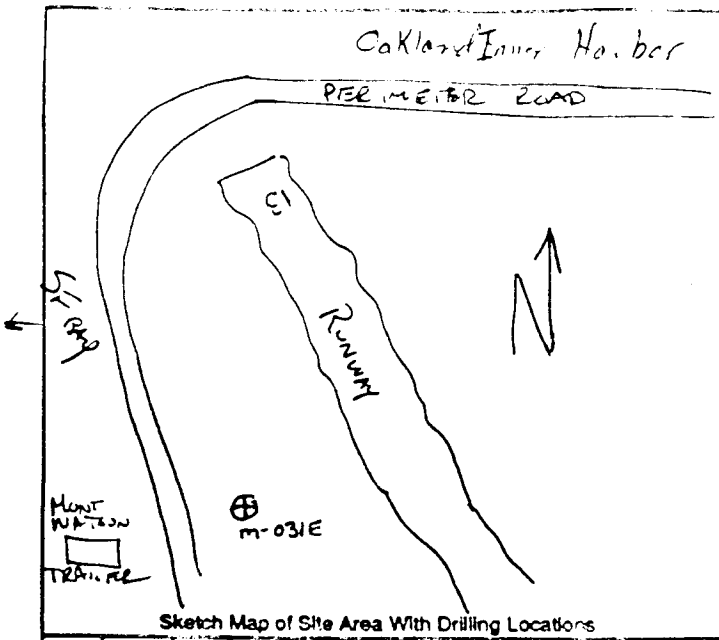
TYPE OF SAND PACK: Monterey Sand # 2/16

ELEVATION / DEPTH BOTTOM OF SCREEN: 12½'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12½

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12½




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-031 E — Sheet 1 of 2 |
| Project: | CTO 280 NAS ALAMEDA |
| Job # | 2738.1404 — Site: 01 |
| Logged By: | DEK — Proj. Eng: S Hill — Edited By: |
| Drilling Contractor: | WOODWARD DRILLING |
| Drill Rig Type/Method: | HOLLOW-STEM AUGER |
| Drillers Name: | ERIK FORSSTROM |
| Borehole Diam./Drill Bit Type | 11.50" / HSA — Total Depth: 19.5 — Ref. Line: |
| Hammer Wt: | 140 lbs — Drop: 30" |
| Start Time: | 1430 — Date: 8/10/94 |
| Completion Time: | 1620 — Date: 8/10/94 |
| Backfille Time: | 1730 — Date: 8/10/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | 6' | | | |
| Water Depth (ft.) | ≈ 6' | | | |
| Time | | | | |
| Date | 8/10/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ϕ | | 15 | | | | | | | SP/SM | | Sand (SP) to silty Sand (SM), brown |
| | | 27 | | | | | | | 1430 | | 10Y 5/3, loose dry, fine and |
| | | 48 | | | | | | | 1 | | v. fine grained sand |
| | | | | | | | | | 2 | | |
| ϕ | | 18 | | | | | | | SP/SM | | Sand As above |
| | | 17 | | | | | | | 1435 | | |
| | | 16 | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| ϕ | | 4 | | | | | | | SP/SM | | Sand As above, black/v. dk grey |
| | | 6 | | | | | | | 1450 | | (2.5Y, N3), soft moist to slightly |
| | | 5 | | | | | | | 5 | | Saturated, fine to very fine grained |
| | | | | | | | | | 6 | | trace of clay layers and shell zones |
| | | | | | | | | | 7 | | |
| ϕ | | 7 | | | | | | | SP/SM | | Sand (SP) to silty Sand (SM) |
| | | 5 | | | | | | | 8 | | v. dk gray (2.5Y, N3) loose, |
| | | 8 | | | | | | | | | saturated, fine to med grained |
| | | | | | | | | | 9 | | sand, trace of shells |
| ϕ | | 9 | | | | | | | SP/SM | | |
| | | 10 | | | | | | | 10 | | Sand As above |
| | | 12 | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

Casing Type & Size: PVC BLANK CASING; PVC Slotted Screen

Annulus Filler: Neat Cement Grout; Bentonite Pellets; Marbling Sand #2/12

Boring # MW# m-031E Sheet 2 of 2

Project: CTO 280 NAS ALAMEDA

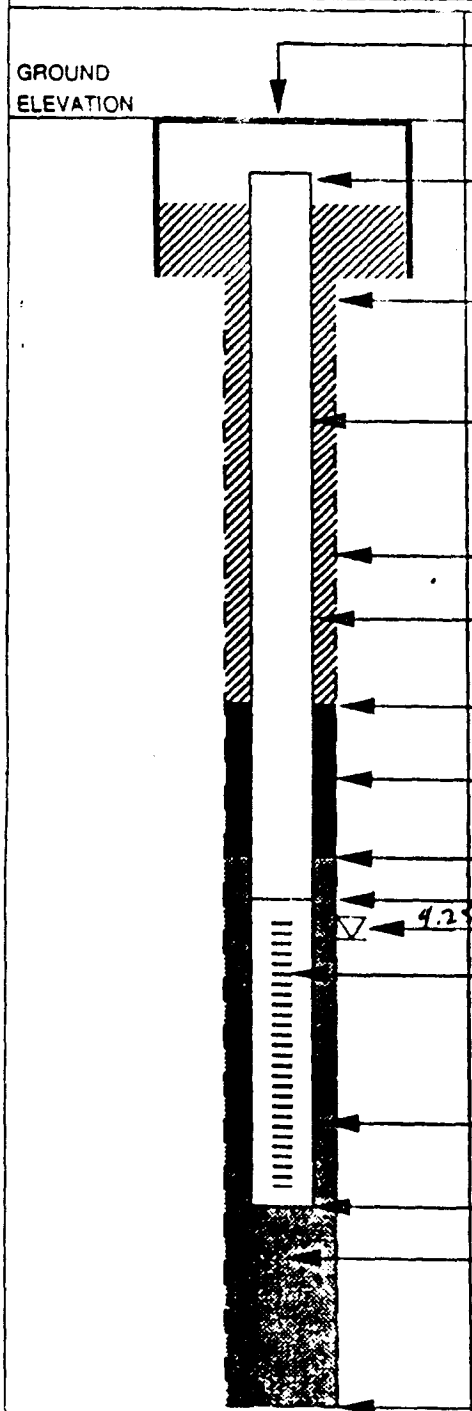
Job # 2738.1404 Site: 01

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | | Casing | Annulus | Depth Sample Rec | Depth Feet | Graph | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Φ | | 12 | ↓ | ↓ | | PVC Slotted Screen | Sand Monterey 2/12 | | 12 SP/SM | | Sand As above, trace |
| | | 10 | | | | | | | | | of clay at bottom of shore |
| | | 8 | ↓ | ↓ | | | | | 13 | | |
| | | | | | | | | | 14 SP/SM SC | | |
| | | 8 | ↓ | ↓ | | | | | 15 SC | | Clayey Sand SC, black, soft/loose |
| | | 6 | | | | | | | | | Saturated, med sand, approx 20% clay |
| | | 8 | ↓ | ↓ | | | | | 16 | | |
| | | 8 | | | | | | | | | |
| | | 9 | | | | | | | 17 SC | | Clayey sand As above |
| | | 13 | ↓ | ↓ | | | | | | | |
| | | 14 | | | | | | | 18 CL | | Clay CL v. dk gray (7.5Y N3) |
| | | 12 | | | | | | | | | Soft, wet, plastic |
| | | 11 | ↓ | ↓ | | | | | 19 | | |
| | | | | | | | | | 20 | | TD = 19.5' Boring |
| | | | | | | | | | 1 | | Well set at 18' |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. _____

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT CTO 280 NAS Alameda | LOCATION S. K 01 | DRILLER Erik Forsstrom |
| PROJECT NO. 2738.1404 | BORING M-031E | DRILLING METHOD HSA |
| ELEVATION _____ | DATE 8-10-94 | DEVELOPMENT METHOD _____ |
| FIELD GEOLOGIST Daniel Kramer | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 11.25"

TYPE OF BACKFILL: Neat cement grout

ELEVATION / DEPTH OF SEAL: 4.0'

TYPE OF SEAL: Bentonite pellets

DEPTH TOP OF SAND PACK: 6'

ELEVATION / DEPTH TOP OF SCREEN: 8

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: PVC Slotted

SLOT SIZE x LENGTH 0.01 x 10'

I.D. OF SCREEN 2"

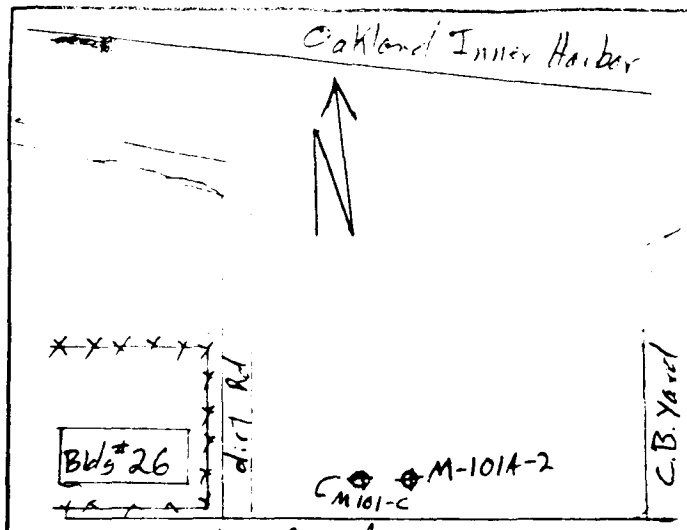
TYPE OF SAND PACK: Morton Sand 2/16

ELEVATION / DEPTH BOTTOM OF SCREEN: 18

ELEVATION / DEPTH BOTTOM OF SAND PACK: 18

TYPE OF BACKFILL BELOW OBSERVATION WELL: Native Sand

ELEVATION / DEPTH OF HOLE: ~~18~~ 19.5




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-101A-2 Sheet 1 of 1 |
| Project: | Alameda CTO-0280 |
| Job # | 2738.1405 Site: Runway Area |
| Logged By: | LWPW Proj. Eng: S H Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B53 |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | 8" Total Depth 12.5' Ref. Elev. |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 1510 Date: 11-23-94 |
| Completion Time: | 1545 Date: 11-23-94 |
| Backfille Time: | 1630 Date: 11-23-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth Sample Recovery | Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Solid Casing | Cement Sand Slurry | | 1 | | Disturbed surface soils - gravelly sands, brick, cement, wood debrie. |
| | | | | | | | | | 2 | SP | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | Fine grained sand (SP), saturated, med. dense, greenish gray SGY (5/1), Trace silt, Trace sea shells |
| | | 9 | | | | | | | | | |
| | | 14 | | | | | | | 5 | | |
| | | 16 | | | | | | | | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | 1 | | | | | | | | CL | Silty Clay (CL), very moist, very soft, dark greenish gray SGY (4/1) |
| | | 1 | | | | | | | 9 | | |
| | | 1 | | | | | | | | SP | Fine grained sand (SP) saturated, very loose to loose, gray SY (5/1), Sea shells common. Trace silt, Trace clay |
| | | | | | | | | | 10 | | |
| | | | | | | | | | 11 | | |
| | | 3 | | | | | | | | | |
| | | 6 | | | | | | | 12 | | |
| 12.5' | | 6 | | | | | | | | | |

#0.01 factory slot casing

2" sch 40 PVC

#2/12 Monterey Sand

TD 12.5 2.5 Solid - 10' Screen

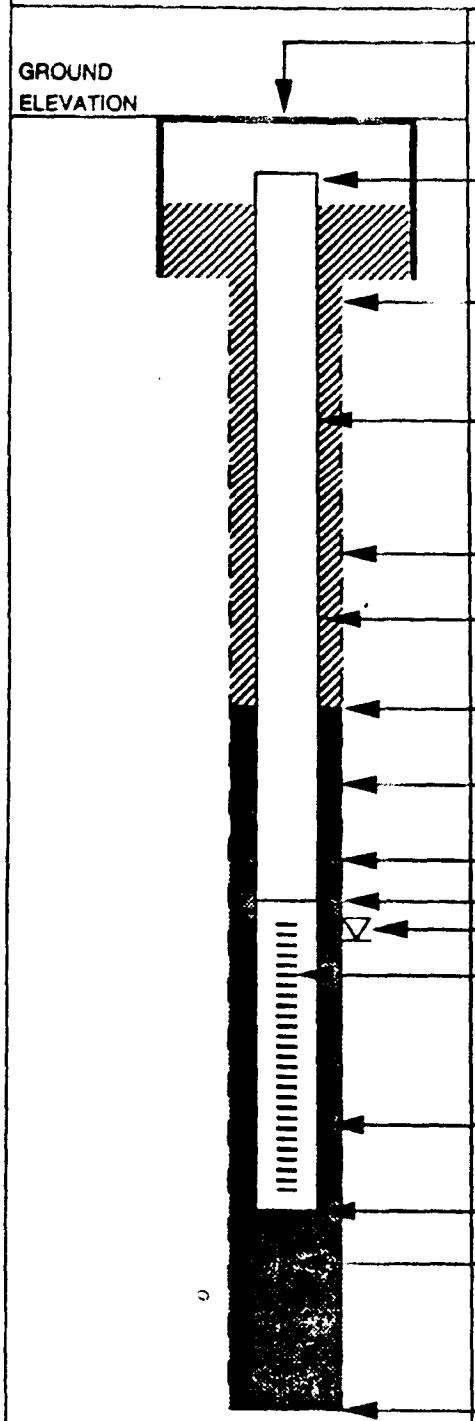
Reinstallation of well M-101A destroyed by C.B's

BORING NO. M-101A-2

# MONITORING WELL SHEET

PROJECT Alameda CTC-0280 LOCATION Runway Area
PROJECT NO. 2738.1405 BORING M-101A-2
ELEVATION _____ DATE 11-23-94
FIELD GEOLOGIST WPW

DRILLER Woodward
DRILLING METHOD HSA
DEVELOPMENT METHOD Surge Bail / Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: _____
TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: ~~4"~~ 2"
TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement + Sand Slurry

ELEVATION / DEPTH OF SEAL: 1.5

TYPE OF SEAL: Bentonite

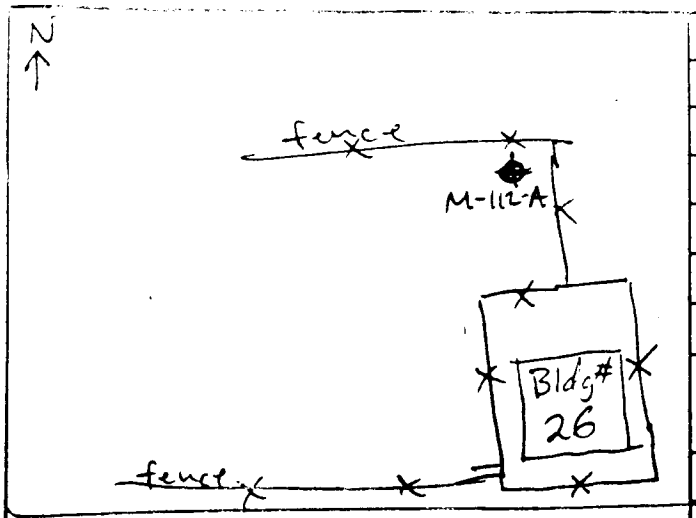
DEPTH TOP OF SAND PACK: 2
ELEVATION / DEPTH TOP OF SCREEN: 2.5
FIRST ENCOUNTERED SATURATED ZONE 3.5
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH 0.01 Factory Slot
I.D. OF SCREEN 2"

TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12.5

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12.5
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12.5




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#M-112-A Sheet 1 of |
| Project: | Alameda NAS |
| Job #2738.1404 | Site: Runway |
| Logged By: JEV | Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA Mobile B57 |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | Total Depth 12.5' |
| 8½" | Ref. Elev. |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 0930 Date: 8-22-94 |
| Completion Time: | 1000 Date: 8-22-94 |
| Backfill Time: | 1200 Date: 8-22-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 12.5' | | | |
| Casing Depth (ft.) | 12.5' | | | |
| Water Depth (ft.) | 4.5' | | | |
| Time | 0995 | | | |
| Date | 8-22-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | | 28 | | | | 3" Dia. Sch 40 Blank PVC | Grout | | | | silty, gravelly SAND (SW), lt br to orange br, dens, dry, fine-gr med lc |
| | | 40 | | | | | | 0937 | 1 | | |
| | | 48 | | | | | | | | | |
| | | 49 | | | | | Bent. | | 2 | | |
| 0 | | 7 | | | | | | | | | SAND (SP) lt brown (6/3, 7.5 YR), dense, v sl mst, f-gr, high lc |
| | | 12 | | | | | | 0990 | 3 | SP | |
| | | 6 | | | | | | | | | |
| | | 9 | | | | | | Geo-tech 4 | | | |
| | | 3 | | | | | | | | | As above, except saturated @ ≈ 4.5' |
| | | 2 | | | | | | | 5 | | |
| 0 | | 2 | | | | | | 0945 | | | |
| | | 4 | | | | | | | 6 | | minor clay @ ≈ 5.5' |
| | | | | | | 3" Diam, Sch. 40, 0.010 slotted PVC Screen | Monterey Sand 2/12 | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | 3 | | | | | | | | | As Above |
| | | 3 | | | | | | Geo-tech | 11 | | |
| | | 1 | | | | | | | | | |
| | | 2 | | | | | | | 12 | | |

12.5 12.5

∴ Bott of Well = 12.5'

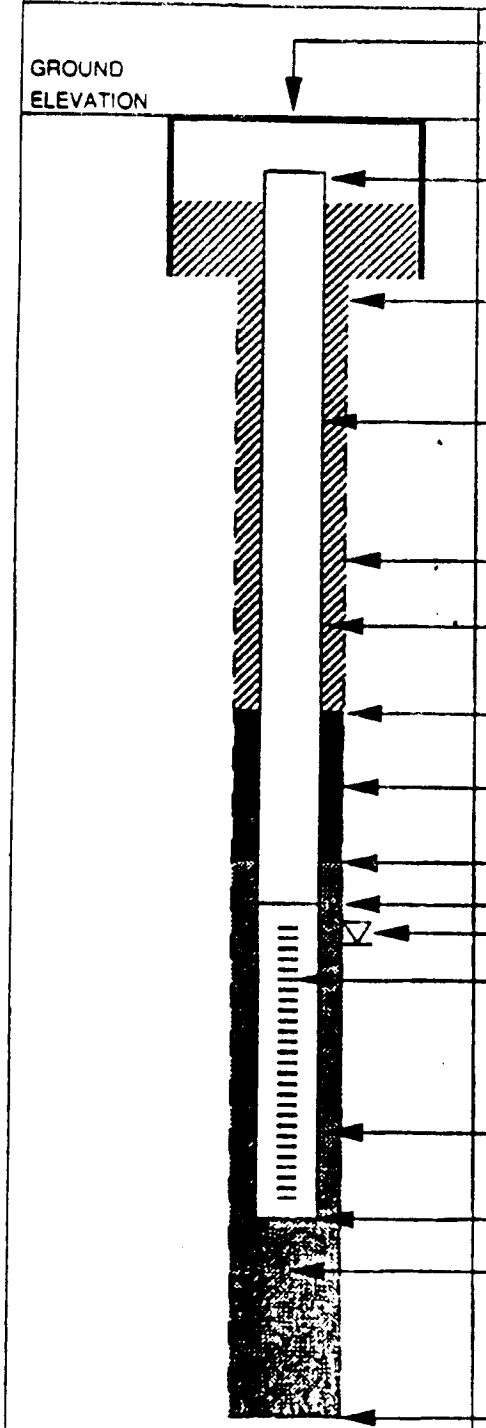
BORING NO. M-112-A

# MONITORING WELL SHEET

PROJECT Alameda NAS
PROJECT NO. 2738.1404
ELEVATION
FIELD GEOLOGIST John Valett

LOCATION Site: Runway
BORING M-112-A
DATE 8-22-94

DRILLER Woodward
DRILLING Eric Forstrom
METHOD HSA
DEVELOPMENT
METHOD Bail, Surge, Pump




ELEVATION OF GROUND SURFACE: —

ELEVATION OF TOP OF WELL CASING: —

I.D. OF SURFACE CASING: 2"
TYPE OF SURFACE CASING: Blank Sch 40 PVC

RISER PIPE I.D.: NA
TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8½"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 1.0'

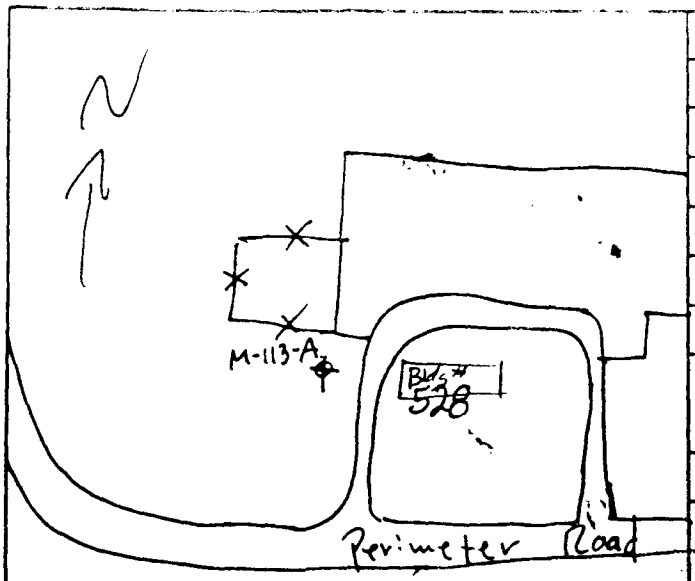
TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 2.0'
ELEVATION / DEPTH TOP OF SCREEN: 2.5'
FIRST ENCOUNTERED SATURATED ZONE 4.5'
TYPE OF SCREEN: PVC Sch 40 Slotted
SLOT SIZE x LENGTH 0.01 X 10
I.D. OF SCREEN 2"

TYPE OF SAND PACK: 2/16 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12.5'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 12.5'
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12.5'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-0113A Sheet 1 of 1 |
| Project: | NAS ALAMEDA CTR 280 |
| Job # | 2738 1404 Site: RA |
| Logged By: | DEK Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | HSA Mobil B57 |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | ~~11.25"~~ 6 1/2" auger — Total Depth 12' — Ref Elev |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 1145 Date: 8-11-94 |
| Completion Time: | 1300 Date: 8-11-94 |
| Backfill Time: | 1500 Date: 8-11-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.05 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1205 | | | |
| Date | 8-10-94 | | | |

| PID/OVA (ppm) | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.2 | | 20 | | | | PVC Blank | Cement grout | X | 1150 | | | Gravelly silt, GM, brown, loose dry, pebble size gravel |
| | | 18 | | | | | | X | 280 SRA-36 | 1 | | |
| | | 10 | | | | | Bentonite | | | | | |
| | | | | | | | | | | 2 | GM | |
| 1.4 | Clay | 2 | | | | PVC Slotted Screen 0.01 | | X | 1200 | | | Clay, black, soft, moist green with grey staining w/ clay |
| | | 1 | | | | | | X | 280 SRA-37 | 3 | CL | |
| | | 2 | | | | | | | | | | |
| | | 1 | | | | | | | | | | |
| 0.8 | | 1 | | | | | | X | 1205 | 4 | CL SP | Clay Aa. |
| | | 2 | | | | | | X | 280 RA-38 | 5 | SP | Sand SP, dk grey to blk, loose, saturated, fine sand ≈ 40%, med sand ≈ 50%, shell fragments ≈ 10% w/ clay layers ≈ 1.5" thick |
| | | | | | | | 2/16 Monterey Sand | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | Screen = 12'-2' |
| | | | | | | | | | | 9 | | sand 12-1.5 |
| | | | | | | | | | | | | bentonite 1.5-1.0 |
| | | | | | | | | | | | | grout 1.0-0.0 |
| | | | | | | | | | | 10 | | |
| | | | | | | | | | | 11 | | |
| | | | | | | | | | | 12 | | |

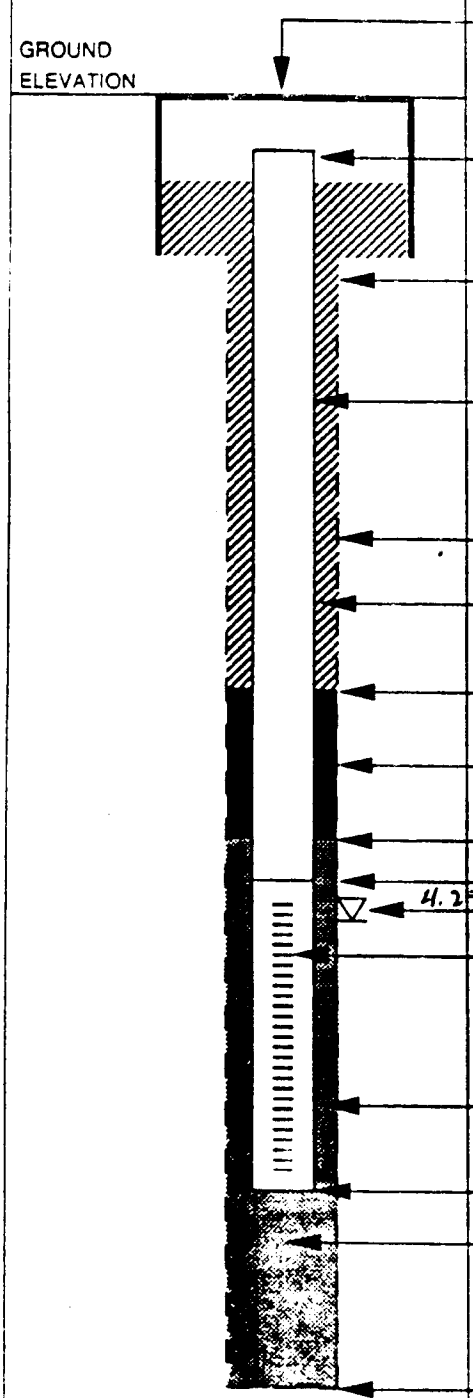
TD=12'

BORING NO. M-113-A

# MONITORING WELL SHEET

PROJECT NASALAMEDA CTO 280 LOCATION Runway area
PROJECT NO. 2736.1404 BORING M-113A
ELEVATION _____ DATE 8-11-94
FIELD GEOLOGIST Daniel Kramer

DRILLER Erik Forsyth
DRILLING METHOD HSA Mobile B57
DEVELOPMENT METHOD Bail, Surge, Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 2"
TYPE OF SURFACE CASING: Black 40 SCH PVC

RISER PIPE I.D.: NA
TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8.5"

TYPE OF BACKFILL: neat cement grout

ELEVATION / DEPTH OF SEAL: 1.5

TYPE OF SEAL: Bentonite pellets

DEPTH TOP OF SAND PACK: 1.5

ELEVATION / DEPTH TOP OF SCREEN: _____

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: PVC SCH 40 slotted
SLOT SIZE x LENGTH 0.01 x 10
I.D. OF SCREEN 2"

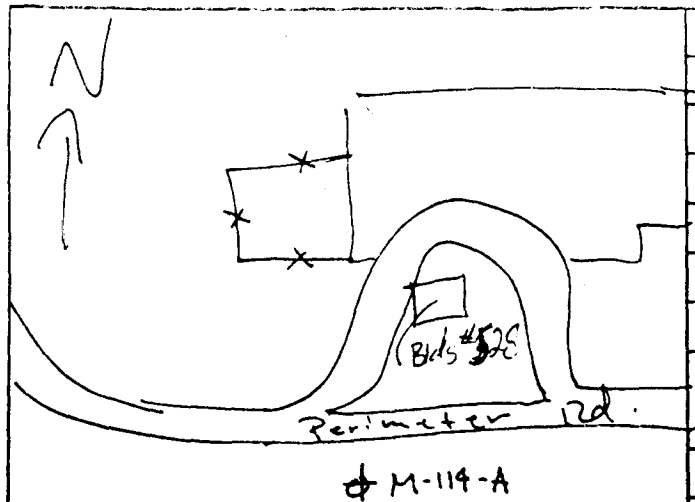
TYPE OF SAND PACK: 2/16 monterey sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-114-A Sheet 1 of 1 |
| Project: | CTO 280 NAS Atlanta GA |
| Job # | 2738 1404 Site: Runway |
| Logged By: | DEK Proj. Eng: Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | ASA B-57 |
| Drillers Name: | Erik Forsstrom |
| Borehole Diam./Drill Bit Type | Total Depth 12' |
| | 11.25" auger Ref. El. |
| Hammer Wt: | 140 lb Drop: 30' |
| Start Time: | 1030 Date: 8.11.97 |
| Completion Time: | 1100 Date: 8.11.97 |
| Backfill Time: | 1125 Date: 8.11.97 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 2.5' | 3.5' | | |
| Casing Depth (ft.) | | 1.9 [illegible] | | |
| Water Depth (ft.) | | | | |
| Time | 1050 | 1052 | | |
| Date | 8.11.97 | 8.11.97 | | |

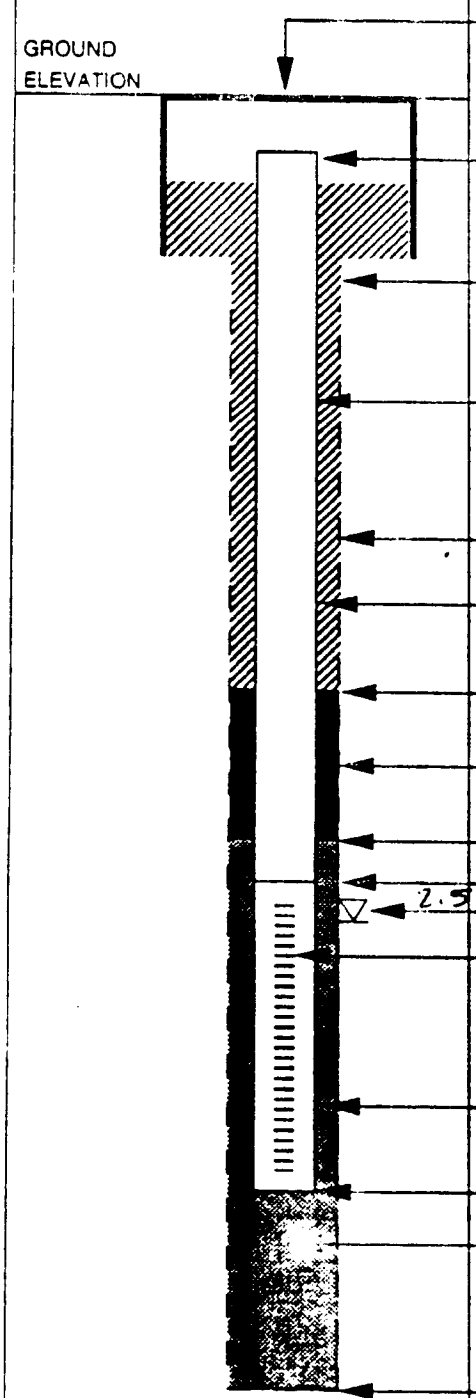
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | | 4 4 6 | ↓ | ↓ | Bkgk Rec | | Grout | ✓ X | 1045 280 RA-39 | 1 | Silty Sand, SM, brown, dry, loose |
| | | | | | | | | | | 2 | |
| Ø | | 1 1 1 | ↓ | ↓ | | | | X X | 1050 280 RA-40 | 3 | Silty sand SM, loose, wet saturated at 2.5', silt content decreases b/w 2.5' & 30 ft |
| Ø | | 1 1 1 | ↓ | ↓ | | | | ✓ X | 1055 280 RA-041 | 4 | Sand SP, lt brown, loose, saturated med grained sand |
| | | | | | | | | | | 5 | |
| | | | | | | | | | | 6 | |
| | | | | | | 0.010 Slotted PVC Screen | | | | 7 | Screen - 2-12 |
| | | | | | | | Sand | | | 8 | Sand 1.5-12 |
| | | | | | | | 8/12 | | | | bent 1-1.5 |
| | | | | | | | | | | 9 | grout 1-0 |
| | | | | | | 3" Dia, Sch 40 | Monterey | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

DEK 8.11.97 ~~12.5~~ TD = 12'

BORING NO. M-114-A

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS ALAMEDA CTO 250 | LOCATION Runway Area | DRILLER Erik Forsston |
| PROJECT NO. 2738.1404 | BORING M-114A | DRILLING METHOD HSA Mobile B57 |
| ELEVATION | DATE 8-11-94 | DEVELOPMENT METHOD Bail, Surge, Pump |
| FIELD GEOLOGIST DANIEL KRAMER | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 40 sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8 1/2"

TYPE OF BACKFILL: neat cement grout

ELEVATION / DEPTH OF SEAL: 10

TYPE OF SEAL: Bentonite pellets

DEPTH TOP OF SAND PACK: 1.5

ELEVATION / DEPTH TOP OF SCREEN: _____

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: PVC sch 40 slotted

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

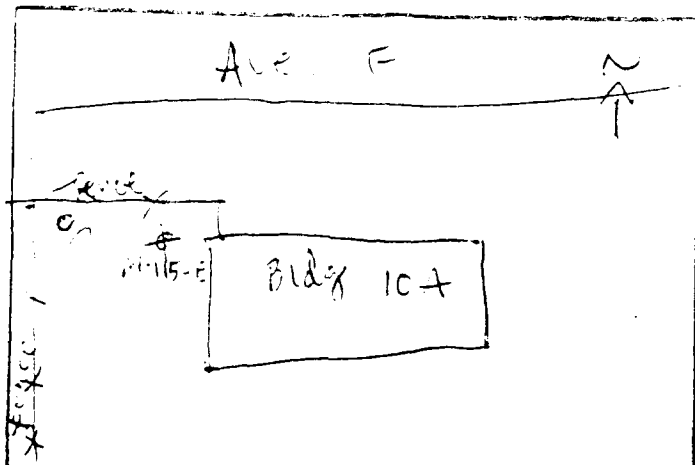
TYPE OF SAND PACK: 2/12 monterey sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-115-E Sheet 1 of 1 |
| Project: | Hamilton NAS |
| Job # | 2738-1404 Site: Runway |
| Logged By: | JEV Proj. Eng: Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8.25" 12' |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 1315 Date: 8-18-94 |
| Completion Time: | 1330 Date: 8-18-94 |
| Backfill Time: | 1335 Date: 8-18-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 12' | | | |
| Casing Depth (ft.) | 12' | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1330 | | | |
| Date | 8-18-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | Casing Type & Size | Annulus Filler | Depth Sample Rec. | Depth Analyses | Depth Feet | Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 4 | | | | | | | | SAND (SP), lt brown, dense, v sl mst, fine-gr, high K. |
| | | 8 | | | | | | 1318 | 1 | |
| | | 7 | | | | | | | | |
| | | 7 | | | | | | | | |
| | | 3 | | | | GROUT | | | 2 | As above |
| | | 8 | | | | | | 1322 | | |
| | | 6 | | | | | | | 3 | |
| | | 7 | | | | | | geo-tech | | |
| | | 5 | | | | | | | 4 | As above, except saturated at 5' bgs. |
| | | 12 | | | | | | | | |
| | | 11 | | | | | | 1330 | 5 | |
| | | 11 | | | | | | | | |
| | | | | | | | | | 6 | |
| | | | | | | | | | 7 | |
| | | | | | | | | | 8 | |
| | | | | | | | | | 9 | |
| | | 10 | | | | | | | 10 | As above |
| | | 12 | | | | | | geo-tech | 11 | |
| | | 9 | | | | | | | | |
| | | 6 | | | | | | | 12 | At 11.5' = sandy CLAY (CL), gray, plastic, saturated, low K. |

Blank PVC

PVC Screen

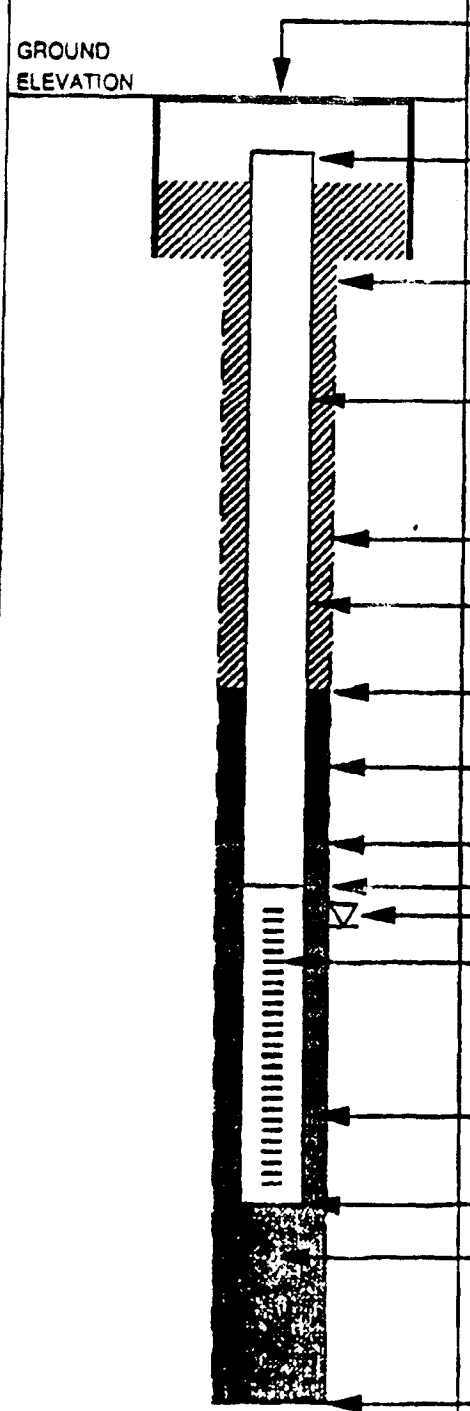
Monterey 3/12 Sand

Bottom of Well = 12'

BORING NO. M-115-E

# MONITORING WELL SHEET

| | | | | | |
|---|---|---|---|---|---|
| PROJECT | Alameda VAS | LOCATION | Site 10A | DRILLER | Eric Forstner Well Drilling |
| PROJECT NO. | 2733 10C4 | BORING | M-115-E | DRILLING METHOD | HSA |
| ELEVATION | | DATE | 8-18-94 | DEVELOPMENT METHOD | Bailer, Surge, Pump |
| FIELD GEOLOGIST | John Valett | | | | |




ELEVATION OF GROUND SURFACE: —

ELEVATION OF TOP OF WELL CASING: —

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 40 Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8 1/2"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: ~~4.5'~~ 3.5'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 4.5'

ELEVATION / DEPTH TOP OF SCREEN: 7'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

TYPE OF SAND PACK: 2/16 Monterey Sand.

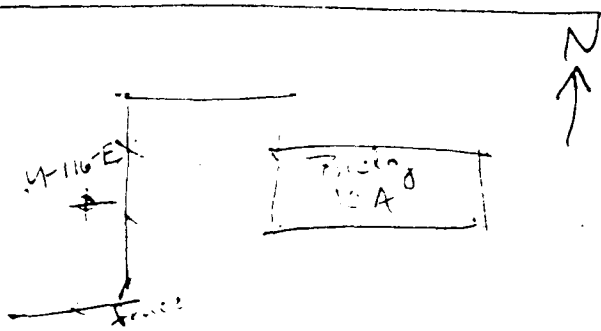
ELEVATION / DEPTH BOTTOM OF SCREEN: 12'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12'

Ave _ F




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# [illegible] |
| Project: | [illegible] NAS |
| Job #: | 2738.[illegible] |
| Site: | Runway |
| Logged By: | [illegible] |
| Proj. Eng: | SMH |
| Edited By: | |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8.25" |
| | 20 well / 22' boring |
| Hammer Wt: | 140 lb. |
| Drop: | 30" |
| Start Time: | 1530 |
| Date: | 8-18-94 |
| Completion Time: | 1545 |
| Date: | 8-18-94 |
| Backfill Time: | 1555 |
| Date: | 8-18-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 22' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1545 | | | |
| Date | 8-18-94 | | | |

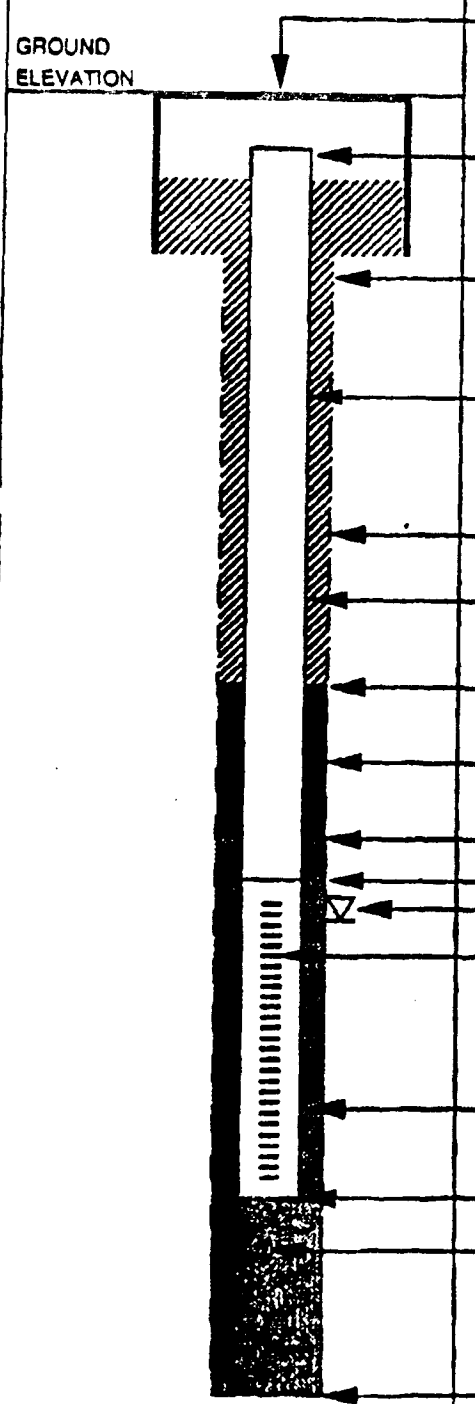
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.2 | | 25 | | | | 3" Dia, Sch 40 Blank PVC | Portland Grout | | | | SAND (SP), lt. br., dense, v sl mst, fine-gr, high K. |
| | | 12 | | | | | | | 1530 | 1 | |
| | | 17 | | | | | | | | | |
| | | 8 | | | | | | | | 2 | |
| | | 4 | | | | | | | | | As above w/ minor pebbles |
| 0.2 | | 5 | | | | | | | 1540 + Dup 1542 | 3 | |
| | | 6 | | | | | | | | | |
| | | 8 | | | | | | | geo tech | 4 | |
| | | 2 | | | | | | | | | As above w/o pebbles. |
| | | 2 | | | | | | | | | |
| 0 | | 4 | | | | | | | 1545 | 5 | |
| | | 6 | | | | | | | | 6 | |
| | | | | | | | Bent. | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | Sand | | | 9 | |
| | | | | | | Screen | | | geo tech | 10 | As above |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | Boring # MW# [illegible] Sheet [illegible] of [illegible] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: Alameda NAS |
| | | | | | | | | | | | Job # 2738.1401 Site: Ro[illegible] |
| | | | | | | 3" Dia, Sch 40, 0.010 slotted PVC | Monterey 2/12 Sand | | continuous sampling (w/o screens) | 12 | As above (SAND). |
| | | | | | | | | | | 13 | |
| | | | | | | | | | | 14 | As Above |
| | | | | | | | | | | 15 | |
| | | | | | | | | | | 16 | As Above, except gray/black color. As Above |
| | | | | | | | | | | 17 | |
| | | | | | | | | | | 18 | As above |
| | | | | | | | | | | 19 | |
| | | | | | | | | | | 20 | clay, sandy on shoe. CLAY (CL) gray, plastic, saturated, fine-gr, low K. ← Bott of well |
| | | | | | | | | | | 21 | |
| | | | | | | | | | | 22 | Bottom of sampling |
| | | | | | | | | | | 3 | Boring TD = 22' |
| | | | | | | | | | | 4 | Well TD = 20' |
| | | | | | | | | | | 5 | |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 0 | |
| | | | | | | | | | | 1 | |
| | | | | | | | | | | 2 | |

BORING NO. M-116-E

# MONITORING WELL SHEET

| | | | | | |
|---|---|---|---|---|---|
| PROJECT | Alameda NAS | LOCATION | Runway | DRILLER | Woodward |
| PROJECT NO. | 2738 1409 | BORING | M-116-E | DRILLING METHOD | Hollow Stem #54 |
| ELEVATION | — | DATE | 8-18-94 | DEVELOPMENT METHOD | Surge, Bail, Pump |
| FIELD GEOLOGIST | John Valett | | | | |




ELEVATION OF GROUND SURFACE: —

ELEVATION OF TOP OF WELL CASING: —

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 40 Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8½"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 6.0'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 8.0'

ELEVATION / DEPTH TOP OF SCREEN: 10.0'

FIRST ENCOUNTERED SATURATED ZONE 5'

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

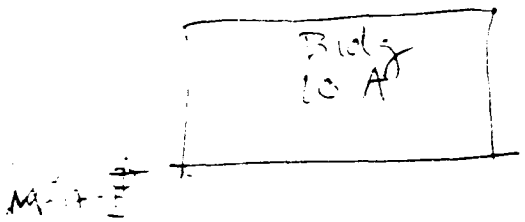
TYPE OF SAND PACK: 2/16 Monterey Sand.

ELEVATION / DEPTH BOTTOM OF SCREEN: 20.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 20.0'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 20.0'




Sketch Map of Site Area With Drilling Lo[illegible]s

| | |
|---|---|
| Boring # | MW# M-117-E Sheet 1 of 2 |
| Project: | [illegible] NAS CTO-0280 |
| Job # | 2738 1909 Site: Runway |
| Logged By: | [illegible] Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA Mobile B57 |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8.25" 18" Boring 90 |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 1150 Date: 8-18-94 |
| Completion Time: | 1220 Date: 8-18-94 |
| Backfill Time: | 1230 Date: 8-18-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 13.5' | | | |
| Casing Depth (ft.) | 13.5' | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1215 | | | |
| Date | 8-18-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth Sample Rec. | Depth Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.5 | | 4 | | | | | | | | | | SAND (SP), lt br, dense, v sl mst, fine-gr, high K. |
| | | 10 | | | | | | | 1155 | 1 | SP | |
| | | 12 | | | | | | | | | | |
| | | 21 | | | | | | | | 2 | | |
| 0 | | 7 | | | | | Grout | | | | | As above, except lt to dk br. |
| | | 12 | | | | | | | 1205 | 3 | | |
| | | 9 | | | | | | | | | | |
| | | 9 | | | | | | | geo-tech | 4 | | |
| | | 3 | | | | PVC | | | | | | As above, except Saturated @ 5' bgs. |
| | | 4 | | | | | | | | | | |
| 0 | | 6 | | | | | Bent. | | 1210 | 5 | | |
| | | 4 | | | | | | | | | | |
| | | | | | | Blank | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | Sand | | | | | |
| | | | | | | | | | | 8 | | |
| | | | | | | Screen | 2/12 | | | | | |
| | | | | | | | | | | 9 | | |
| | | | | | | PVC | Monterey | | | | | |
| | | 4 | | | | | | | geo-tech | 10 | | As above. |
| | | 6 | | | | | | | | | | |
| | | 6 | | | | | | | | 11 | | |
| | | 10 | | | | | | | | | | |
| | | | | | | | | | | 12 | | |

[illegible]

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | | Boring # MW# M-17E Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: Alameda |
| | | | | | | | | | | | | Job # 2735-1404 Site: Runway (104) |
| | | | | | | | | | | 12 | | SAND (SP) (as above) |
| | | | | | | | | | | 13 | | |
| | | | | | | 3" Diam., Sch 40 0.010 Slotted PVC | Sand | | | 14 | | SAND (SP) (as above) |
| | | | | | | | 2/12 | | | 15 | SP | |
| | | | | | | | Monterey | | | 16 | | 15.75 = Clay (CL) gray, plastic, saturated, fine-gr, low K |
| | | | | | | | | | | 17 | | SAND (w/ minor clay), gray, dense, saturated, fine, high K. |
| | | | | | | | | | | 18 | | Clay @ 18' (Same as 15.75) |
| | | | | | | | | | | 19 | | |
| | | | | | | | | | | 20 | | TD of boring = 20' |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |
| | | | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

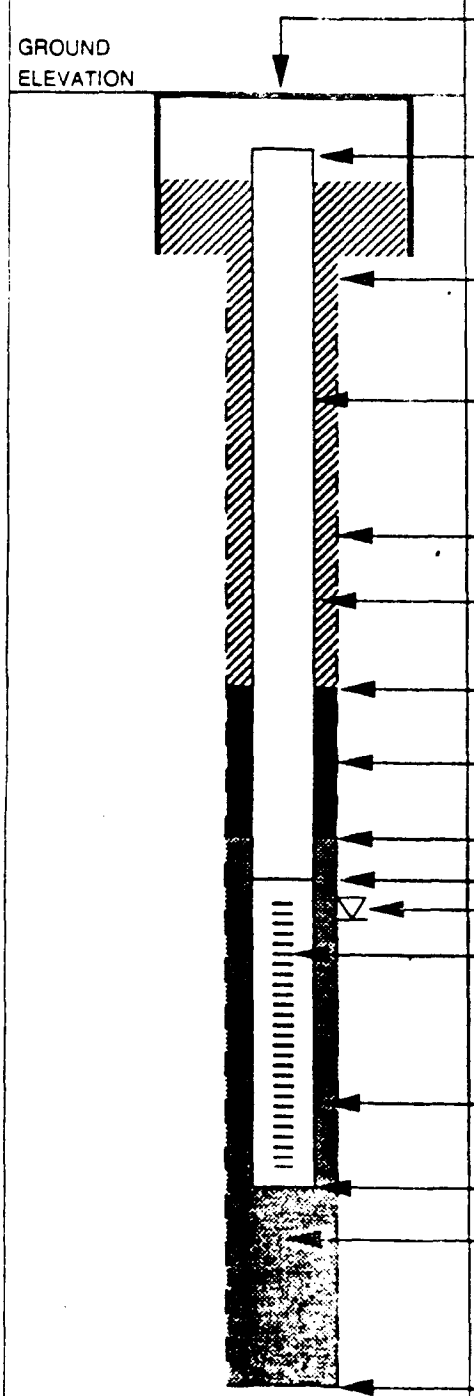
Bottom well = 18'

M117-E

BORING NO. M-17-E

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT Alameda LTS | LOCATION Site Runway | DRILLER [illegible] |
| PROJECT NO. 2738.1404 | BORING ~~M7C-C7~~ | DRILLING METHOD HSA |
| ELEVATION — | DATE 8-18-94 | DEVELOPMENT METHOD Surge, Bail, Pump |
| FIELD GEOLOGIST John Valett | | |




ELEVATION OF GROUND SURFACE: —

ELEVATION OF TOP OF WELL CASING: —

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 40 Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8½"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 4.0'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 6.0'

ELEVATION / DEPTH TOP OF SCREEN: 8.0'

FIRST ENCOUNTERED SATURATED ZONE 5'

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

TYPE OF SAND PACK: 2/16 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 18.0'

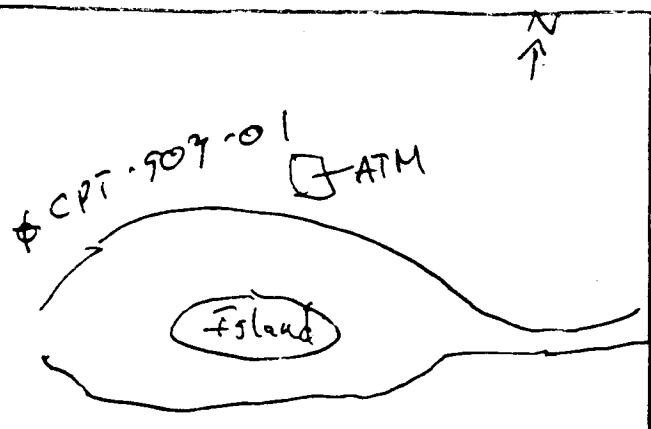
ELEVATION / DEPTH BOTTOM OF SAND PACK: 18.0'

TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

Native material

ELEVATION / DEPTH OF HOLE: ~~18.0'~~ 20'

CPT - SC3-01 location

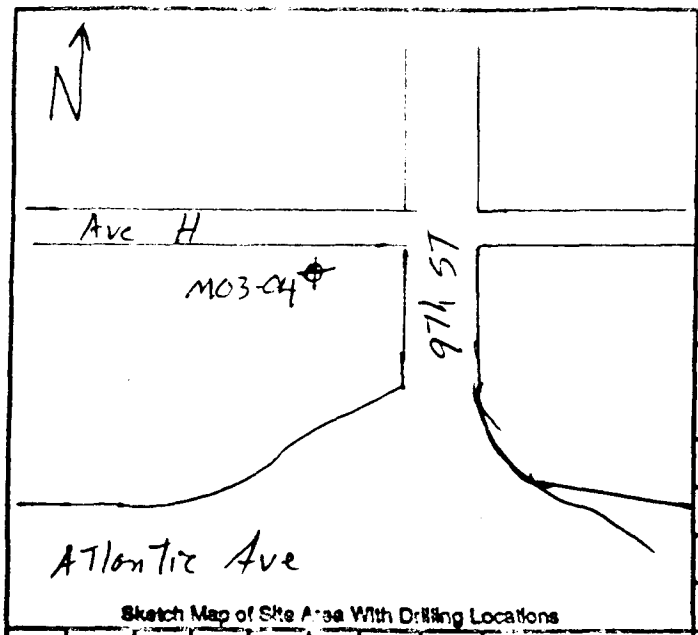



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # CPT-SC3-01 MW# | Sheet 1 of 1 |
| Project: Alameda NAS | |
| Job # 2738.1404 Site: 3 | |
| Logged By: JEV Proj. Eng: | Edited By: |
| Drilling Contractor: Hand Auger | |
| Drill Rig Type/Method: — | |
| Drillers Name: — | |
| Borehole Diam./Drill Bit Type | Total Depth: 6' Hole Diam.: |
| Hammer Wt: 15 Lb | Drop: To many Times |
| Start Time: 1500 | Date: 8/31/94 |
| Completion Time: 1600 | Date: 8/31/94 |
| Backfill Time: | Date: |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ↓ | ↓ | | | | | 1510 | silty gravelly SAND (SW), dk br, v sl mst, dense, med-gr, med K |
| | | | | | | | | | 1 | |
| | | | | | | | | | 2 | At 1.5' = SAND (SP) gray-br, v sl mst, dense, fine-gr, high K. At 2' = |
| | | | ↓ | ↓ | | | | | 1530 3 | CLAY (CL), gray, plastic, v sl mst, low K. (mild hc odor) |
| | | | | | | | | | 4 | 4' = SAND (SP) gray-br, sl mst, dense, fine-gr, high K. |
| | | | ↓ | ↓ | | | | | 1550 5 | As Above |
| | | | | | | | | | 6 | 6' = BOB |
| | | | | | | | | | 7 | |
| | | | | | | | | | 8 | * Note - Soil Samples Obtained by hand Auger and driven Tube Sampler because The CPT |
| | | | | | | | | | 9 | rig could not obtain enough Soil in The 1.5" Tubes for Lab screens. This location was |
| | | | | | | | | | 10 | later pushed fore deep H.P. and CPT by The Cone rig. |
| | | | | | | | | | 11 | NO DWR required. |
| | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MO3-04 Sheet 1 of 1 |
| Project: | CTO-0280 NAS Alameda |
| Job # | 2738.1405 Site: 3 |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | Mobile B53 HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" Total Depth 11 |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 1405 Date: 11/6/94 |
| Completion Time: | 1455 Date: 11/6/94 |
| Backfill Time: | 1530 Date: 11/6/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

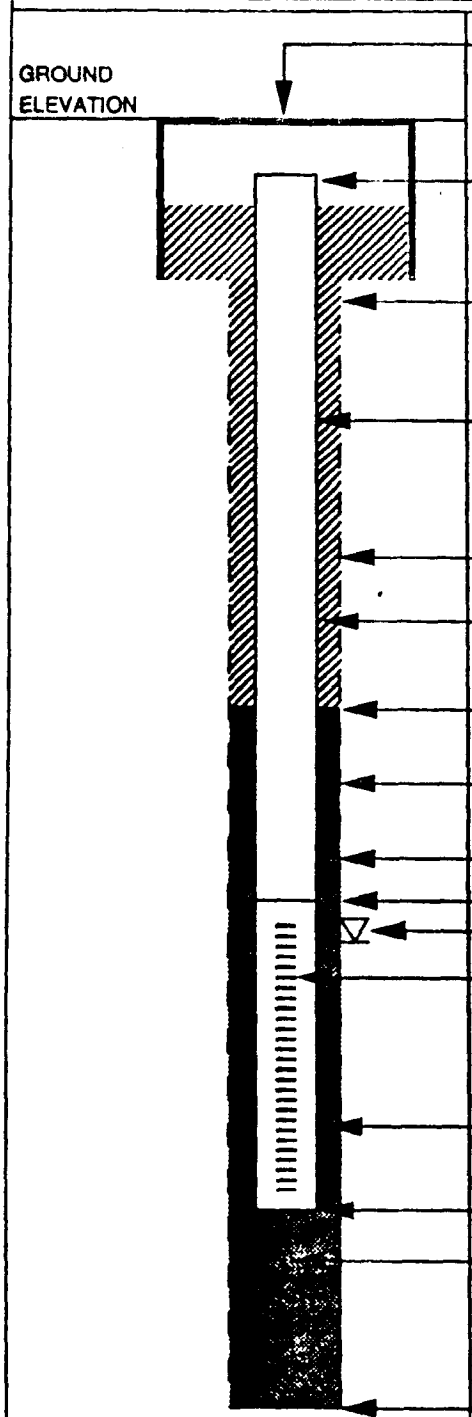
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 3" Asphalt sand & gravel base |
| | California 2" Split Spoon | 11 | | | | Solid PVC 2" | Bent Tonite | X | 1415 | SW | Gravelly sand (SW) moist, olive gray 5Y (4/2) |
| | | 12 | | | | | | X | | | fine grained sand (SP) moist, med dense, light olive gray 5Y (6/2) |
| | | 9 | | | | | | | | | |
| | | 2 | | | | | | X | 1420 | SP | |
| | | 3 | | | | | | X | | | |
| | | 4 | | | | | | | | | |
| | | 5 | | | | | | | | | |
| 25 | | 6 | | | | #0.01 Slot | #2/12 Monterey Sand | X | 1425 | | fine grained sand (SP) saturated med. dense, light olive gray 5Y (6/2) and olive gray 5Y (4/2) mottled. |
| | | 10 | | | | | | X | | | |
| | | | | | | 2" sch 40 PVC | | | | | |
| 93 | | 1 | | | | | | | | | fine grained sand (SP) saturated, very loose, greenish gray 5GY (5/1) odor - trace sea shells - trace gravel |
| 28 | | 1 | | | | | | X | 1430 | CL | Silty clay (CL), very moist very soft, dark gray 5Y (4/1), trace sand, organic matter + sea shells. |
| | | 1 | | | | | | X | | | |
| | | | | | | | | | | | TD = 11' |

BORING NO. MC3-04

# MONITORING WELL SHEET

PROJECT C70-028C Alameda LOCATION Site 3
PROJECT NO. 2738.1405 BORING MC3-04
ELEVATION _____ DATE 11-6-94
FIELD GEOLOGIST LVPW

DRILLER Woodward
DRILLING METHOD HSA
DEVELOPMENT METHOD Surge/bail/Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A
TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"
TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 1.5

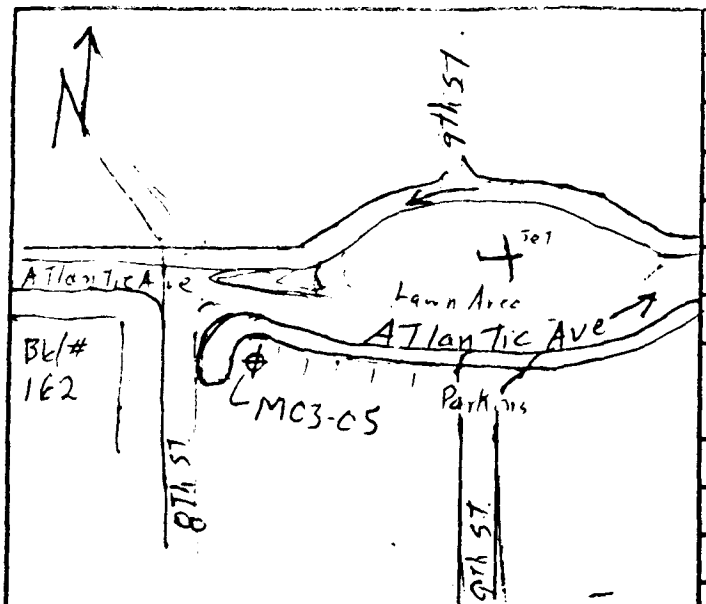
TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2.5
ELEVATION / DEPTH TOP OF SCREEN: 3
FIRST ENCOUNTERED SATURATED ZONE 5.2
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH #0.010 Factory Slot
I.D. OF SCREEN 2"

TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 11
ELEVATION / DEPTH BOTTOM OF SAND PACK: 11
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 11




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MC3-05 Sheet 1 of 2 |
| Project: | Alameda CTC - C28C |
| Job # | 2738.1405 Site: 3 |
| Logged By: | JRW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | Mobile B57 HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" Total Drill Depth: 13 |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 0715 Date: 11-20-94 |
| Completion Time: | 0800 Date: 11-20-94 |
| Backfill Time: | 0835 Date: 11-20-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

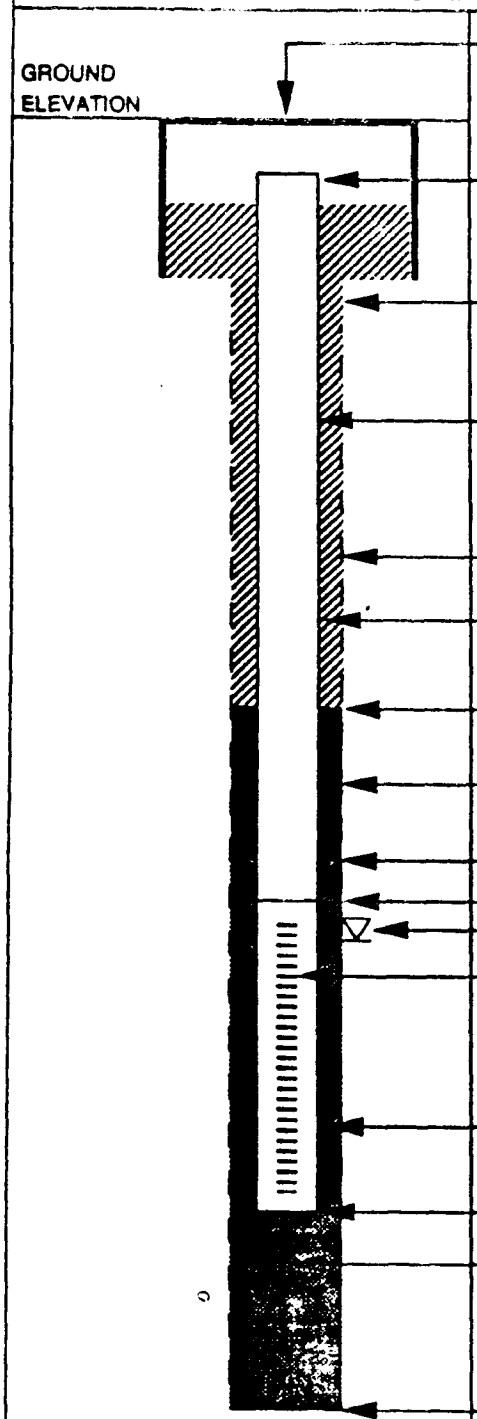
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 6" Asphalt over sand & gravel base |
| | | 29 | | | | Solid Casing | Neat cement | | | | |
| | | 37 | | | | | | X 730 | 1 | | |
| | | 46 | | | | | | X | | SP | Very fine to fine grained Sand (SP) |
| | | | | | | | bentonite | | 2 | | moist, Very dense to med. dense, |
| | | 5 | | | | | | X 735 | | | Pale brown 10YR(6/3). |
| | | 9 | | | | | | X | 3 | | |
| | | 13 | | | | | | | | | |
| | | | | | | | | | 4 | | |
| | | 6 | | | | Factory slot | | | | | Very fine to fine grained Sand (SP) |
| | | 8 | | | | | | X 745 | 5 | | Very moist to Saturated below |
| | | 10 | | | | | | X | | | 5.5', med. dense, Pale brown |
| | | | | | | | | | 6 | | 10YR(6/3) |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | change per driller. |
| | | 1 | | | | 2" Sch 40 PVC with 0.01 | # 2/12 monterey sand | | | CL | Silty Clay (CL), very moist to saturated, very |
| | | 1 | | | | | | | 10 | | Soft, Dark greenish gray 5GY(4/1). |
| | | 7 | | | | | | | | SP | Very fine to fine grained Sand (SP), Saturated |
| | | 4 | | | | | | | 11 | | loose, black N2/ Trace sea shells, Trace silt. |
| | | 6 | | | | | | | | SP | fine grained Sand (SP) Saturated, loose |
| | | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# MC3-C5 Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: Alameda CTO-028C |
| | | | | | | | | | | | Job # 2738.1405 Site: 3 |
| | | 7 | ↓ | ↓ | | ↓ | ↓ | | 12 | | greenish gray 5GY 6/1), Trace Silt - 5% |
| | | | | | | | | 74 | 13 | | Traces of rootlets. |
| | | | | | | | | | 4 | | TD = 13' |
| | | | | | | | | | | | 3" solid, 10' screen. |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. MO3-C5

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT Alameda-C70-0280 | LOCATION Site 3 | DRILLER Woodward | |
| PROJECT NO. 2738.1405 | BORING MO3-C5 | DRILLING METHOD HSA | |
| ELEVATION | DATE 11-20-94 | DEVELOPMENT METHOD Surge bail Pump | |
| FIELD GEOLOGIST WPW | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 2'

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2.5

ELEVATION / DEPTH TOP OF SCREEN: 3

FIRST ENCOUNTERED SATURATED ZONE 5.5

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 factory slot

I.D. OF SCREEN 2"

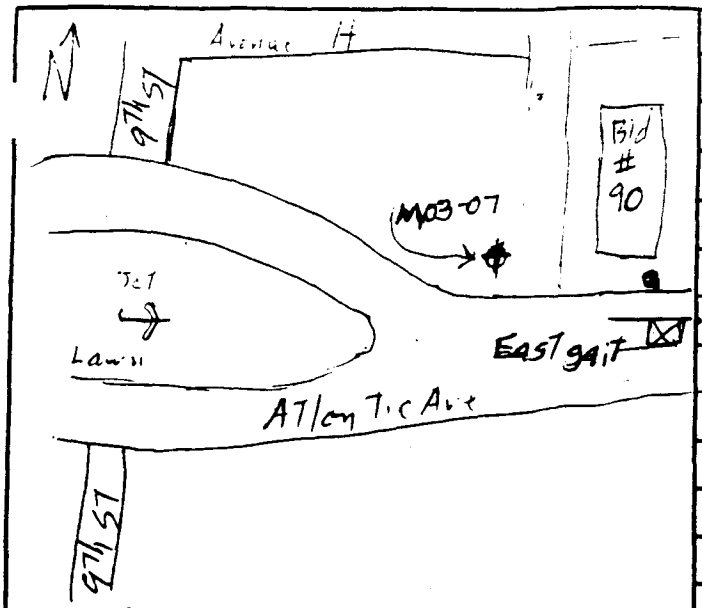
TYPE OF SAND PACK: #2/12 monterey sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 13

ELEVATION / DEPTH BOTTOM OF SAND PACK: 13

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 13




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M03-07 Sheet 1 of 2 |
| Project: | NAS Alameda CTO-0280 |
| Job # | 2738.1405 Site: 3 |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B57 HSA |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | 8" Total Depth 13 Ref. Elev |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 0845 Date: 11-20-94 |
| Completion Time: | 0915 Date: 11-20-94 |
| Backfille Time: | 0950 Date: 11-20-94 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

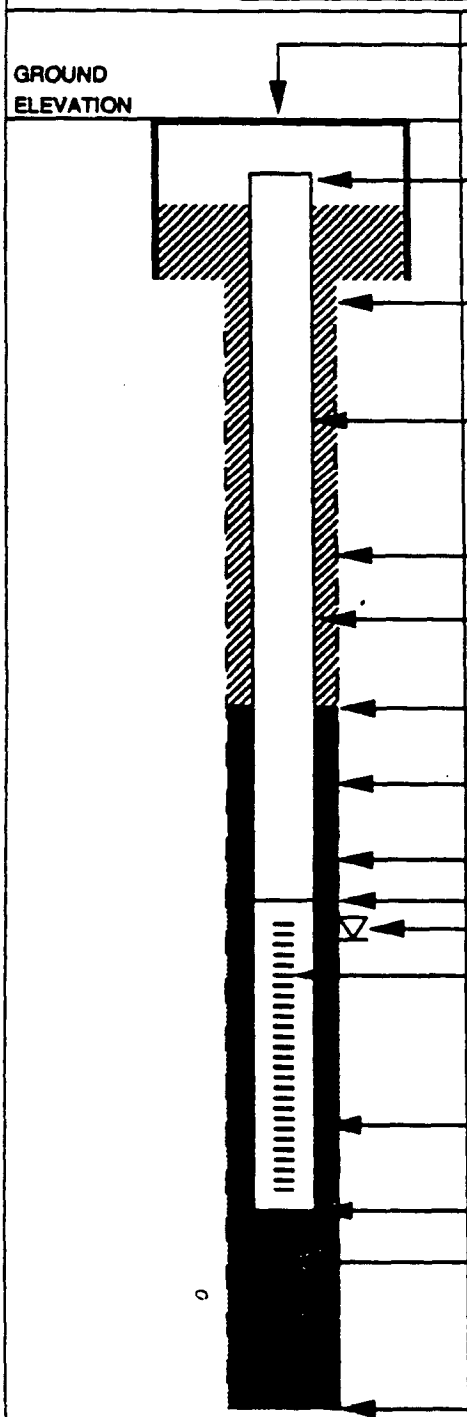
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Solid Casing | Neat Cement | | | | 3" Asphalt over sand + gravel base |
| | | 11 | | | | | | X 0850 | 1 | CL | Silty Clay (CL), moist, stiff, dark green |
| 0 | | 6 | | | | | | X | | | ish gray 5GY (4/1) trace rootlets |
| | | 6 | | | | | bent onite | | 2 | | |
| | | 2 | | | | | | X 855 | 3 | SP | fine grained Sand (SP), very moist |
| .2 | | 2 | | | | | | X | | | To saturated below 5', loose, very |
| | | 3 | | | | | | | 4 | | dark gray 10YR (3/1), 5% silt |
| | | 2 | | | | | | X 905 | 5 | | |
| | | 5 | | | | | | X | | | |
| .2 | | 3 | | | | 2" sch 40 PVC #0.01 factory slot casing | #2/12 Monterey Sand | | 6 | PT | Peat (PT) very moist, med. stiff, |
| | | | | | | | | | | | brown 7.5YR (4/4) Trace sand |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | SP | |
| | | 3 | | | | | | | 9 | | Very fine to fine grained sand (SP) |
| .2 | | 3 | | | | | | | | | Saturated, very loose, olive brown |
| | | 2 | | | | | | | 10 | | 2.5Y (5/4) ≈5% silt |
| | | | | | | | | | 11 | | fine grained Sand (SP), very moist |
| | | | | | | | | | 12 | | To saturated, very loose, mottled |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Feet | Depth: Graph | Boring # MW# MC3-07 Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda CTC-C280 |
| | | | | | | | | | | | Job # 2738.1405 Site: 3 |
| .1 | | 2 | ↓ | ↓ | | ↓ | ↓ | | 2 | | greenish gray 5GY(6/1) and |
| | | 3 | ↓ | ↓ | | ↓ | ↓ | CGK | 3 | | yellowish brown 10YR(5/6) Trace |
| | | | | | | | | | | | Silt, Clay To 8% increasing with depth |
| | | | | | | | | | 4 | | rootlets common. |
| | | | | | | | | | 5 | | TD 13' |
| | | | | | | | | | | | 3' solid, 10' screen |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. MO3-07

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT Alameda CTO-0280 | LOCATION Site 3 | DRILLER Woodward |
| PROJECT NO. 2738.1405 | BORING MO3-07 | DRILLING METHOD HSA |
| ELEVATION | DATE 11-20-94 | DEVELOPMENT METHOD Surgebail Pump |
| FIELD GEOLOGIST WPL | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 2

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2.5

ELEVATION / DEPTH TOP OF SCREEN: 3

FIRST ENCOUNTERED SATURATED ZONE 5

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH 0.01 factory slot

I.D. OF SCREEN 2"

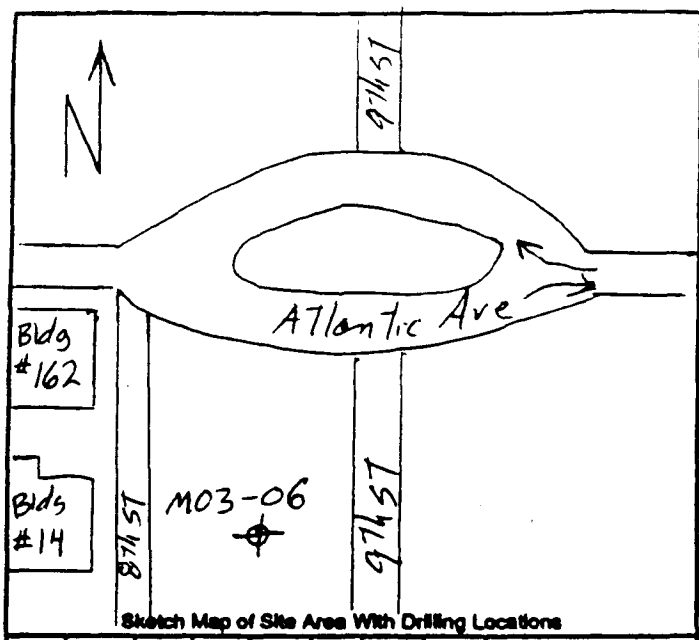
TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 13

ELEVATION / DEPTH BOTTOM OF SAND PACK: 13

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 13




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MO3-06 Sheet 1 of 1 |
| Project: | NAS Alameda CTO-0280 |
| Job # | 2738.1405 Site: 3 |
| Logged By: | WPH Proj. Eng: SH Edited By: |
| Drilling Contractor: | Cascade Drilling |
| Drill Rig Type/Method: | Mobile B57 HSA |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | Total Depth 12' |
| 8" | Ref Elev |
| Hammer Wt: | 140 Lb Drop: 30" |
| Start Time: | 1550 Date: 11/19/94 |
| Completion Time: | 1630 Date: 11/19/94 |
| Backfille Time: | 1730 Date: 11/19/94 |

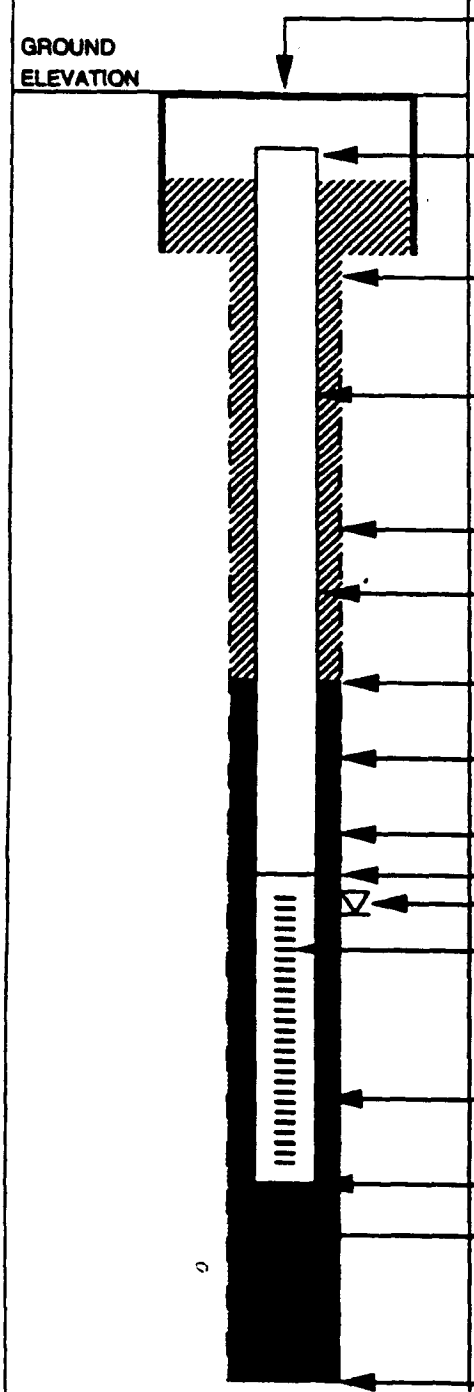
| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (ft.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 3" Asphalt Pavement over Sand & gravel |
| | | 10 | | | | Casing | | X | | | Fine grained Sand (SP) moist, Dense, |
| 0 | | 14 | | | | | | X | 1 | | light yellowish brown 10YR (6/4) Trace |
| | | 20 | | | | Solid | Bentonite | | 2 | SP | Sea shells |
| | | | | | | | | | | | fine grained |
| | | 11 | | | | | | X 1600 | 3 | | ~~Silty~~ Sand with gravel (SP) very |
| | | 8 | | | | | | X | | | moist, med dense, black N2/. |
| 0 | | 6 | | | | | | | 4 | | *Gravels appear to be a baked Ash and |
| | | | | | | | | | | | are white in color. Trace silt. |
| | | 5 | | | | | | | | | |
| .5 | | 5 | | | | 0.d factory slot | | X 1610 | 5 | | Fine grained Sand (SP) very |
| | | 8 | | | | | | X | 6 | | moist to Saturated below 5.5' |
| | | | | | | | | | | | med. dense black N2/, |
| | | | | | | | | | 7 | | Trace of baked Ash as above. |
| | | | | | | | | | | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | | | |
| | | | | | | 4" PVC | | | 9 | | fine grained Sand (SP), Saturated, |
| | | | | | | | | | | | black N2/, Trace gravels. |
| | | 6 | | | | Sch | | | | | Clayey Sand (SC) very moist, med dense |
| | | 10 | | | | | | | 10 | SC | yellowish brown 10YR (5/6) and greenish gray 5G |
| 132 | | 13 | | | | 2" | | | | | Rootlets common. odor, Sheen |
| | | 3 | | | | | | | 11 | | |
| | | 7 | | | | | | 1630 | 12 | | TD: 12' 9' Screen 3' Solid |

BORING NO. MC3-06

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT Alameda-CTO-0280 | LOCATION Site 3 | DRILLER Woodward | |
| PROJECT NO. 2738.1405 | BORING MO3-06 | DRILLING METHOD HSA. | |
| ELEVATION | DATE 11-19-94 | DEVELOPMENT METHOD Surge bail Pump | |
| FIELD GEOLOGIST WPW | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 1.5

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2.5

ELEVATION / DEPTH TOP OF SCREEN: 3

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH 0.010 factory slot

I.D. OF SCREEN 2"

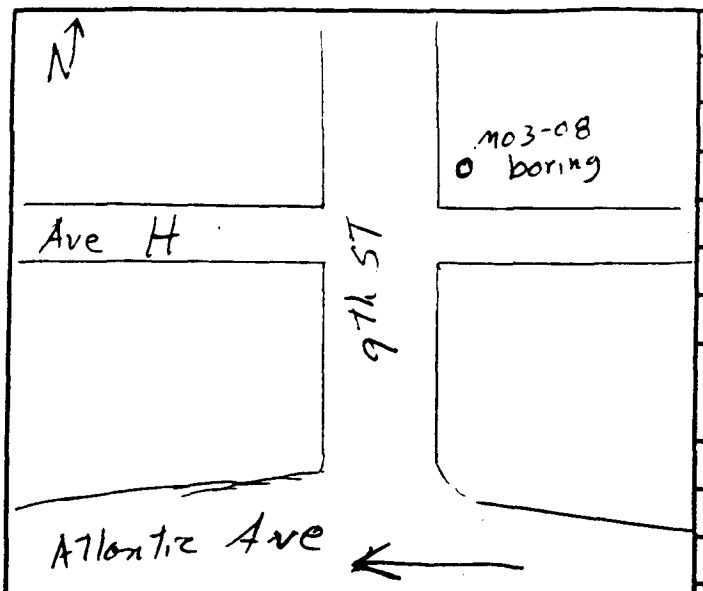
TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12'



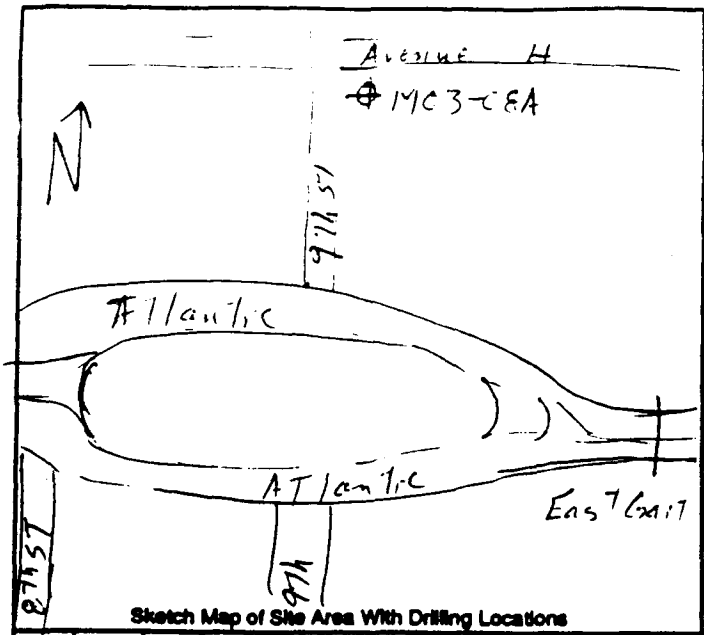

Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # M03-08 MW# ~~M03-08~~ | Sheet 1 of 1 |
| Project: CTO-0280 NAS Alameda | |
| Job # 2738.1405 | Site: 3 |
| Logged By: LJPW | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward Drilling Co | |
| Drill Rig Type/Method: Mobile B53 H.S.A | |
| Drillers Name: Wayne Woodward | |
| Borehole Diam./Drill Bit Type: 8" | Total Depth: 12' |
| | Ref. Elev: |
| Hammer Wt: 140 | Drop: 30" |
| Start Time: 1540 | Date: 11/6/94 |
| Completion Time: 1630 | Date: 11/6/94. |
| Backfill Time: 1700 | Date: 11/6/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 3" Asphalt over sand & gravel base. |
| | California 2" split Spoon | 6 | | | | | Neat Cement grout | X | 1555 1 | | fine grained Sand (SP) moist med. |
| | | 8 | | | | | | X | | | dense, brown 10YR (5/3). |
| | | 14 | | | | | | | 2 | SP | |
| | | 1 | | | | | | X | 1600 3 | | fine grained sand (SP) saturated, brown |
| | | 1 | | | | | | X | | | 10YR (5/3) |
| | | 1 | | | | | | | 4 | CL | Silty Clay, very moist, very soft, dark |
| | | | | | | | | | | | greenish gray, 5GY (4/1) |
| | | 1 | | | | | | | 5 | | Silty Clay with sand (CL), very moist |
| | | 1 | | | | | | X | 1605 | | to saturated, very soft, dark gray 5Y (4/1) |
| | | | | | | | | X | 6 | | Trace sea shells |
| | | | | | | | | | 7 | | |
| | | 1 | | | | | | | | | Silty Clay (CL), moist to very moist, |
| | | 1 | | | | | | | 8 | | very soft, dark greenish gray 5GY |
| | | | | | | | | | | | (4/1) Trace sand, & sea shells, |
| | | 1 | | | | | | | 9 | | Silty Clay with sand, very moist, |
| | | 1 | | | | | | | | | very soft, dark gray 5Y (4/1) Traces |
| | | 1 | | | | | | | 10 | | of rootlets, + organic matter |
| | | 1 | | | | | | | | | Silty Clay (CL), moist to very moist, very |
| | | 1 | | | | | | | 11 | | soft, dark greenish gray 5GY (4/1) |
| | | 1 | | | | | | | | | Trace sand, Traces of sea shells |
| | | | | | | | | | 12 | | |

TD 12' Borehole




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MC3-08A Sheet 1 of 2 |
| Project: | NAS Alameda CTC-0280 |
| Job # | 2738.1405 Site: 3 |
| Logged By: | LUPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B53 HSA |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | 8" Total Depth 13 / Ref. Elev |
| Hammer Wt: | 140 Drop: 30 |
| Start Time: | 0955 Date: 11-20-94 |
| Completion Time: | 1020 Date: 11-20-94 |
| Backfille Time: | Date: 11-20-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

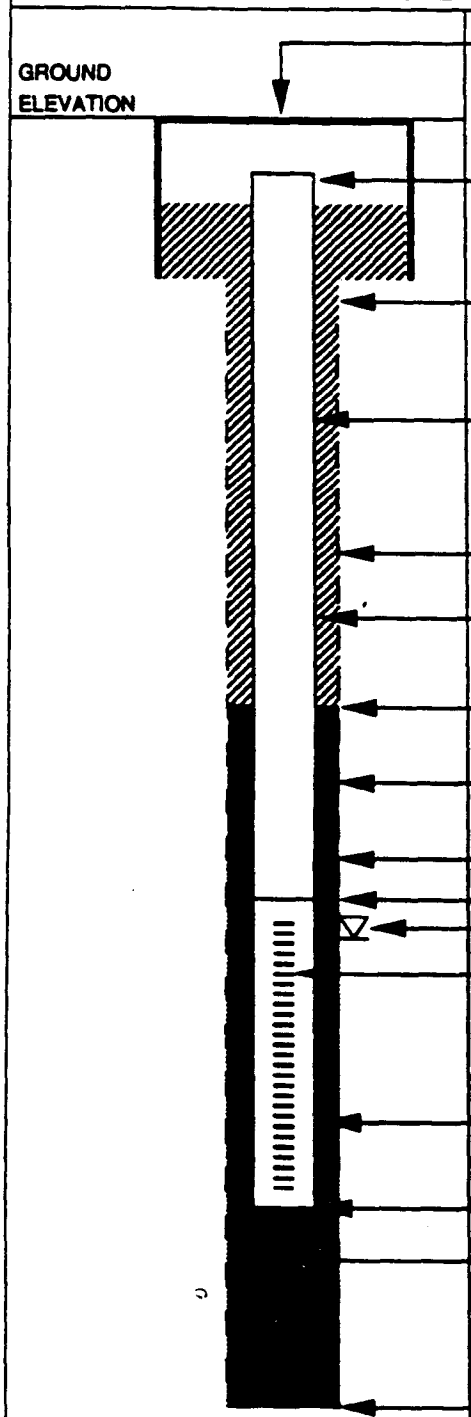
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (ft.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 3" Asphalt over sand/gravel base |
| | | | | | | Solid Casing | Neat Cement | | 1 | | |
| | | | | | | | Bent Bentonite | | 2 | SP | fine grained sand (SP) moist, Olive gray 5Y(5/2) |
| | | 2 | | | | | | | 3 | CL | Silty Clay (CL) moist to very moist, med stiff, mottled olive 5Y(6/3) and greenish gray 5GY(6/1) *note - silty sand pockets common in clay, silty sand pockets are very moist. |
| | | 2 | | | | | | | | | |
| | | 2 | | | | | | | 4 | | |
| | | | | | | Slotted Casing | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | SP | Interbedded & disturbed clay and sands, Sand is fine grained, Saturated greenish gray 5GY(5/1) Clay is very soft, moist, dark greenish gray 5GY(4/1) Trace rootlets |
| | | 1 | | | | | | | | | |
| | | 1 | | | | | | | | | |
| | | 1 | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | 2"x4" PVC old | 2/12 Monterey Sand | | | | |
| | | | | | | | | | 10 | SP | fine grained sand (SP) Saturated, Very loose, greenish gray 5GY(5/1) approx 5% silt, Trace clay, Trace seashells, |
| | | 1 | | | | | | | | | |
| | | 1 | | | | | | | 11 | SP | Very fine to fine grained sand, Saturated very loose, dark gray 5Y(4/1) 5% silt |
| | | 2 | | | | | | | | | |
| | | 2 | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# MC3-C8A Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda CTO-0250 |
| | | | | | | | | | | | Job # 2738.1405 Site: 3 |
| | | 2 | ↓ | ↓ | | ↓ | ↓ | | 12 | SP | Very fine to fine grained Sand (SP) |
| | | 3 | | | | | | | 3 | | Saturated, very loose, gray 5Y (5/1) |
| | | | | | | | | | | | approx 5% silt |
| | | | | | | | | | 4 | | |
| | | | | | | | | | | | TD = 13' |
| | | | | | | | | | 5 | | 3' solid - 10' screen. |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. MO3-08A

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT Alameda CTO-0280 | LOCATION Site 3 | DRILLER Woodward |
| PROJECT NO. 2738.1405 | BORING MO3-08A | DRILLING METHOD HSA |
| ELEVATION | DATE 11-20-94 | DEVELOPMENT METHOD Surge ball Pump |
| FIELD GEOLOGIST LWPW | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 2

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2.5

ELEVATION / DEPTH TOP OF SCREEN: 3

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 factory slot

I.D. OF SCREEN 2"

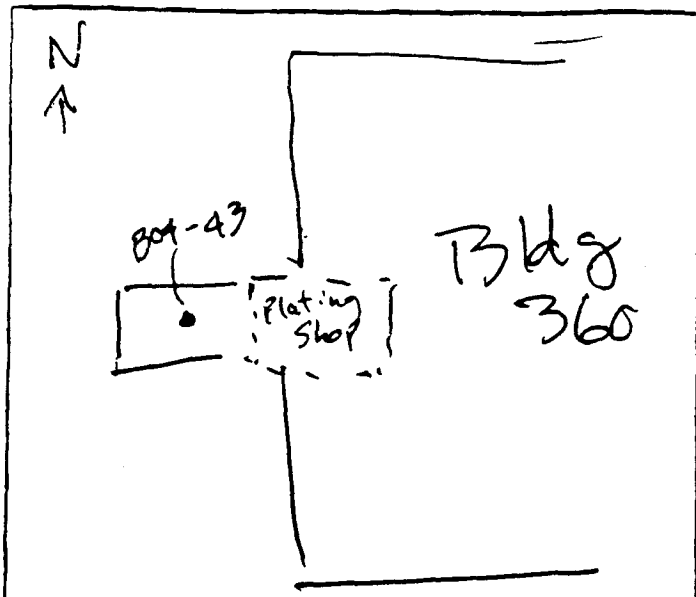
TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 13

ELEVATION / DEPTH BOTTOM OF SAND PACK: 13

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 13

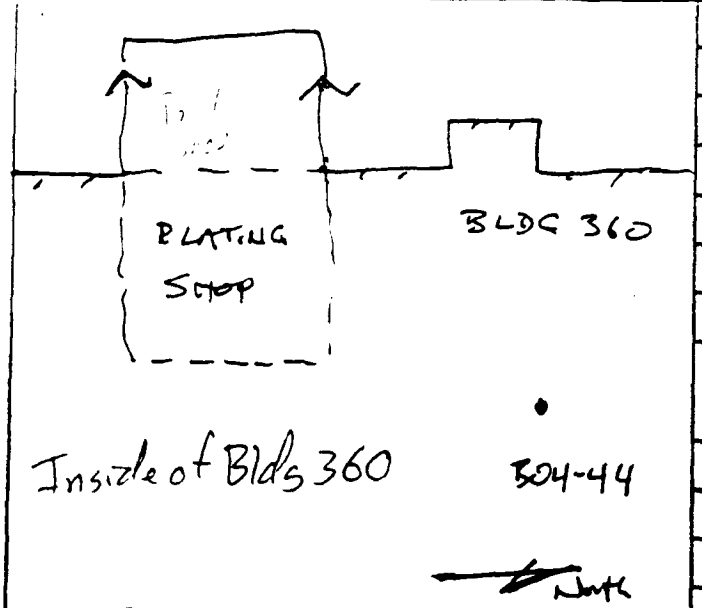



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # 804-43 MW# | Sheet 1 of 1 |
| Project: Alameda | |
| Job # 2738.1404 Site: 4 | |
| Logged By: JEV Proj. Eng: S.MH Edited By: | |
| Drilling Contractor: — | |
| Drill Rig Type/Method: Hand Auger | |
| Drillers Name: — | |
| Borehole Diam./Drill Bit Type: Comment: 4½' of free space (between ground + floor) | 6 |
| Hammer Wt: | Drop: |
| Start Time: 0900 | Date: 9/1/94 |
| Completion Time: | Date: 9/1/94 |
| Backfill Time: | Date: 9/1/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ↓ | ↓ | | | Native Soil/compacted | | 0902 | | SAND (SP), lt br, dense, dry, fine-gr, high K |
| | | | | | | | | | | 1 | |
| | | | | | | | | | | 2 | |
| | | | ↓ | ↓ | | | | | 0955 | 3 | As Above (w/ minor gravel) |
| | | | | | | | | | | 4 | |
| | | | | | | | | | | 5 | |
| | | | ↓ | ↓ | | | ↓ | | 1050 | | As Above (except no gravel) + saturated |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |



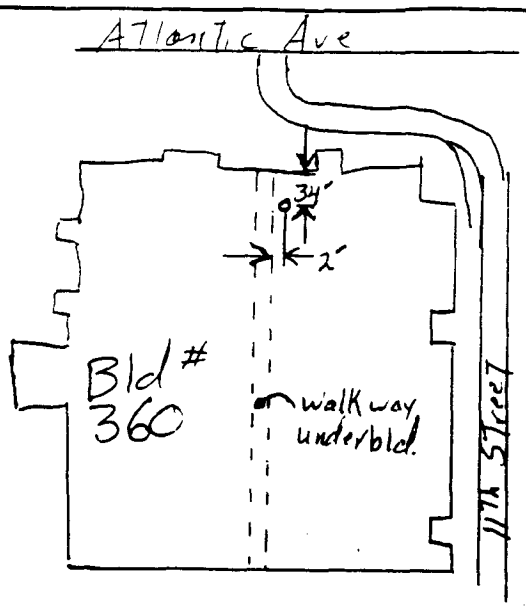

Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B04-44MW# | Sheet 1 of 1 |
| Project: NAS Alameda | |
| Job # 2738.1404 | Site: 4 |
| Logged By: MEM | Proj. Eng: SH Edited By: |
| Drilling Contractor: NA | |
| Drill Rig Type/Method: Hand Auger / Drive Sample | |
| Drillers Name: | |
| Borehole Diam./Drill Bit Type 4" | 6' |
| Hammer Wt: | Drop: |
| Start Time: 1400 | Date: 9/1/94 |
| Completion Time: 1615 | Date: 9/1/94 |
| Backfill Time: 1620 | Date: 9/1/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 6" | X | | X | | | 1400 | Silty gravelly SAND SM, brown, |
| | | | | 6" | | | | | | | damp. Lowest K |
| | | | | | | | | | | 1 | |
| | | | | | | | | | | 2 | |
| | | | | 6" | X | | | | | 1530 | Silty gravelly SAND SM, rust |
| | | | | 6" | X | | | | | | brown, damp. Low est K |
| | | | | | | | | | | 3 | |
| | | | | | | | | | | | SAND SP, gray-brown, damp. Fine |
| | | | | | | | | | | 4 | gr. med est K. |
| | | | | | | | | | | | SAND SP, brown, damp. Fine-med gr. med est K. (4 |
| | | | | 3" | X | | | | | 5 | Sandy SILT OL, black, organic, moist. Lowest K. (4.5 |
| | | | | 5" | X | | | | | | (AS ABOVE) (5.0-5.5) |
| | | | | | | | | | | 6 | AS ABOVE (5.5-6.0) |
| | | | | | | | | | | | BOTTOM OF BORING @ 60' |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

Native Soil




Sketch Map of Site Area With Drilling Locations

Boring # B04-45 MW# | Sheet 1 of 1

Project: CTC - 0280

Job # 2738.1404 Site: 4

Logged By: L'PW Proj. Eng: SMH Edited By:

Drilling Contractor: Montgomery Watson

Drill Rig Type/Method: Hand Auger

Drillers Name: Wade Weston

Borehole Diam./Drill Bit Type: 4" hand Auger | Total Depth: 55 | Ref Elev:

Hammer Wt: 20lb Drop: 18"

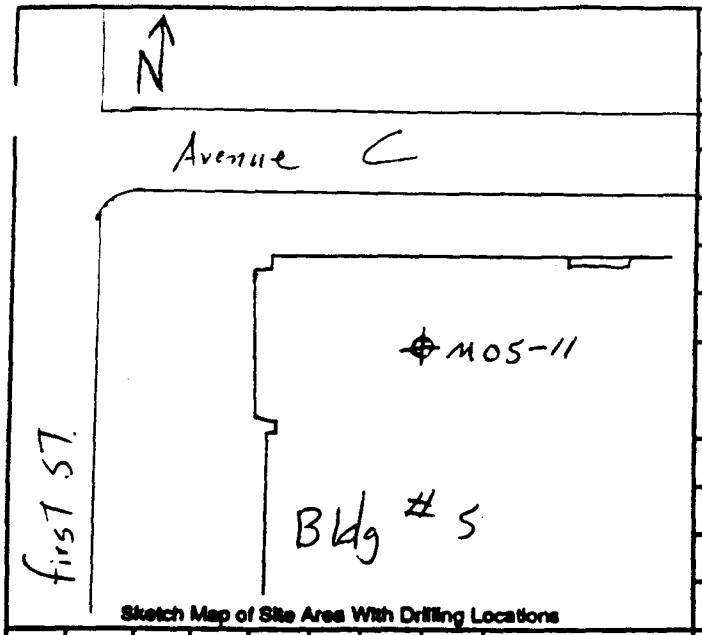
Start Time: 1045 Date: 9/15/94

Completion Time: 1145 Date: 9/15/94

Backfille Time: 1200 Date: 9/15/94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 5.5' | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | 3.6' | | | |
| Time | | | | |
| Date | 9/15/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | | | ↓ | ↓ | | | | X | | | |
| 0.0 | | | ↓ | ↓ | | | | X | 1 | SP | Very fine to fine grained Sand (SP) moist, Brown 10YR (5/3) |
| | | | | | | | | | 2 | | |
| 0.0 | | | ↓ | ↓ | | | Soil | X | 3 | | |
| 0.1 | | | ↓ | ↓ | | | | X | ▽ | | Very fine to fine grained Sand (SP) Saturated below 3.6'. Color change below 3.6' to Greenish gray 5 Gy (5/1) |
| | | | | | | | | | 4 | | |
| 0.0 | | | ↓ | ↓ | | | Native | X | 5 | | |
| 0.0 | | | ↓ | ↓ | | | | X | | | |
| | | | | | | | | | 6 | | TD = 5.5' |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#M05-11 |
| Sheet | |
| Project: | CTO-0280-NAS Alameda |
| Job # | 2738.1405 |
| Site: | 5 |
| Logged By: | WPW |
| Proj. Eng: | SMH |
| Edited By: | |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | Mobile B57 H.S.A |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" |
| Total Depth | 15.5 |
| Ref. Elev. | |
| Hammer Wt: | 140 |
| Drop: | 30" |
| Start Time: | 1000 |
| Date: | 11/5/94 |
| Completion Time: | 1030 |
| Date: | 11/5/94. |
| Backfille Time: | 1115 |
| Date: | 11/5/94 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

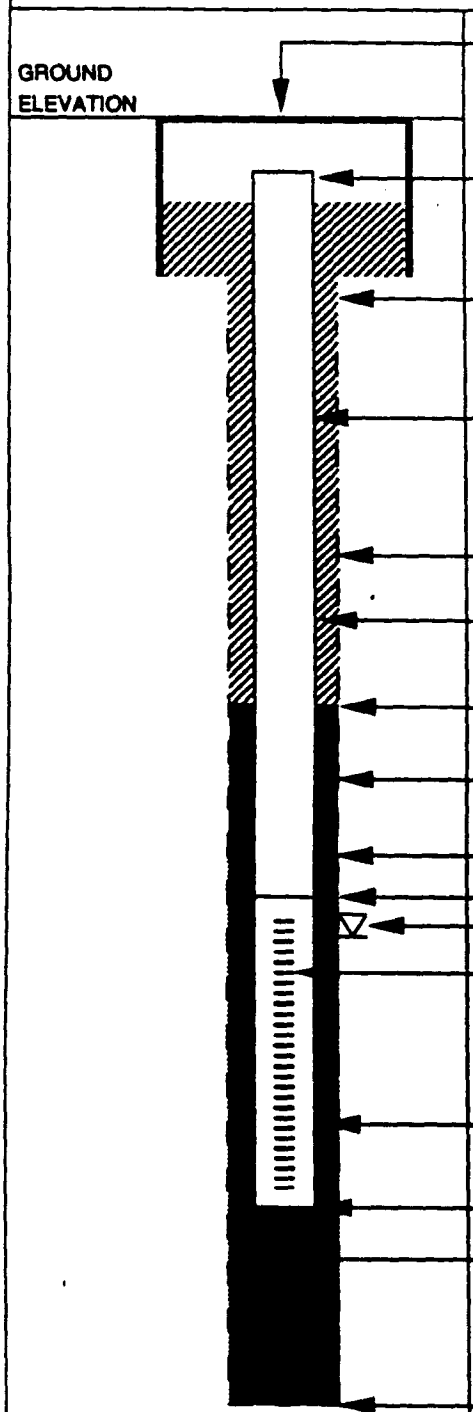
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 10" Concrete Slab |
| | | 4 | | | | | | X 1000 | 1 | SP | |
| | | 5 | | | | | | X | | | fine grained Sand (SP) slightly |
| 0 | | 5 | | | | Solid Casing PVC | Neat Cement | | 2 | | moist, loose to med. dense, yellowish |
| | | 3 | | | | | | X 1010 | | | brown 10YR (5/4), Trace silt, Trace |
| | | 3 | | | | | bentonite | X | 3 | | concrete, |
| 0 | Spoon | 3 | | | | | | | | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | | | |
| | Split | 4 | | | | | | X 1015 | 5 | | fine grained Sand (SP) as above |
| | | 7 | | | | | | X | | | moist, med. dense, yellowish brown |
| 0 | | 8 | | | | | | | 6 | | 10YR (5/4) Trace silt, gravel, sea |
| | | | | | | | | | | | shells |
| | | | | | | | | | 7 | | |
| | | 3 | | | | | | X | | | fine grained Sand (SP) saturated |
| | California | 3 | | | | | | X | 8 | | below 8' yellowish brown 10YR (5/4) |
| 0 | | 4 | | | | 0.010 factory slot | Monterey Sand #2/12 | | | | Color change @ 8.8' to dark greenish |
| | | | | | | | | | 9 | | gray 5GY (4/1). |
| | | | | | | | | | 10 | SP | |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rovd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW#M05-11 Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: CTC-0280 - NAS Alameda |
| | | | | | | | | | | | Job # 2738.1405 Site: 5 |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | Very fine to fine grained Sand (SP), Saturated, loose, greenish gray SGY(5/1), Trace sea shells |
| | | 2 | | | | | | | | | |
| | | 3 | | | | | | | | | |
| | | 5 | | | | | | 1025 | 5 | | |
| | | | | | | | | | 6 | | TD = 15.5 |
| | | | | | | | | | 7 | | S.S Solid |
| | | | | | | | | | 8 | | 10' #0.010 slot screen from S.S to 15.5 |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. MCS-11

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT CTC-0280 | LOCATION Site 5 | DRILLER Woodward | |
| PROJECT NO. 2738.1405 | BORING MCS-11 | DRILLING METHOD HSA | |
| ELEVATION | DATE 11-5-94 | DEVELOPMENT METHOD Surge bail pump | |
| FIELD GEOLOGIST W Pluvostan | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 3'

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 4'

ELEVATION / DEPTH TOP OF SCREEN: 5.5

FIRST ENCOUNTERED SATURATED ZONE 8'

TYPE OF SCREEN: Sch. 40 PVC

SLOT SIZE x LENGTH Factory 0.010 slot

I.D. OF SCREEN 2"

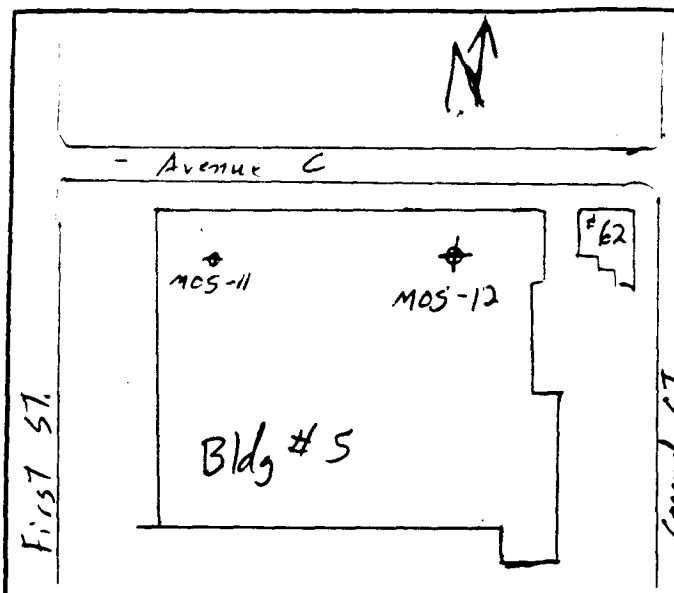
TYPE OF SAND PACK: #2/12 monterey sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 15.5

ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.5

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 15.5




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MOS-12 Sheet 1 of 2 |
| Project: | CTC - C280 NAS Alameda |
| Job # | 2738.1405 Site: 5 |
| Logged By: | LVL Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | Mobile B53 H.S.A. |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" Total Depth 15.5 Not Less |
| Hammer Wt: | 140 Lb Drop: 30" |
| Start Time: | 0810 Date: 11/5/94 |
| Completion Time: | 0850 Date: 11/5/94 |
| Backfill Time: | 0930 vault Date: 11/5/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

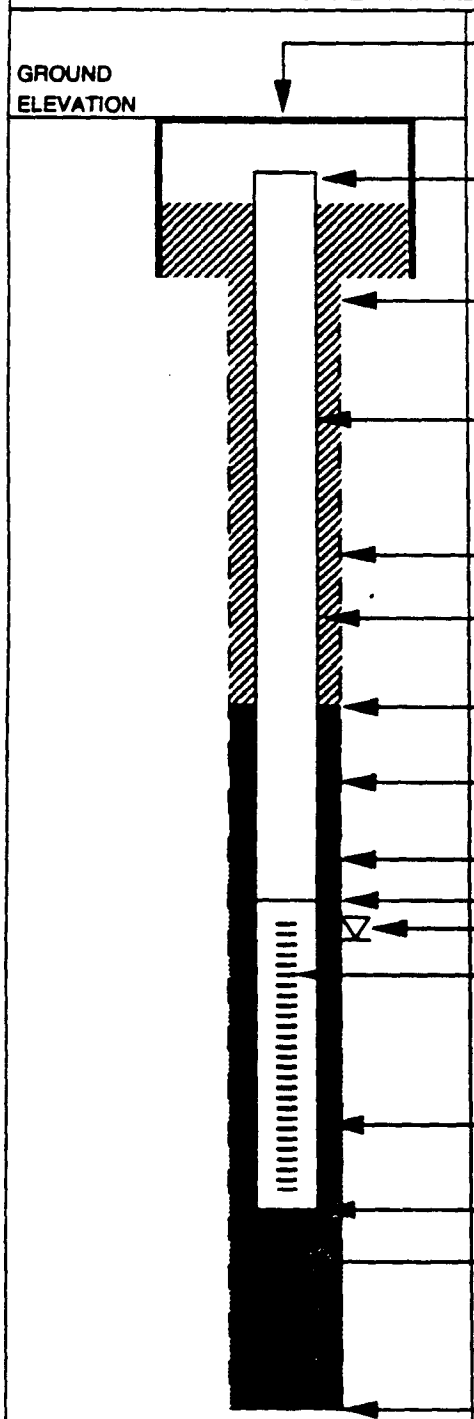
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (ft.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 10" Concrete Slab |
| | | 1 | | | | Solid Casing | Medium | X | 1 | SP | Fine grained Sand (SP), Dry very loose, light yellowish brown 10YR(6/4) |
| | Spoon | 1 | | | | | | X | 2 | | |
| | | 1 | | | | | | | | | |
| | | 3 | | | | | | X | 3 | | |
| | | 4 | | | | | bentonite | X | | | |
| 0 | Split | 4 | | | | | | | 4 | | fine grained Sand (SP) slightly moist loose, light yellowish brown 10YR(5/4) Traces of concrete, gravel & silt. |
| | | 3 | | | | | | X | | | |
| | California | 3 | | | | | | X | 5 | | |
| | | 4 | | | | | | | | | |
| | | 5 | | | | | | | 6 | SP | fine grained Sand (SP), moist, med. dense, yellowish brown 10YR 5/4 Traces of gravels & concrete, Trace silt - 5%. |
| | | 7 | | | | | | | | | |
| | | 16 | | | | | | | 7 | | |
| | | | | | | Sand | | | 8 | SP | fine grained Sand (SP) Very moist, med. dense, greenish gray 5GY(5/1) - Sea shells common. |
| | | 3 | | | | | | | | | |
| | | 2 | | | | Slot casing | #2/12 | X | 9 ▽ | | |
| | | 3 | | | | | | X | | | |
| | | | | | | 0.010 | | | 10 | SM | Silty Sand (SM), Saturated, loose, dark greenish gray 5GY(4/1) Sand is very fine to fine grained |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# MOS-12 Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: CTO-0260 NAS Alameda |
| | | | | | | | | | | | Job # 2738.1405 Site: 5 |
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | SM | Silty Sand (SM) Saturated, loose, greenish gray 5GY(5/1) grading to dark greenish |
| | | 2 | | | | | | | 14 | | gray 5GY(4/1). Trace sea shells |
| | | 2 | | | | | | | | | Silty Clay with Sand (CL) very moist, |
| | | 3 | | | | | | 8.50 | 15 | CL | firm, dark gray N 4/, sand is |
| | | | | | | | | | 16 | | fine grained, Traces of sea shells, |
| | | | | | | | | | | | Trace organic matter. |
| | | | | | | | | | 7 | | TD = 15.5' |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. MOS-12

# MONITORING WELL SHEET

| | | | | | |
|---|---|---|---|---|---|
| PROJECT | CTO-0280 | LOCATION | Site 5 | DRILLER | Woodward |
| PROJECT NO. | 2738.1405 | BORING | MOS-12 | DRILLING METHOD | H.S.A |
| ELEVATION | | DATE | 11-5-94 | DEVELOPMENT METHOD | Surge/bail/pump |
| FIELD GEOLOGIST | WPW | | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 3

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 4

ELEVATION / DEPTH TOP OF SCREEN: 5.5

FIRST ENCOUNTERED SATURATED ZONE 9.3

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 factory slot

I.D. OF SCREEN 2"

TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 15.5

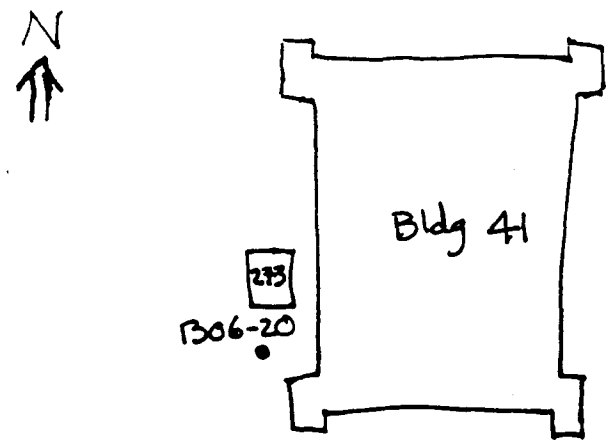
ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.5

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 15.5

B06-20

Avenue F




Sketch Map of Site Area With Drilling Locations

Boring # B06-20MW# Sheet 1 of 2

Project: NAS Alameda CTO 280

Job # 2733/1404 Site: OC

Logged By: DEK Proj. Eng: SMH Edited By:

Drilling Contractor: Woodward-Drilling Co.

Drill Rig Type/Method: HSA Mobile B-57

Drillers Name: Erik Forsstrom

Borehole Diam./Drill Bit Type: 8.5" auger — Total Depth: 15

Hammer Wt: 140 lb Drop: 30"

Start Time: 1530 Date: 8-11-94

Completion Time: 1600 Date: 8-11-94

Backfill Time: 1600 Date: 8-11-94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 2.75 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1540 | | | |
| Date | 8-11-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | | Concrete | Concrete | Concrete | | | | | | | | Concrete 0-12" |
| 1.1 | | 4 | | | | | | X | 1530 | 1 | SP | SP, sand, light brown, fine sand, loose moist, mod well sorted |
| | | 6 | | | | | | X | | 2 | SP | |
| | | 23 | | | | | | | | | | |
| 1.1 | | 13 | | | | | | X | 1540 | 3 | | |
| | | 11 | | | | | | X | | | | |
| | | 12 | | | | | | | | 4 | SP/SM | |
| | | 10 | | | | | CEMENT GROUT | X | 1546 ▽ | | | Standing in auger |
| 2.0 | | 10 | | | | | | X | | 5 | | Silty sand, lt brown, loose saturated fine/med sand, clay blebs. |
| | | 11 | | | | | | | | | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | 1 | | | | | | X | 1555 | 10 | | Clay, CL, black, soft, moist |
| | | 1 | | | | | | X | | | | |
| 0.5 | | 1 | | | | | | | | 11 | | |
| | | | | | | | | | | 12 | | |

Boring # B06-20 MW# | Sheet 2 of 2

Project: NAS ALAMEDA CTO 200

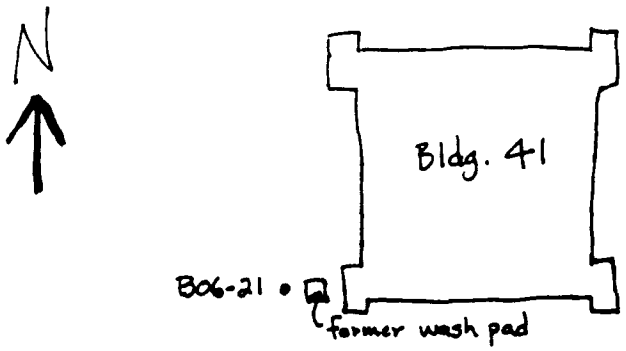
Job # 2778.1404 Site: 06

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample No. | Analysis | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 12 | |
| | | | | | | | Need cement grout | | | 13 | |
| | | 1 | ↓ | ↓ | | | | X | 1000 | 14 | Clayey sand SC, black, sight moist, fine, v. fine sand trace shells. |
| | | 1 | | | | | | X | | | |
| | | 2 | | | | | | | | 15 | |
| | | | | | | | | | | | TD = 15' |
| | | | | | | | | | | 16 | |
| | | | | | | | | | | 17 | |
| | | | | | | | | | | 18 | |
| | | | | | | | | | | 19 | |
| | | | | | | | | | | 20 | |
| | | | | | | | | | | 21 | |
| | | | | | | | | | | 22 | |
| | | | | | | | | | | 23 | |
| | | | | | | | | | | 24 | |
| | | | | | | | | | | 25 | |
| | | | | | | | | | | 26 | |
| | | | | | | | | | | 27 | |
| | | | | | | | | | | 28 | |
| | | | | | | | | | | 29 | |
| | | | | | | | | | | 30 | |
| | | | | | | | | | | 31 | |
| | | | | | | | | | | 32 | |

MF

B06-21

Avenue F




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B06-21 MW# | Sheet 1 of 2 |
| Project: CTO 280 | |
| Job # 2738.1404 | Site: 06 |
| Logged By: | Proj. Eng: SMH Edited By: |
| Drilling Contractor: | |
| Drill Rig Type/Method: | |
| Drillers Name: ERIK FORSSTROM | |
| Borehole Diam./Drill Bit Type: 8½" auger | Total Depth: 15 / Ref. Elev. |
| Hammer Wt: 140 lb | Drop: 30" |
| Start Time: 1515 | Date: 8.11.94 |
| Completion Time: 1545 | Date: 8.11.94 |
| Backfill Time: 1555 | Date: 8.11.94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 2.5' | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | ~~2.5'~~ | | | |
| Time | 1525 | | | |
| Date | 8.11.94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Concrete | | | | | | | | | Concrete |
| | | | Parking | | | | | | | | | |
| | | 1 | | | | | | X | 1520 | 1 | | SP/SM Sand/silty sand, brown |
| | | 11 | | | | | | X | | | | loose, wet, fine/med sand |
| 0.0 | | 13 | | | | | | | | 2 | | |
| | | 5 | | | | | | X | 1525 | 3 | | |
| | | 4 | | | | | | X | | | Si | SP, brown, wet, loose, med sand |
| 0.0 | | 4 | | | | | | | | | Cl | |
| | | 2 | | | | | | X | 1530 | 4 | | CL black, moist, soft |
| | | 1 | | | | | | X | | | | SC black, wet, soft/loose |
| 0.1 | | 3 | | | | | Neat cement grout | | | 5 | | fine sand |
| | | | Drill out | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| 0.5 | | 1 | | | | | | | | | | |
| | | 1 | | | | | | X | 1535 | 10 | | CL, black, ~~wet~~ moist, ~~soft~~ |
| | | 1 | | | | | | X | | | | |
| | | | Drill | | | | | | | 11 | | |
| | | | | | | | | | | 12 | | |

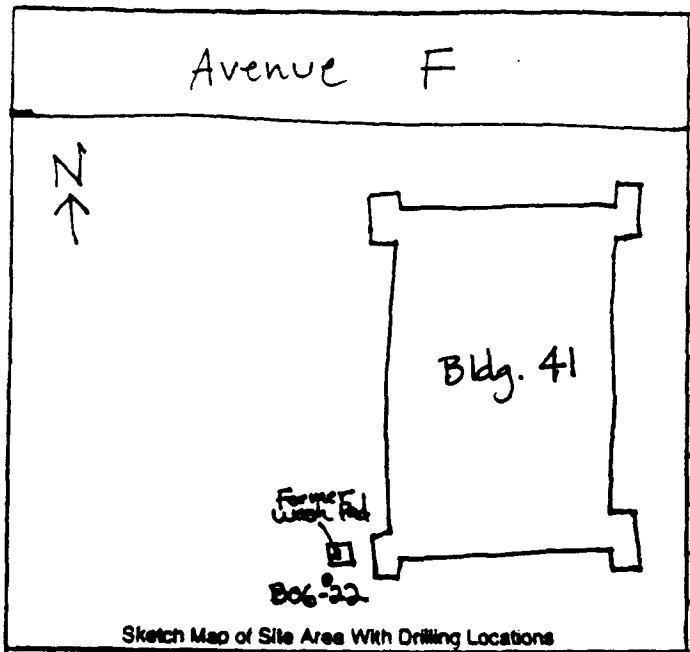
| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 12 | |
| | | | Pulled out | | | | Neat cement grout | | | 13 | |
| | | 1 | | | | | | X | 1540 | | SC, black, wet (sandy clay) soft |
| | | 1 | | | | | | X | | 14 | abundant to trace shells, fine sand |
| 0.8 | | 1 | | | | | | | | 15 | |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 0 | |
| | | | | | | | | | | 1 | |
| | | | | | | | | | | 2 | |
| | | | | | | | | | | 3 | |
| | | | | | | | | | | 4 | |
| | | | | | | | | | | 5 | |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 0 | |
| | | | | | | | | | | 1 | |
| | | | | | | | | | | 2 | |

Boring # BOG 21 MW#

Sheet 2 of 2

Project: NAS ALAMEDA (TO 280

Job # 2938.1404 Site: 06




Sketch Map of Site Area With Drilling Locations

Boring # B06-22MW# | Sheet 1 of 2

Project: NAS ALAMEDA CTO 280

Job # 2738.1404 Site: 06

Logged By: DEIK Proj. Eng: SMH Edited By:

Drilling Contractor: WOODWARD DANLINE CO

Drill Rig Type/Method: HSA Mobil 57

Drillers Name: ERIK FORSSTROM

Borehole Diam./Drill Bit Type: 8½" auger | Total Depth: 15'

Hammer Wt: 140lb Drop: 30"

Start Time: 1600 Date: 8.11.94

Completion Time: 1645 Date: 8.11.94

Backfill Time: " Date: "

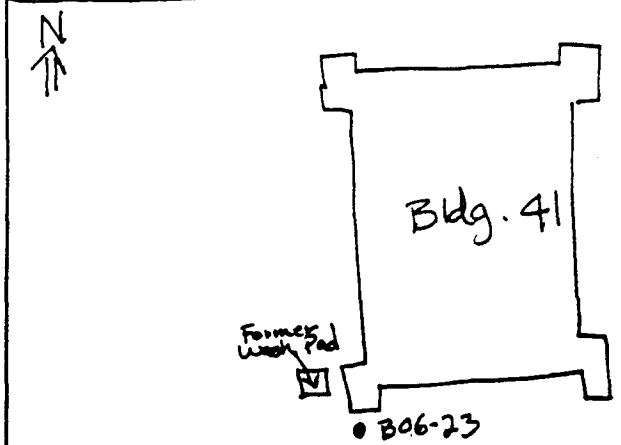
| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.5 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1615 | | | |
| Date | 8.11.94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth (Feet) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Concrete | | | | | | | | |
| | | 3 | | | | | | X | 1605 | 1 | |
| | | 5 | | | | | | X | 280-SOC-011 | 2 | No duplicate collected |
| 0.0 | | 13 | | | | | | | | | |
| | | 8 | | | | | | X | 1610 | 3 | |
| | | 8 | | | | | | X | 280-SOC-012 | | 13 |
| 0.1 | | 15 | | | | | | | | | |
| | | 3 | | | | | | X | 1615 | 5 | Saturated |
| | | 2 | | | | | | X | 280-SOC-013 | | 14 |
| 0.5 | | 4 | | | | | | | | | |
| | | | | | | | | | | 6 | |
| | | | | Drill out | | | Neat cement grout | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | 1 | | | | | | | | | |
| | | 1 | | | | | | X | 1620 | 10 | |
| 0.8 | | 1 | | | | | | X | 280-SOC-014 | | 15 |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Analyses | Depth: Feet | | Boring # B06-22 MW# | Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS ALAMEDA CTO 280 | |
| | | | | | | | | | | | | Job # 2798.1404 Site: 06 | |
| | | | | | | | | | | 12 | | | |
| | | | | | | | | | | 13 | | | |
| | | 1 | ↓ | ↓ | | | | X | 1630 | | | | |
| | | 1 | | | | | | X | 280-306-015 K | 14 | | | |
| 0.0 | | 1 | ↓ | ↓ | | | | | | | | BOB | |
| | | | | | | | | | | 15 | | | |
| | | | | | | | | | | | | TD=15' | |
| | | | | | | | | | | 16 | | | |
| | | | | | | | | | | 17 | | | |
| | | | | | | | | | | 18 | | | |
| | | | | | | | | | | 19 | | | |
| | | | | | | | | | | 20 | | | |
| | | | | | | | | | | 21 | | | |
| | | | | | | | | | | 22 | | | |
| | | | | | | | | | | 23 | | | |
| | | | | | | | | | | 24 | | | |
| | | | | | | | | | | 25 | | | |
| | | | | | | | | | | 26 | | | |
| | | | | | | | | | | 27 | | | |
| | | | | | | | | | | 28 | | | |
| | | | | | | | | | | 29 | | | |
| | | | | | | | | | | 30 | | | |
| | | | | | | | | | | 31 | | | |
| | | | | | | | | | | 32 | | | |

B06-23

Avenue F




Sketch Map of Site Area With Drilling Locations

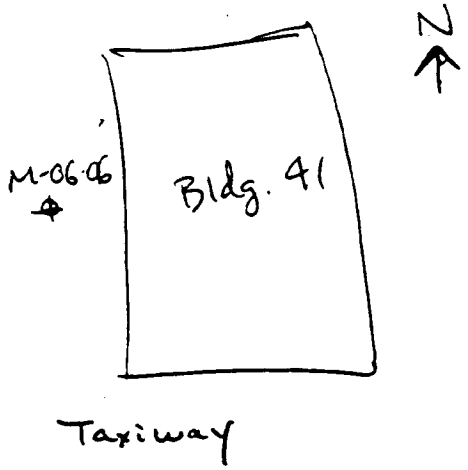
| | |
|---|---|
| Boring # B06-23 MW# | Sheet 1 of 2 |
| Project: NAS ALAMEDA 2 TO 280 | |
| Job # 2738 1404 | Site: 06 |
| Logged By: DEK | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward Drilling Co | |
| Drill Rig Type/Method: HSA Mob. 1B57 | |
| Drillers Name: Erik Forsstrom | |
| Borehole Diam./Drill Bit Type: 8.5" auger | Total Depth: 15' Ref. Elev |
| Hammer Wt: 140 lb | Drop: 30" |
| Start Time: 1510 | Date: 8-11-94 |
| Completion Time: 1550 | Date: 8-11-94 |
| Backfill Time: 1600 | Date: 8-11-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 15' | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1550 | | | |
| Date | 8-11-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Concrete | | | | | | | | | Concrete ≈ 12" thick |
| | | | Concrete | | | | | | | | | |
| | | 4 | | | | | | X | 1510 | 1 | | SP/SM brown, loose, dry, fine/med sand |
| | | 6 | | | | | | X | 280.S06.17 | | | |
| | | 9 | | | | | | | | 2 | | |
| | | 3 | | | | | | X | 1515 | | | |
| | | 3 | | | | | | X | 280.S06.18 | 3 | | |
| | | 3 | | | | | | | | | | |
| | | 2 | | | | | | | | 4 | | |
| | | 4 | | | | | | X | 1520 | | | SP/SM brown, saturated, loose fine/med sand |
| | | 3 | | | | | | X | 280.S06.19 | 5 | | duplicate 280.S06.020 not collected |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | 1 | | | | | | | | | SC | |
| | | 1 | | | | | | X | 1525 | | | SC black, saturated, M. dense to loose, fine/med sand |
| | | 1 | | | | | | X | 280.S06.21 | 10 | | CL at base, w trace sand layers. ; Shell lenses throughout. |
| | | | | | | | | | | 11 | | |
| | | | | | | | | | | 12 | | |

Annulus Filler: Neat Cement Grout

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample Rec. | Analyses | Depth Feet | | Boring # BOC-23 MW# | Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS Alameda CTO 200 | |
| | | | | | | | | | | | | Job # 2738.1404 | Site: 06 |
| | | | | | | | | | | 12 | | | |
| | | | | | | | | | | 13 | | | |
| | | 1 | ↓ | | | | Grout ↓ | X | 1535 | | | CL black, trace fine sand | |
| | | 1 | | | | | | X | 280.506 | 021 22 | | grades into a SC black, | |
| | | 2 | | | | | | | | | | $H_2S$ odor | |
| | | | | | | | | | | 15 | | | |
| | | | | | | | | | | | | TD=15' | |
| | | | | | | | | | | 6 | | | |
| | | | | | | | | | | 7 | | | |
| | | | | | | | | | | 8 | | | |
| | | | | | | | | | | 9 | | | |
| | | | | | | | | | | 0 | | | |
| | | | | | | | | | | 1 | | | |
| | | | | | | | | | | 2 | | | |
| | | | | | | | | | | 3 | | | |
| | | | | | | | | | | 4 | | | |
| | | | | | | | | | | 5 | | | |
| | | | | | | | | | | 6 | | | |
| | | | | | | | | | | 7 | | | |
| | | | | | | | | | | 8 | | | |
| | | | | | | | | | | 9 | | | |
| | | | | | | | | | | 0 | | | |
| | | | | | | | | | | 1 | | | |
| | | | | | | | | | | 2 | | | |




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-06-06 Sheet 1 of 2 |
| Project: | Alameda NAS CTO-0280 |
| Job # | 2738.1404 Site: 6 |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8½" |
| Total Depth | 13' well |
| Ref. Elev | 15' borings |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 1000 Date: 8-22-94 |
| Completion Time: | 1140 Date: 8-22-94 |
| Backfill Time: | 1145 Date: 8-22-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 13' | | | |
| Casing Depth (ft.) | 13' | | | |
| Water Depth (ft.) | 50' | | | |
| Time | 8-22-94 | | | |
| Date | 1110 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 8 | | | | 3" Dia, Sch 40 Blank PVC | Bentonite | | | | | SAND (SP), lt. br (6/3, 7.5YR), dense dr fine-gr, high K |
| | | 10 | | | | | | | 1000 | 1 | | |
| | | 23 | | | | | | | | | | |
| | | 50 | | | | | | | | 2 | | |
| | | 10 | | | | | | | | | | As above, except sl mst |
| | | 20 | | | | | | | 1105 | 3 | | |
| | | 18 | | | | | | | | | | |
| | | 5 | | | | | | | 900-tech | 4 | | |
| | | 7 | | | | | | | | | | As Above, except saturated. @ 5' bgs. |
| | | 8 | | | | | | | | | | |
| | | 11 | | | | | | | 1110 | 5 | SP | |
| | | 14 | | | | | | | | 6 | | |
| | | | | | | 3" Dia, Sch 40, 0.010 Slotted PVC | Monterey 3/16 Sand | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | 1 | | | | | | | 1125 | 10 | | CLAY (CL), dark gray (N4, 7.5YR), plastic, saturated, low K. |
| | | 1 | | | | | | | | 11 | CL | |
| | | 1 | | | | | | | | | | |
| | | 1 | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | | | | | | | | 12 | | |
| | | | | | | | | | | | | Well Bottom = 13' |
| C | | 1 | | | | Sand | Monterey 3/16 sand | | | 13 | C2 | |
| | | 1 | | | | | | | 1135 | | | As above (w/ minor sand) |
| | | 1 | | | | | | | | 14 | | |
| | | 1 | | | | | | | | | | BOB = 15' |
| | | | | | | | | | | 15 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |
| | | | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

Boring # MW#M-06-06 Sheet 2 of 2

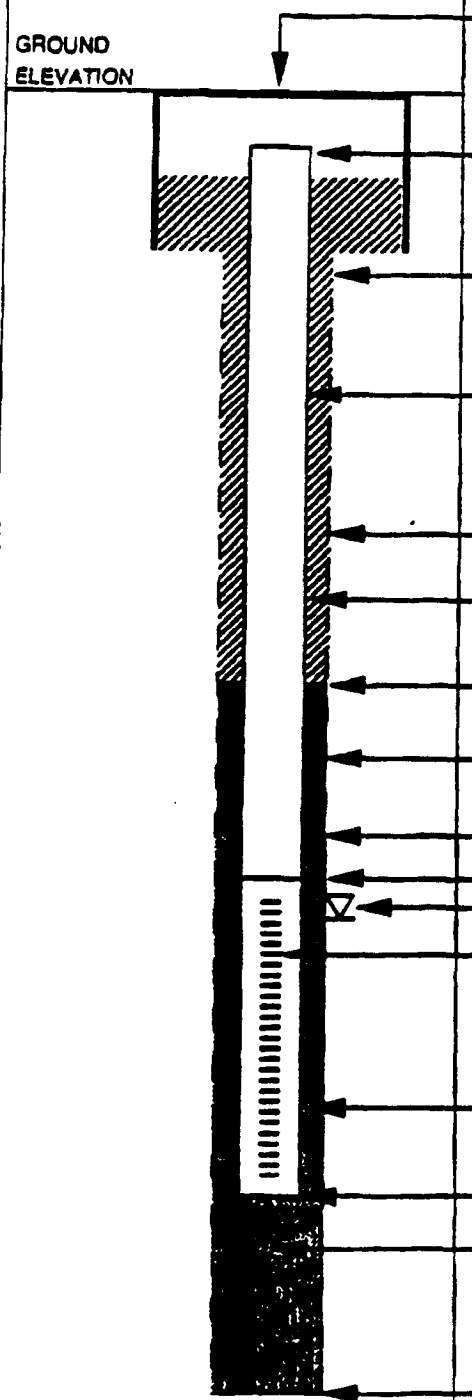
Project: Alameda NAS

Job # 2738.1404 Site: 6

BORING NO. M-06-06

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT 2738.1404 | LOCATION Site 6 | DRILLER Woodward |
| PROJECT NO. 2738.1404 | BORING M-06-06 | DRILLING METHOD Eric Forstrom HSA |
| ELEVATION – | DATE 8-22-94 | DEVELOPMENT METHOD Surge, Bail, Pump |
| FIELD GEOLOGIST John Valett | | |




ELEVATION OF GROUND SURFACE: –

ELEVATION OF TOP OF WELL CASING: –

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 40 Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8½"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 1'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 2'

ELEVATION / DEPTH TOP OF SCREEN: 3'

FIRST ENCOUNTERED SATURATED ZONE 5'

TYPE OF SCREEN: PVC Sch 40 Slotted.

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

TYPE OF SAND PACK: 2/16 Monterey Sand

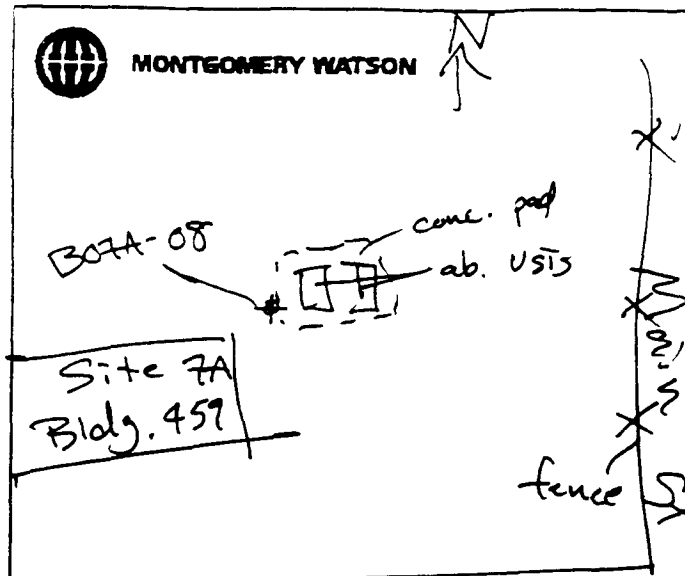
ELEVATION / DEPTH BOTTOM OF SCREEN: 13'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 15'

TYPE OF BACKFILL BELOW OBSERVATION WELL: ~~[illegible]~~ 2/16 Monterey Sand.

ELEVATION / DEPTH OF HOLE: 15' JV

**MONTGOMERY WATSON**




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#B07A-08 Sheet 1 of 1 |
| Project: | Alameda C70-0262 |
| Job # | 2738.1184 Site: 7A |
| Logged By: | JEV Proj. Eng: MGM Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | B-57/HSA |
| Drillers Name: | Eric Forsstrom |
| Borehole Diam./Drill Bit Type | 8" Total Depth 11.5 Ref. Elev. |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 10am Date: 5/5/94 |
| Completion Time: | 130 Date: 5/5/94 |
| Backfill Time: | Date: |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | ~~[illegible]~~ | | | |
| Time | | | | |
| Date | 5/5/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | Description |
|---|---|---|---|---|---|---|---|---|---|---|
| 411 | | 7 8 10 | 18" ↓ | 18" ↓ | | | | B07A-08 (1150) | 1 | Sandy GRAVEL (GM), green-gray (5GY 4/1), v sl mst, dense, high K |
| | | | | | | | | | 2 | |
| 408 | | 3 2 2 | 18" ↓ | 18" ↓ | | | | B07A-08 (1200) | 3 | SAND (SP), gray to lt br (2.5Y 5/2) mst to wet, dense, (trace of sea shells), high K |
| | | | | | | | | | 4 | |
| 83 | | 2 1 1 | 18" ↓ | 18" ↓ | | | | B07A-08 (1350) | 5 | SAND (As Above) |
| | | | | | | | | | 6 | 6'-6.5' = ~~Sandy CLAY greenish gray (~~ ~~) mst, plastic~~ → As Above JEV |
| | | | | | | | | | 7 | ~~Borehole terminated @ 6.5~~ |
| | | | | | | | | | 8 | |
| | | | | | | | | | 9 | |
| 855 | | | 18" ↓ | 18" ↓ | | | | | 10 | SAND (SP) f-med.-gr. w/ 2" cl layer, saturated, dense, minor shells, high K |
| | | | | | | | | | 11 | → Bot of Well @ 11'. |
| | | | | | | | | | 12 | |

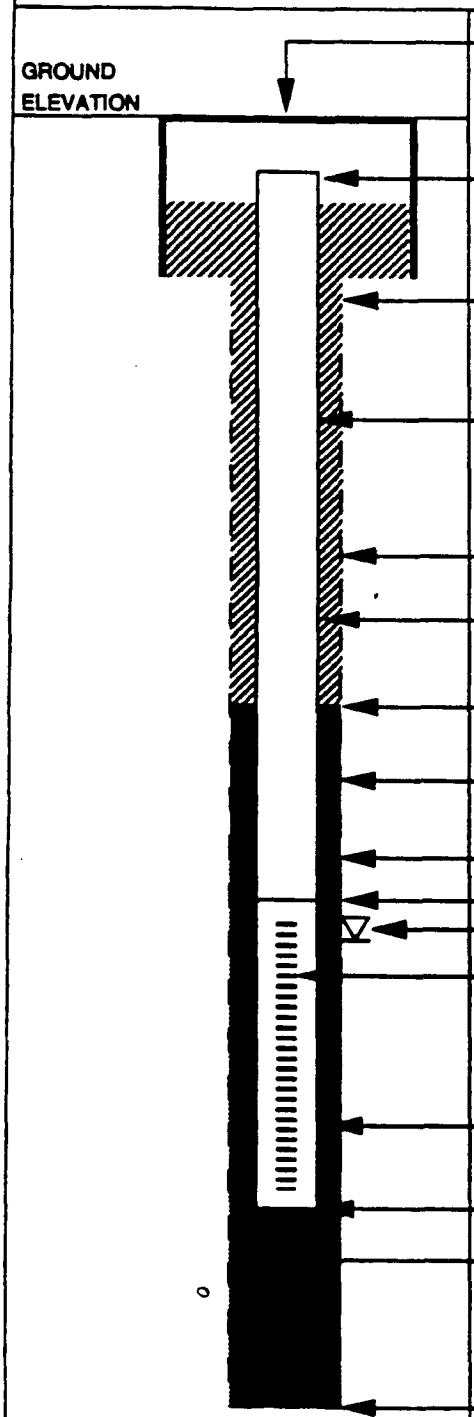
gray to light brown (2.5Y 5/2)

Piezo

BORING NO. B07A-08

# MONITORING WELL SHEET

| | | | | | |
|---|---|---|---|---|---|
| PROJECT | ANASC 70-0262 | LOCATION | Site 7A | DRILLER | Woodward |
| PROJECT NO. | 2738.1184 | BORING | B07A-08 | DRILLING METHOD | HSA |
| ELEVATION | NA | DATE | 5/5/95 | DEVELOPMENT METHOD | NA (Piezometer only) |
| FIELD GEOLOGIST | JEV | | | | |




ELEVATION OF GROUND SURFACE: NA

ELEVATION OF TOP OF WELL CASING: NA

I.D. OF SURFACE CASING: NA

TYPE OF SURFACE CASING: NA

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC Schedule 40

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Bentonite

ELEVATION / DEPTH OF SEAL: 0' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 0.5' bgs

ELEVATION / DEPTH TOP OF SCREEN: 1' bgs

FIRST ENCOUNTERED SATURATED ZONE (13.7' bgs)

TYPE OF SCREEN: Schedule 40 PVC

SLOT SIZE x LENGTH 0.010" x 10'

I.D. OF SCREEN 1"

TYPE OF SAND PACK: Natural formation Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 11' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 11' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

ELEVATION / DEPTH OF HOLE: 11' bgs

11.5'

**MONTGOMERY WATSON**

Boring # B07A-09 MW# | Sheet 1 of 1

Project: Alameda NAS CTO-C262

Job # 2738-1184 Site: 74

Logged By: MEM Prof. Eng: MEM Edited By:

Drilling Contractor: Woodward

Drill Rig Type/Method: B57 HSA

Drillers Name: Eric Forstrom

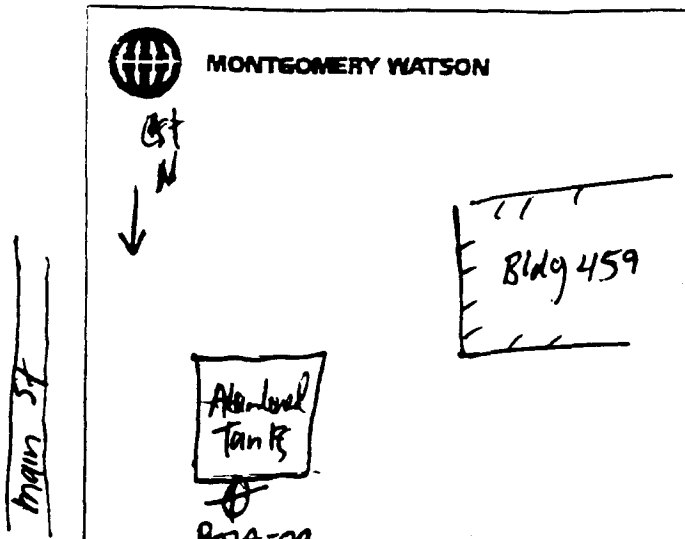
Borehole Diam./Drill Bit Type: 8" | Total Depth: 11.5' | Ref. Elev.:

Hammer Wt: 140# Drop: 30"

Start Time: 1520 Date: 5/5/94

Completion Time: Date: 5/5/94

Backfill Time: Date: 5/5/94




Sketch Map of Site Area With Drilling Locations

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 11.5' | | | |
| Casing Depth (ft.) | 11.5' | | | |
| Water Depth (ft.) | 2.5' | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. Analyses | Depth Feet | Description |
|---|---|---|---|---|---|---|---|---|---|---|
| 402 | | 6 7 6 | 18" | 18" | | | | B07A-09 0' 1520 | 1 | Silty Sand (SM), grayish gray, m dense, slightly moist, med est K. Strong gasoline odor. (5GY 4/1) |
| 24 | | 3 2 2 | 18" | 9" | | | | B07A-09 2.5' 1535 | 2 3 4 | Sand (SP), dark gray, loose, moist, f-m, high est K (2.5 Y 3/0) |
| 170 | | 2 3 3 4 | 24" | 18" | | | | B07A-09 5' 1550 | 5 6 7 8 9 | Sand (SP), gray, loose, moist, f-m, high est K, trace shells. (2.5 Y 3/0) |
| 20 | | 1 1 2 | 18" | 18" | | | | B07A-09 10' 1600 | 10 11 12 | Sand (SP), gray, v. loose, wet, f-m, high est K (Black clay 11.1-11.5') (2.5Y 5/0) |

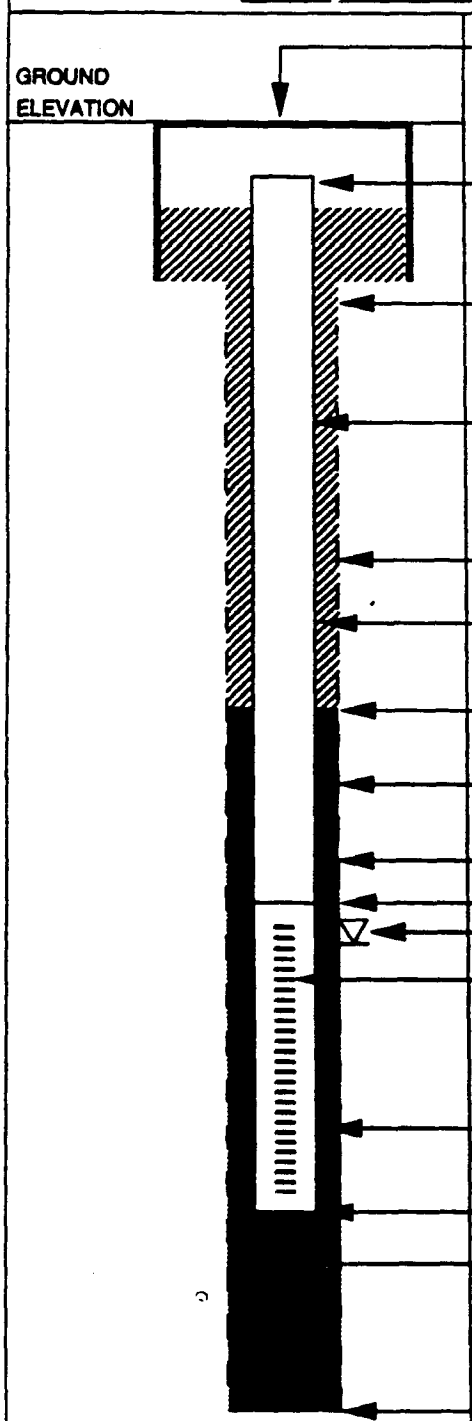
Bottom of boring @ 11.5'

Piezo

BORING NO. B07A-09

# MONITORING WELL SHEET

| | | | | | |
|---|---|---|---|---|---|
| PROJECT | ANAS | LOCATION | Site 7A | DRILLER | Woodward |
| PROJECT NO. | 2738.1184 | BORING | B07A-09 | DRILLING METHOD | HSA |
| ELEVATION | NA | DATE | 5/5/91 | DEVELOPMENT METHOD | NA (Piezometer only) |
| FIELD GEOLOGIST | MEM | | | | |




ELEVATION OF GROUND SURFACE: NA

ELEVATION OF TOP OF WELL CASING: NA

I.D. OF SURFACE CASING: NA

TYPE OF SURFACE CASING: NA

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC Schedule 40

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Bentonite

ELEVATION / DEPTH OF SEAL: 0' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 0.5' bgs

ELEVATION / DEPTH TOP OF SCREEN: 1.5' bgs

FIRST ENCOUNTERED SATURATED ZONE (2.5' bgs)

TYPE OF SCREEN: Schedule 40 PVC

SLOT SIZE x LENGTH 0.010" x 10'

I.D. OF SCREEN 1"

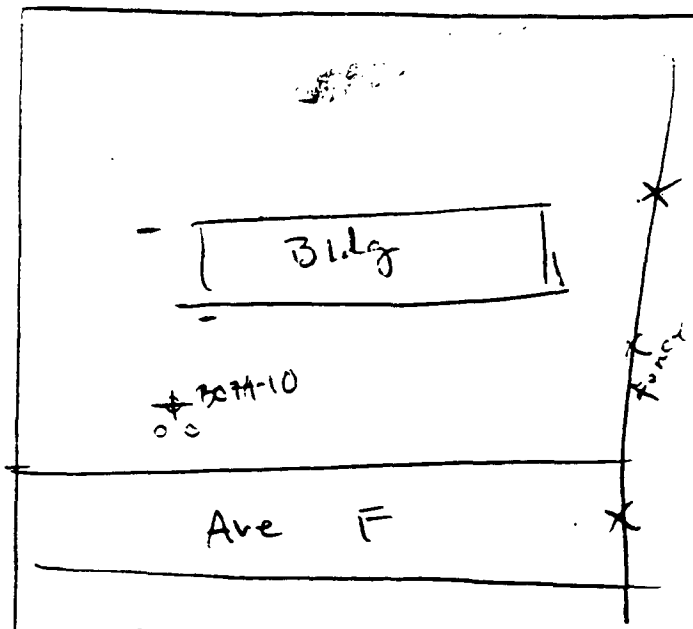
TYPE OF SAND PACK: Natural Formation Soil

ELEVATION / DEPTH BOTTOM OF SCREEN: 11.5' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 11.5' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

ELEVATION / DEPTH OF HOLE: 11.5' bgs




Sketch Map of Site Area With Drilling Locations

Boring # B07A-10 MW# | Sheet 1 of 1

Project: Alameda NAS

Job # 2738.1404 Site: 7A

Logged By: JEV Proj. Eng: SMH Edited By:

Drilling Contractor: Woodward

Drill Rig Type/Method: HSA

Drillers Name: Eric Forstrom

Borehole Diam./Drill Bit Type: 8.25" | Total Depth: 14'

Hammer Wt: 140 lb. Drop: 30'

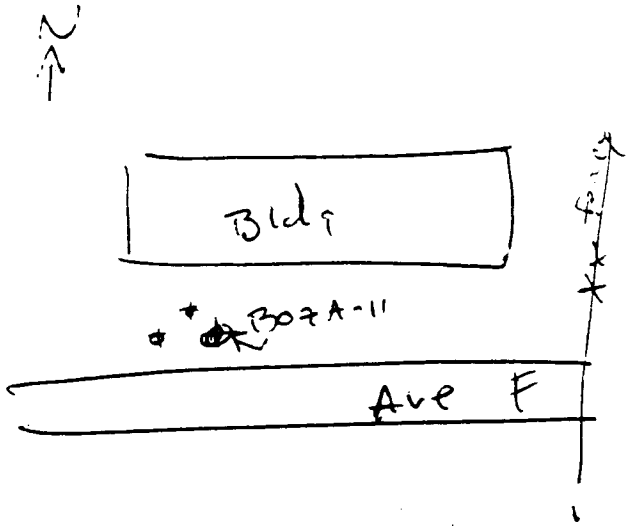
Start Time: 1000 Date: 8-17-94

Completion Time: 1030 Date: 8-17-94

Backfill Time: 1040 Date: 8-17-94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 14' | | | |
| Casing Depth (ft.) | — | | | |
| Water Depth (ft.) | ≈5' | | | |
| Time | 1015 | | | |
| Date | 8-17-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filter | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.2 | | 12 | | | | | | | | | silty SAND (SM) w/ minor clay, yellowish brown to dk brown, dense, sl mst, med K |
| | | 16 | | | | | | | | | |
| | | 20 | | | | | | | 1005 | 1 | |
| | | 27 | | | | | | | | | |
| | | 7 | | | | | | | | 2 | CLAY (CL) w/ minor sand + silt, gray, sl plastic, mst, low K |
| 1.0 | | 9 | | | | | | | | | |
| | | 3 | | | | | | | 1010 | 3 | |
| | | 3 | | | | | | | | 4 | As Above |
| | | 2 | | | | | | | | | |
| | | 2 | | | | | Grout | | 90' tech | 5 | |
| | | 2 | | | | | | | | | |
| | | 2 | | | | | | | | 6 | As Above, except saturated |
| | | 2 | | | | | | | | | |
| | | 3 | | | | | | | 1020 | 7 | |
| | | 3 | | | | | | | | | |
| | | 2 | | | | | | | | 8 | |
| | | | | | | | Neat cement | | | | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |
| | | | | | | | | | 1030 | 13 | As Above (some minor sand) |

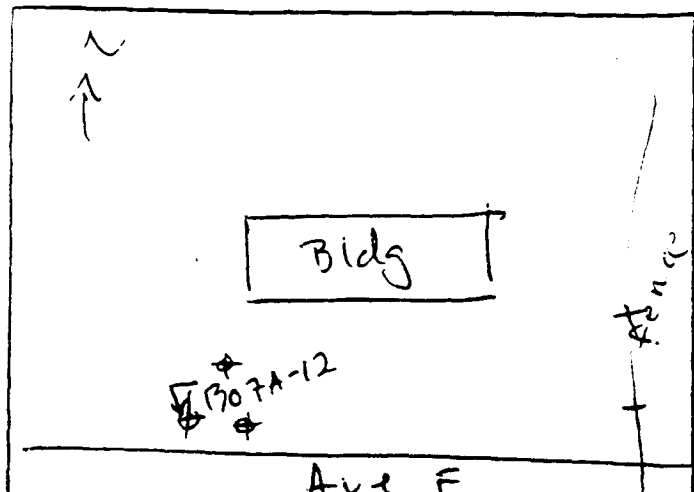



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # 307A-11 MW# | Sheet 1 of 1 |
| Project: Alameda NAS | |
| Job # 2738.1404 | Site: 7A |
| Logged By: JEV | Proj. Eng: / Edited By: |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forgtrom | |
| Borehole Diam./Drill Bit Type: 8.25" | Total Depth: 14' / Ref. Elev: |
| Hammer Wt: 140 lb. | Drop: 30" |
| Start Time: 0820 | Date: 8-17-94 |
| Completion Time: 0855 | Date: 8-17-94 |
| Backfill Time: 0900 | Date: 8-17-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 14' | | | |
| Casing Depth (ft.) | — | | | |
| Water Depth (ft.) | 25' | | | |
| Time | 0830 | | | |
| Date | 8-17-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.2 | | 7 8 | | | | | | | 0820 | 1 | Silty SAND (SM), gray brown w/ minor black, dense, sl mst, fine-gr, med IK |
| | | 15 28 | | | | | | | | 2 | |
| | | 6 8 | | | | | | | | | As above w/ minor clay |
| 1.0 | | 3 5 | | | | | Grout | | 0825 | 3 | |
| | | 1 2 | | | | | | | | 4 | Clay (SC) ~~gravelly~~ w/ minor sand, gray brown, plastic, moist, low IK. |
| | | 1 4 | | | | | | | geotech | 5 | |
| | | 1 1 | | | | | Cement | | 0835 | 6 | As Above |
| | | 1 1 | | | | | | | | 7 | |
| | | | | | | | Mat | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | 0855 | 12 | |
| 2.0 | | | | | | | | | | 13 | Clay (As Above) |




Sketch Map of Site Area With Drilling Locations

Boring # B07A-12MW# Sheet 1 of 1

Project: Alameda NAS

Job # 2733.1404 Site: 7A

Logged By: JEV Proj. Eng: Edited By:

Drilling Contractor: Woodward

Drill Rig Type/Method: HSA

Drillers Name: Eric Forstrom

Borehole Diam./Drill Bit Type 8.25" Total Depth 14'

Hammer Wt: 140 lb. Drop: 30"

Start Time: 0915 Date: 8-17-94

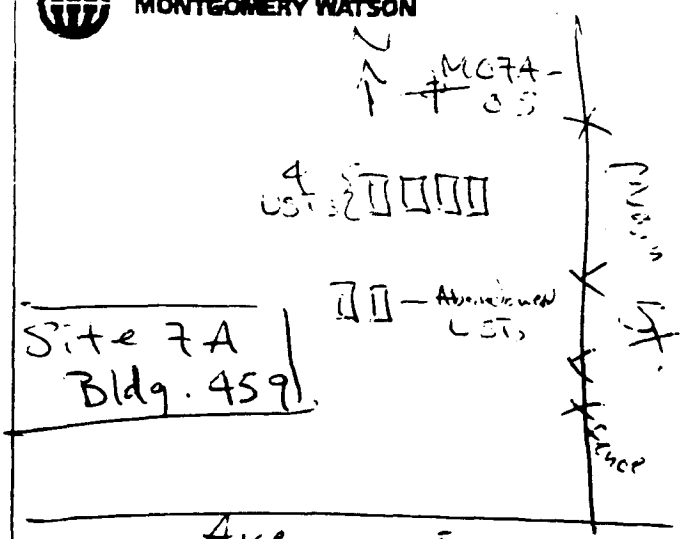
Completion Time: 0935 Date: 8-17-94

Backfill Time: 0940 Date: 8-17-94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 14' | | | |
| Casing Depth (ft.) | — | | | |
| Water Depth (ft.) | 5.5' | | | |
| Time | 0915 | | | |
| Date | 8-17-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1 | | 9 | | | | | | | | | Clayey SAND (SC), gray, ~~dens~~ plastic, sl mst, fine-gr, low K |
| | | 18 | | | | | | | 0915 | 1 | |
| | | 25 | | | | | | | | | |
| | | 28 | | | | | | | | | |
| | | | | | | | | | | 2 | |
| | | 5 | | | | | | | | | As above w/ mild hydrocarbon odor and some black color |
| | | 6 | | | | | | | | | |
| 1.3 | | 3 | | | | | | | 0917 | 3 | |
| | | 2 | | | | | | | | | |
| | | | | | | | | | | 4 | |
| | | 2 | | | | | Grout | | | | ~~more clay~~ As above w/ more clay |
| | | 2 | | | | | | | 0920 | 5 | |
| | | 3 | | | | | | | TEC | | |
| | | 3 | | | | | | | | | |
| | | 1 | | | | | Cement | | 0926 | 6 | Clay (CL), gray, plastic, moist, fine, low K |
| | | 1 | | | | | | | | | |
| | | 1 | | | | | | | 0927 (DUP) | 7 | |
| | | 1 | | | | | | | | | |
| | | | | | | | | | | 8 | |
| | | | | | | | Neat | | | | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |
| | | | | | | | | | 0929 | | As above, except saturated. |

**MONTGOMERY WATSON**




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MO7A-05 Sheet 1 of 2 |
| Project: | Alameda CTO-0262 |
| Job # | 2738.1184 Site: 7A |
| Logged By: | JEU Proj. Eng: MEm Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | B 57 / HSA |
| Drillers Name: | Eric Forsstrom |
| Borehole Diam./Drill Bit Type | 8" / HSA — Total Depth: 15 Well — Ref. Elev. |
| Hammer Wt: | Drop: |
| Start Time: | 0945 Date: 5/5/94 |
| Completion Time: | 1100 Date: 5/5/94 |
| Backfill Time: | 1115 Date: 5/5/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | 3' | | | |
| Time | | | | |
| Date | 5/5/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.8 | | 16 | 18" | 18" | Solid PVC Riser | Neat Cement Grout | | MO7A-05A(1-1.5) | | | sandy GRAVEL (GM), pale br (10YR 6/3), trace cobbles, v sl mst, loose, high K |
| | | 15 | | | | | | 0950 | | | |
| | | 19 | | | | | | | | | sand fr 1.5-2.5 (cuttings) |
| | | | | | | | | | 2 | | |
| 1.7 | | 2 | 24" | 24" | | | | 05 (3-3.5) | | OH | 0958 organic CLAY (OH), greenish gray (5GY 4 |
| | | 2 | | | | | | (3.5-4) | | | plastic, sl mst, med. K. |
| | | 3 | | | | | | (Dup) (1000) | | | |
| | | 4 | | | | | | | | | |
| | | | | | | | | | 5 | | |
| 2.0 | | 1 | 18" | 18" | | | | 05 (5-6.5) | | CL | silty CLAY (CL) w/ trace fine sand, laminations, greenish gray (5GY 4/1), plastic, sl mst, med-low K. |
| | | 1 | | | | | | (1005) | | | |
| | | 1 | | | | | | | 6 | | |
| | | | | | Slotted (0.010") PVC Riser (5.5-15 bgs) | #2/12 Monterey Sand | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | | OH | |
| | | | | | | | | | 10 | | |
| 31.7 | | 1 | 18" | 18" | | | | | | | organic CLAY (OH), greenish gray (5GY 4/1 |
| | | 1 | | | | | | 1015 | 11 | | plastic, moist, roots + tw |
| | | 1 | | | | | | | | | strong organic odor, med-low K. |
| | | | | | | | | | 12 | | |

Boring # MW# MO7A-05 Sheet 2 of 2

Project: Alameda NAS Site 7A

Job # 2738.1184 Site: 7A

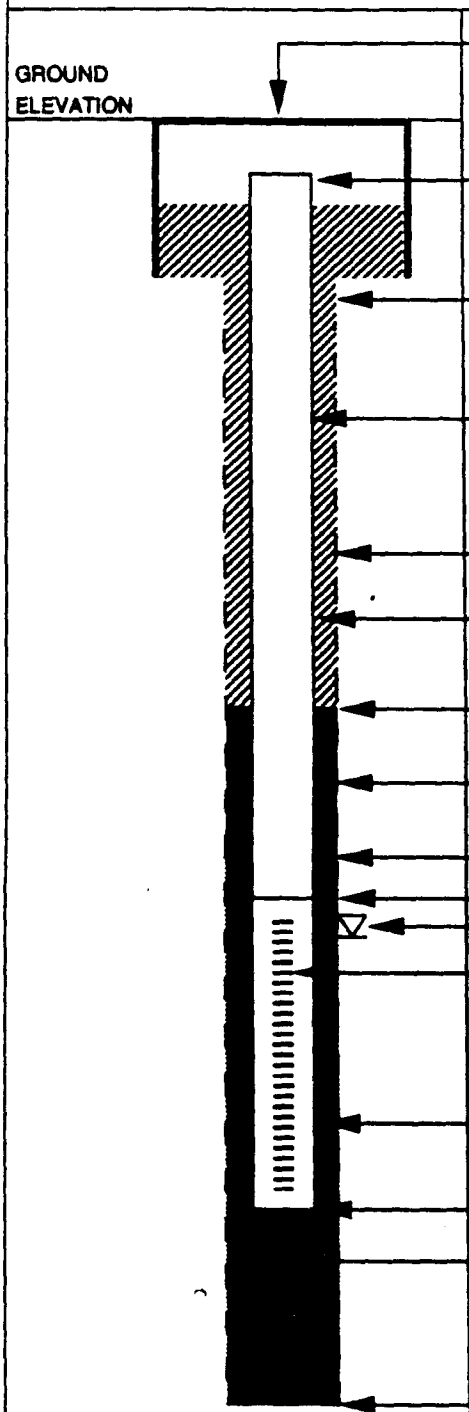
| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analysis | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Slotted PVC Riser | #2/12 Monterey Sand | | | 12 | | |
| | | | | | | | | | | 13 | | |
| | | | | | | | | | | 14 | CH | |
| | | | | | | | | | | 15 | | |
| 21.2 | | 2 | | | | | | | | | | (SAME AS 10-11.5' SAMPLE) |
| | | 2 | | | | | | | 1025 | 16 | | |
| | | 2 | | | | | | | | | | Bottom Boring @ 16.5' |
| | | | | | | | | | | 17 | | |
| | | | | | | | | | | 18 | | |
| | | | | | | | | | | 19 | | |
| | | | | | | | | | | 20 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |
| | | | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

VE

BORING NO. M07A-05

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT ANAS C70-0262 | LOCATION Site 7A | DRILLER Woodward |
| PROJECT NO. 2738.1184 | BORING M07A-05 | DRILLING METHOD HSA |
| ELEVATION NA | DATE 5/5/95 | DEVELOPMENT METHOD Surge/Purge/Bail |
| FIELD GEOLOGIST JEV | | |




ELEVATION OF GROUND SURFACE: NA

ELEVATION OF TOP OF WELL CASING: NA

I.D. OF SURFACE CASING: NA

TYPE OF SURFACE CASING: NA

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Schedule 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 3.5' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 4.5' bgs

ELEVATION / DEPTH TOP OF SCREEN: 5.5' bgs

FIRST ENCOUNTERED SATURATED ZONE (3' bgs)

TYPE OF SCREEN: Schedule 40 PVC

SLOT SIZE x LENGTH 0.010" x 10'

I.D. OF SCREEN 2"

TYPE OF SAND PACK: Monterey 2/12

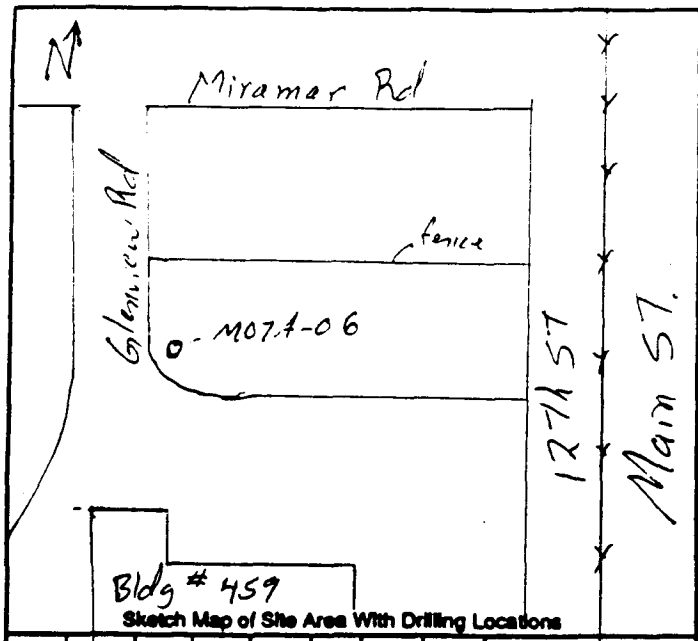
ELEVATION / DEPTH BOTTOM OF SCREEN: 15' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 15' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Natural Formation clays

ELEVATION / DEPTH OF HOLE: 16.5' bgs

Borings



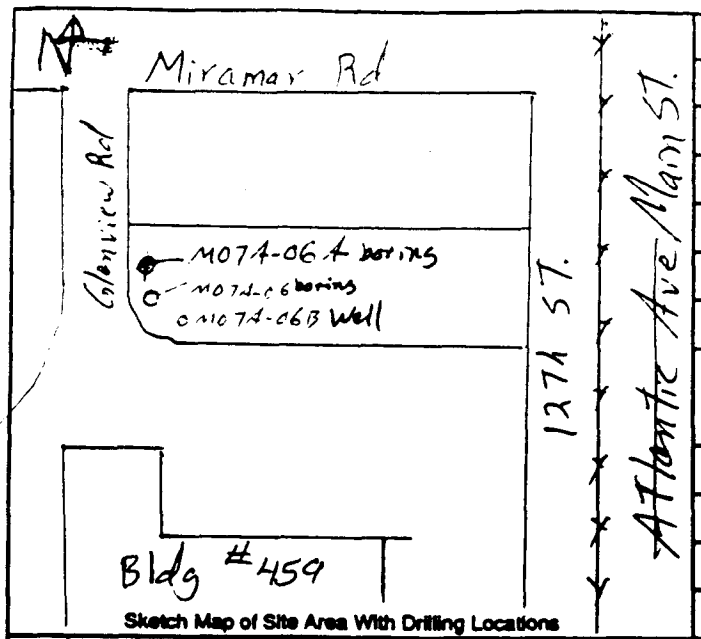
Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#MW74-06 Sheet 1 of 1 |
| Project: | NAS Alameda CTO-0262 |
| Job # | 2738.1184 Site: 7.1 |
| Logged By: | G. Pla Proj. Eng: Edited By: |
| Drilling Contractor: | Cascade Drilling |
| Drill Rig Type/Method: | Mobile B53 |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | Total Depth: 12 |
| 8" HSA | Bot Elev: |
| Hammer Wt: 140 | Drop: 30" |
| Start Time: 1115 | Date: 11-20-94 |
| Completion Time: 1145 | Date: 11-20-94 |
| Backfill Time: 1210 | Date: 11-20-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (ft.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 20 | | | | | | | | | Sandy gravel base |
| | | 8 | | | | | | | | | |
| | | 11 | | | | | | 1115 | 1 | SP | fine grained sand (SP), moist to saturated below 3' medium dense to loose, yellowish brown 10YR(5/4) |
| | | | | | | | | | 2 | | |
| | | 5 | | | | | | finished | | | |
| | | 3 | | | | | | 1120 | 3 | | |
| | | 2 | | | | | | | 4 | CL | Silty Clay (CL) moist, med. stiff, greenish gray 5GY(5/1) |
| | | 1 | | | | | | | 5 | | |
| | | 1 | | | | | | | | CL/PT | Clay with organic matter (CL/PT) moist, soft, greenish gray 5GY(5/1) |
| | | 2 | | | | | | 1130 | 6 | | |
| | | | | | | | Neat Cement Grout | | 7 | | |
| | | | | | | | | | 8 | | Clay with organic matter (CL/PT) moist, very soft, greenish gray 5GY(5/1) rootlets common. 35% organic matter. |
| | | 1 | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | | | | | | | | 11 | CL | Clay, (CL) moist, very soft, greenish gray 5GY(5/1) - 15-20% organic matter. TD 12' - pulled augers - boring dry. |
| | | 1 | | | | | | 1135 | 12 | | |

TD = 12'

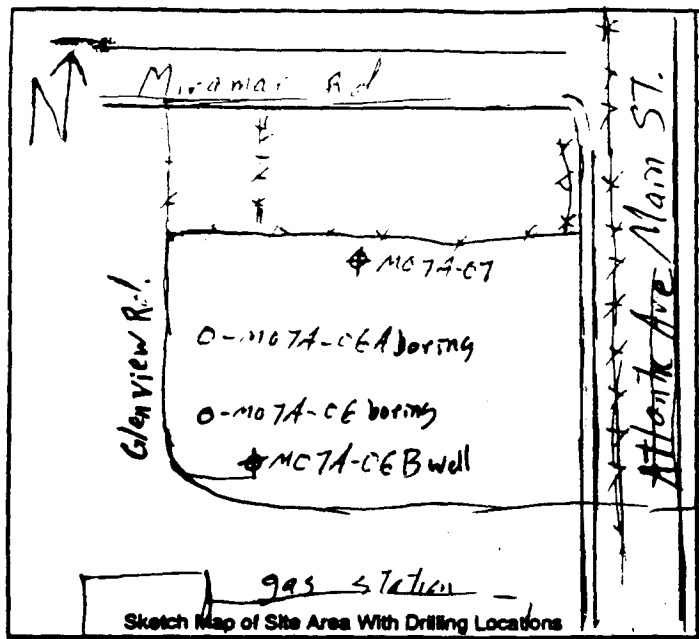



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MO7A-06A Sheet 1 of 1 |
| Project: | NAS Alameda CTO-0262 |
| Job # | 2738.1184 Site: 7A |
| Logged By: | Proj. Eng: Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B53 HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" Total Depth: 12 Ref Elev |
| Hammer Wt: | 140 Lb Drop: 30" |
| Start Time: | 1300 Date: 11-23-94 |
| Completion Time: | 1325 Date: 11-23-94 |
| Backfille Time: | 1415 Date: 11-23-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Sand + gravel base with silt. |
| | | | | | | | | | 1 | SP | fine grained Sand (SP) very moist, med. dense, pale brown 10YR(6/3) |
| | | | | | | | | | 2 | | Trace seashells. |
| | | 8 | | | | | | | | | |
| | | 7 | | | | | | | 3 | | fine grained Sand (SP), very moist med dense, dark greenish |
| | | 6 | | | | | | | 4 | | gray 5GY(4/1) - 5-10% Clay increasing with depth. |
| | | | | | | | Neat Cement Grout | | 5 | CL | |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | | 6 | | Silty Clay (CL) very moist, soft to med. stiff, dark greenish gray |
| | | 1 | | | | | | | | | 5GY (4/1), Trace sand, |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | CL/CH | Silty Clay with organics, CL/CH |
| | | 1 | | | | | | | | | soft, gray 5Y(5/1) moist |
| | | 1 | | | | | | | 9 | | |
| | | 1 | | | | | | | | | |
| | | | | | | | | | 10 | CL | Silty Clay (CL), moist to very moist, |
| | | 1 | | | | | | | 11 | | & soft, dark greenish gray 5GY(4/1) |
| | | 1 | | | | | | | | | |
| | | 1 | | | | | | | | | TD 12' - Dry - Grout to surface. |
| | | | | | | | | | 12 | | |




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MC7A-C6B Sheet 1 of 1 |
| Project: | NAS Alameda - CTC-0262 |
| Job # | 2738.1184 Site: 7A |
| Logged By: | CPW Proj. Eng: MEM Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B53 HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" Total Depth: 12' Ref. Elev. |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 1350 Date: 11-23-94 |
| Completion Time: | 1415 Date: 11-23-94 |
| Backfille Time: | 1455 Date: 11-23-94 |

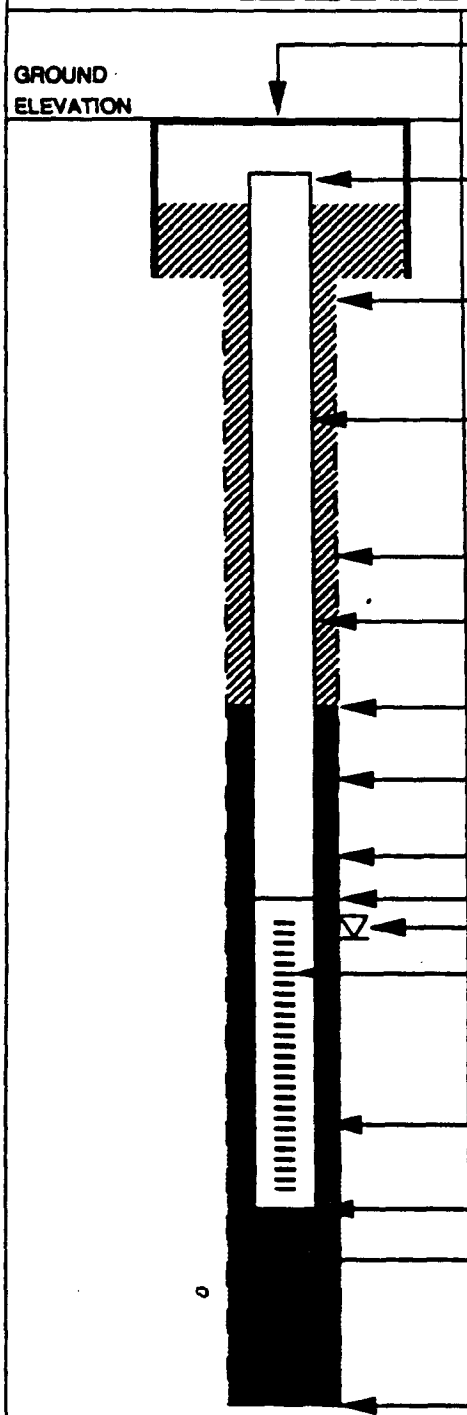
| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Sand + gravel base w/ 12 s.f.T. |
| | | | | | | Solid | Cuttings | | 1 | | |
| | | | | | | | bentonite | | 2 | SP | fine grained Sand (SP) moist to very moist, yellowish brown 10YR (5/4) with iron oxide staining. |
| | | 3 | | | | | | | 3 | | |
| | | 2 | | | | | | | | | |
| | | 3 | | | | 6" factory slotted casing | | | 4 | CL | Silty Clay (CL) very moist, med. stiff, greenish gray 5GY (5/1) |
| | | | | | | | | | 5 | | |
| | | 2 | | | | | | | | | |
| | | 1 | | | | | | | 6 | | 2" lense of saturated sand observed. |
| | | 2 | | | | | | | | | voids in clay are saturated. Traces of disturbed pocket of saturated sands in the clay |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | CL | Silty Clay (CL) very moist, very soft to soft, dark greenish gray 5GY (4/1) organic matter common. |
| | | 1 | | | | 2" Schedule 40 PVC | #2/12 Monterey Sand | | 9 | | |
| | | 1 | | | | | | | | | |
| | | | | | | | | | 10 | | Silty Clay CL As above. |
| | | 1 | | | | | | | | | |
| | | 1 | | | | | | | 11 | | TD = 12' 2' Solid 10' screen |
| | | 1 | | | | | | | 12 | | *Note perfs on screen actually start @ 2.5'. |

BORING NO. MO7A-06B

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT CTO-0262 | LOCATION Site 7A | DRILLER Woodward | |
| PROJECT NO. 2738.11F4 | BORING MO7A-06B | DRILLING METHOD HSA | |
| ELEVATION | DATE 11-23-94 | DEVELOPMENT METHOD Surge bail Pump | |
| FIELD GEOLOGIST W. Pl. | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 1.5

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2'

ELEVATION / DEPTH TOP OF SCREEN: 2.5'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH 0.01 factory slot

I.D. OF SCREEN 2"

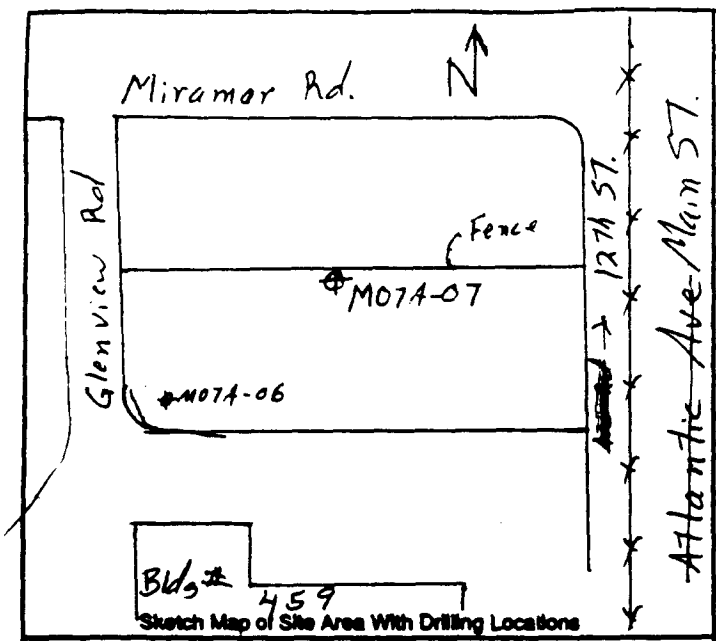
TYPE OF SAND PACK: 2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 12'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M07A-07 Sheet 1 of 1 |
| Project: | NAS Alameda CTO-0262 |
| Job # | 2738.1184 Site: 7A |
| Logged By: | WPW Proj. Eng: Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B53, HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" Total Depth: 10 Ref. Elev. |
| Hammer Wt: | 140 Drop: 30 |
| Start Time: | 1215 Date: 11-20-94 |
| Completion Time: | 1245 Date: 11-20-94 |
| Backfille Time: | Date: 11-20-94 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | | | | | | X | | | Very fine to fine grained Sand (SP) |
| | | 8 | | | | | | X | | | moist, med. dense grayish brown |
| | | 17 | | | | | | | 1 | SP | 10YR (5/2), Trace gravels @ surface |
| | | | | | | | | | 2 | | |
| | | 1 | | | | | | X | 3 | CL | Silty Clay (CL) moist to very moist |
| | | 1 | | | | | | X | | | very soft, greenish-gray 5GY |
| | | 1 | | | | | | | 4 | | (5/1) - Trace sand. |
| | | | | | | | | | 5 | | |
| | | 1 | | | | | | X | | | |
| | | 1 | | | | | | X | 6 | | |
| | | 2 | | | | | | | | SM | Silty Sand (SM) very fine to fine grained |
| | | | | | | | | | 7 | | Sand, Saturated, very loose, green |
| | | | | | | | | | | | ish gray 5GY (5/1) |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | CL | Silty Clay (CL), very moist, very soft, |
| | | 1 | | | | | | | | | greenish gray 5GY (5/1), rootlets |
| | | | | | | | | | 10 | | common |
| | | | | | | | | | | | TD 10' |
| | | | | | | | | | 11 | | 7' Solid 7' Screen |
| | | | | | | | | | 12 | | |

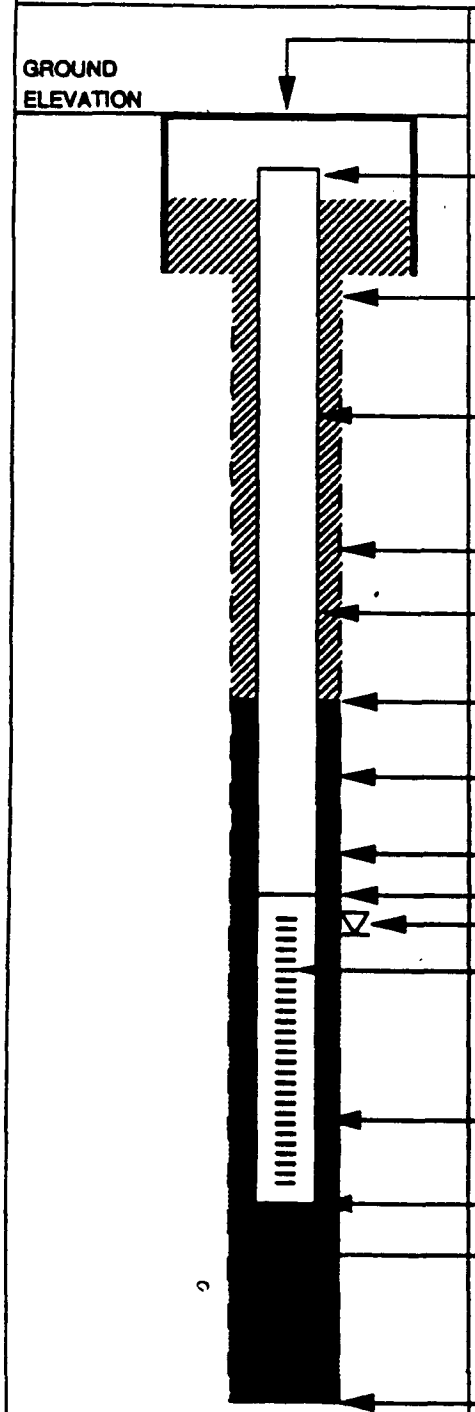
Casing Type & Size: 2" sch 40 PVC 0.01 factory slot; Solid casing; Bentonite Concrete; #2/12 mortarey sand

1 ft

BORING NO. MOTA-07

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT CTO-0262 | LOCATION Site 7A | DRILLER Woodward |
| PROJECT NO. 2738.1184 | BORING MOTA-07 | DRILLING METHOD HSA |
| ELEVATION | DATE 11-20-94 | DEVELOPMENT METHOD Surge bail Pump |
| FIELD GEOLOGIST WPW | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 1.5

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2.5

ELEVATION / DEPTH TOP OF SCREEN: 3'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 factory slot

I.D. OF SCREEN 2"

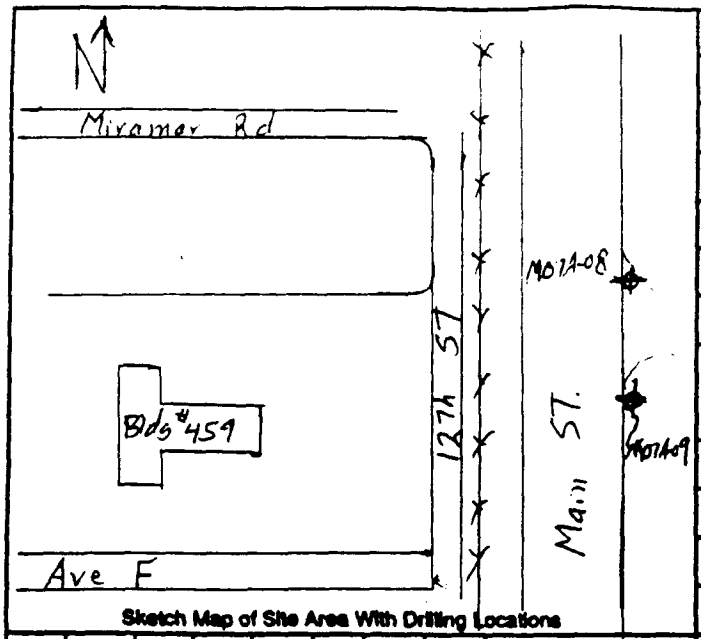
TYPE OF SAND PACK: 2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 10'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 10'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 10'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MOTA-08 Sheet 1 of 1 |
| Project: | NAS Alameda CTO-0280 |
| Job # | 2738.1405 Site: 7A |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B53 HSA |
| Drillers Name: | Erick Forrstrom |
| Borehole Diam./Drill Bit Type | 8" Total Depth: 11 Ref. Elev: |
| Hammer Wt: | 140 Drop: 30 |
| Start Time: | 1615 Date: 11-20-94 |
| Completion Time: | 1645 Date: 11-20-94 |
| Backfille Time: | Date: 11-20-94 |

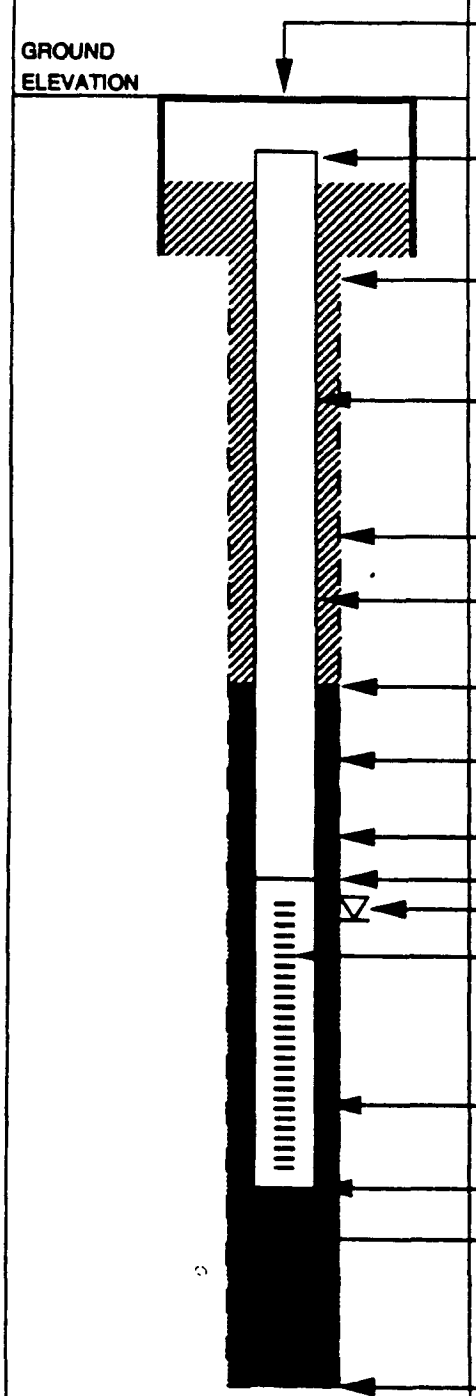
| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 1" Asphalt over Sand & gravel base, yellowish |
| | | 45 | | | | Solid casing | Concrete | X | | | brown 10YR (5/4) to greenish gray |
| | | 22 | | | | | | X | 1 | GM | SGY (5/1) below 1.5' + saturated |
| | | 23 | | | | | Bent onite | | | | gravels to 3" ℄. |
| | | | | | | | | | 2 | | |
| | | 14 | | | | | | X | | | |
| | | 8 | | | | | | X | 3 | | |
| | | 5 | | | | | | | | CL | Silty Clay (CL) very moist, soft, |
| | | 1 | | | | | | | 4 | | greenish gray SGY (5/1) Trace sand & |
| | | 1 | | | | | | X | | | gravel, rootlets common. |
| | | 2 | | | | | | X | 5 | | Silty Clay, very moist, soft, dark |
| | | | | | | | | | | | greenish gray SGY (4/1) and |
| | | | | | | | | | 6 | | dark gray N4/ mottled, organic |
| | | | | | | | | | | | matter common. |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | | | Silty Clay with organic matter, |
| | | 1 | | | | 2" sch 40 PVC factory slot 0.010 | #2/12 monterey sand | | 9 | | very moist to saturated, soft, greenish |
| | | 1 | | | | | | | | | gray SGY (5/1) |
| | | 1 | | | | | | | 10 | | |
| | | 1 | | | | | | | | | |
| | | | | | | | | | 11 | | TD = 11' |
| | | | | | | | | | | | 2' solid + 9' sloted casing |
| | | | | | | | | | 12 | | |

BORING NO. M07A-08

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT Alameda CTO-0280 | LOCATION Site 7A | DRILLER Woodward | |
| PROJECT NO. 2738.1405 | BORING M07A-08 | DRILLING METHOD HSA | |
| ELEVATION | DATE 11-20-94 | DEVELOPMENT METHOD Surge/bail/Pump | |
| FIELD GEOLOGIST WPL | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 1.5'

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2'

ELEVATION / DEPTH TOP OF SCREEN: 2.5'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH 0.010 factory slot

I.D. OF SCREEN 2"

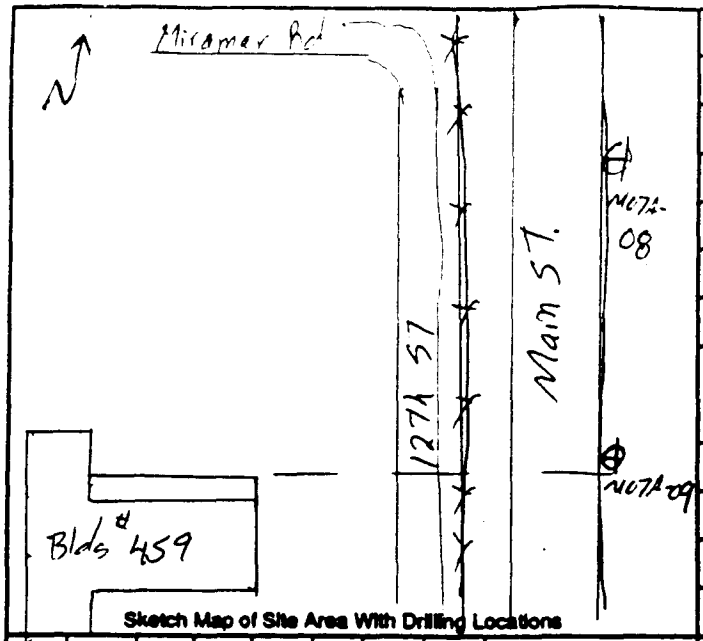
TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 11'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 11'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 11'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MC7A-09 Sheet 1 of 1 |
| Project: | NAS Alameda CTO-0280 |
| Job # | 2738.1405 Site: 7.4 |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | HSA Mobile B57 |
| Drillers Name: | Erick Forrstrom |
| Borehole Diam./Drill Bit Type | 8" Total Depth: 11 Ref. Elev. |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 1450 Date: 11-20-94 |
| Completion Time: | 1525 Date: 11-20-94 |
| Backfille Time: | 1610 -Kristy Sct Date: 11-20-94 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 2" Asphalt over sand + gravel base |
| | | 32 | | | | Sand | concrete + rapid set | X | | | fill - Silty Gravel with Sand (GM) |
| | | 26 | | | | | | X | 1 | GM | very moist to saturated below 2.5' |
| | | 35 | | | | | bent onite | | | | (Same level as standing water in drain ditch. |
| | | | | | | | | | 2 | | Gravels to 3"Ø. |
| | | 3 | | | | | | X | Pushed | | |
| | | 2 | | | | | | X | Front heavy rain | 3 | CL |
| | | 2 | | | | | | | | | Silty Clay (CL), very moist, soft |
| | | | | | | | | | | | to med. stiff, mottled, greenish |
| | | | | | | | | | 4 | | gray SGY (5/1) and dark gray N/4 |
| | | | | | | | | | 5 | | |
| | | 1 | | | | | | X | | | Silty Clay (CL) moist to very moist, very |
| | | 1 | | | | | | X | | | soft, Gray SY (5/1), organic matter |
| | | 1 | | | | | | X | dup | 6 | common. |
| | | | | | | | | X | | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | | | Silty Clay (CL) very moist, very |
| | | 1 | | | | | | | | | soft, Gray SY (5/1) to greenish |
| | | 1 | | | | | | | 10 | | gray SGY (5/1), organic matter |
| | | 1 | | | | | | | 1525 | | common. |
| | | | | | | | | | 11 | | |
| | | | | | | | | | | | TD = 11' |
| | | | | | | | | | 12 | | |

Casing Type & Size: 2" Sch 40 PVC #01 factory slot

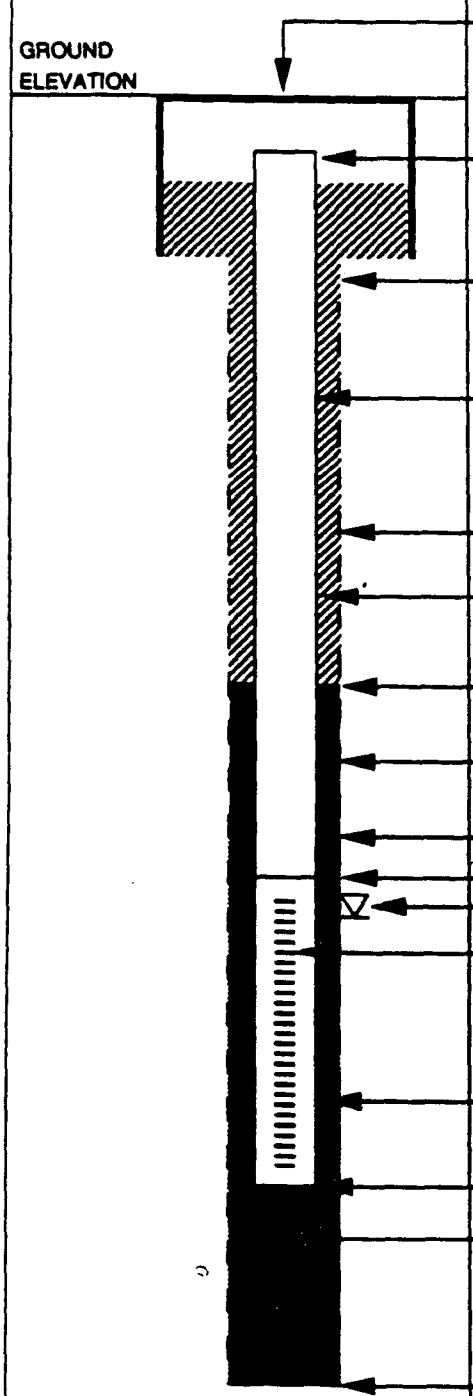
Annulus Filler: 2/12 Monterey Sand

Depth: Sample Recovery; Feet; Graphics

BORING NO. M07A-09

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT Alameda CTC-0280 | LOCATION Site 7.4 | DRILLER Woodward | |
| PROJECT NO. 2738.1405 | BORING M07A-09 | DRILLING METHOD HSA | |
| ELEVATION | DATE 11-20-94 | DEVELOPMENT METHOD Surge ball Pump | |
| FIELD GEOLOGIST WPW | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 1.5

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2'

ELEVATION / DEPTH TOP OF SCREEN: 2.3'

FIRST ENCOUNTERED SATURATED ZONE 2.3'

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH 0.010 factory slot

I.D. OF SCREEN 2"

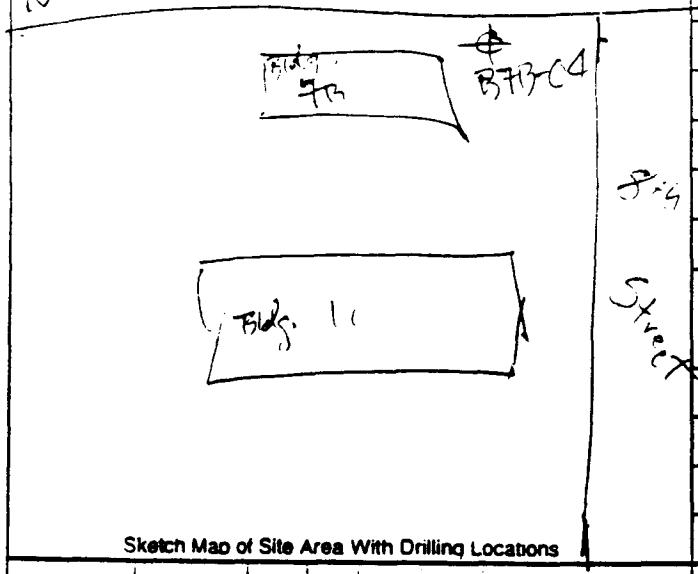
TYPE OF SAND PACK: #2/12 monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 11'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 11'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 11'



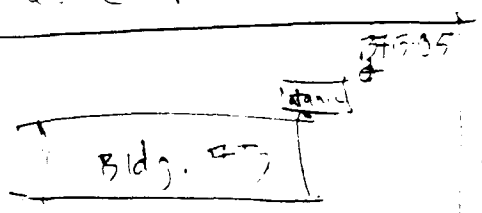

Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # [illegible] MW# | Sheet 1 of |
| Project: Alameda NAS CTO-0280 | |
| Job # 2738.1404 | Site: 7B |
| Logged By: JEV | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forstrom | |
| Borehole Diam./Drill Bit Type: 8½" | Total Depth: 6' |
| | Ref. Elev: |
| Hammer Wt: 140 lb. | Drop: |
| Start Time: 1600 | Date: 8/16/94 |
| Completion Time: 1620 | Date: 8/16/94 |
| Backfill Time: 1620 | Date: 8/16/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 8-16-94 | | | |
| Date | 1612 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C | | 26 | | | | | Neat Cement Grout | | | | SAND (SP) w/ minor silt, lt br, ~~dry~~ JV dense, dry, fine, med |
| | | 17 | | | | | | | 1600 | 1 | |
| | | 20 | | | | | | | | | |
| | | 22 | | | | | | | | 2 | |
| | | 7 | | | | | | | | | As above w/ minor roots |
| C | | 13 | | | | | | | 1605 | 3 | and shells. Also v sl mst |
| | | 12 | | | | | | | | | |
| | | 14 | | | | | | | geo tech | 4 | |
| | | 3 | 3 | | | | | | | | As above, except some clay |
| | | 6 | 5 | | | | | | | | |
| C | | 8 | 5 | | | | | | 1612 + Duplicate (1615) | 5 | saturated @ 5' |
| | | 8 | 6 | | | | | | | 6 | BOB = 6' |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

Atlantic Ave

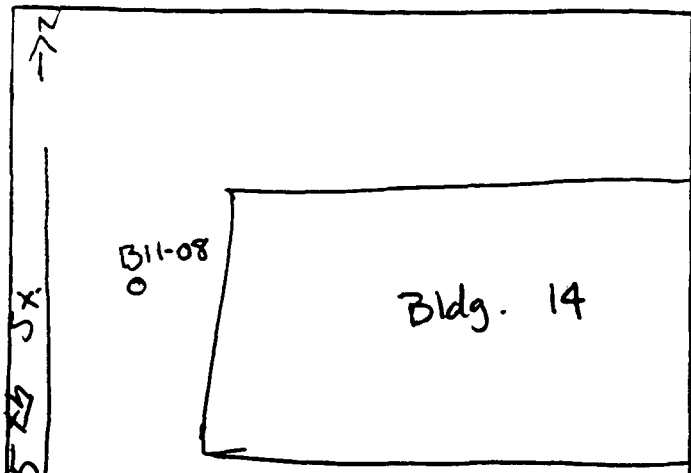



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# |
| Sheet | of |
| Project: | CTO-0280 |
| Job # | Site: 7B |
| Logged By: | Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8½" Total Depth 6' Ref. Elev |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 1625 Date: 8/16/94 |
| Completion Time: | 1635 Date: 8/16/94 |
| Backfill Time: | 1635 Date: 8/16/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | — | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1635 | | | |
| Date | 8-16-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 10 | | | | | Neat Cement Grout | | | | SAND (SP), lt br, dense, dry, fine, med K. |
| | | 12 | | | | | | | 1630 | 1 | |
| | | 12 | | | | | | | | | |
| | | 17 | | | | | | | | 2 | |
| | | 10 | | | | | | | | | As above, except dk. br and w/ some pebbles + roots. |
| 2 | | 9 | | | | | | | 1632 | 3 | |
| | | 7 | | | | | | | | | |
| | | 12 | | | | | | | geo tech | 4 | |
| | | 6 | | | | | | | | | As above. (w/ hydrocarbon odor @ ≈ 5' bgs). |
| | | 7 | | | | | | | | 5 | |
| 0 | | 6 | | | | | | | 1635 | | |
| | | 6 | | | | | | | | | 6' = BOB |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

Boring # B11-08 MW# — Sheet 1 of 1

Project: 7738.1404 CTO-0280

Job # Alameda Site: 7B/11

Logged By: JEV Proj. Eng: SMA Edited By:

Drilling Contractor: Woodward Drilling

Drill Rig Type/Method: HSA

Drillers Name: Eric Forstrom.

Borehole Diam./Drill Bit Type: 8½" Total Depth: 6'

Hammer Wt: 140 lb. Drop: 30"

Start Time: 0900 Date: 8/16/94

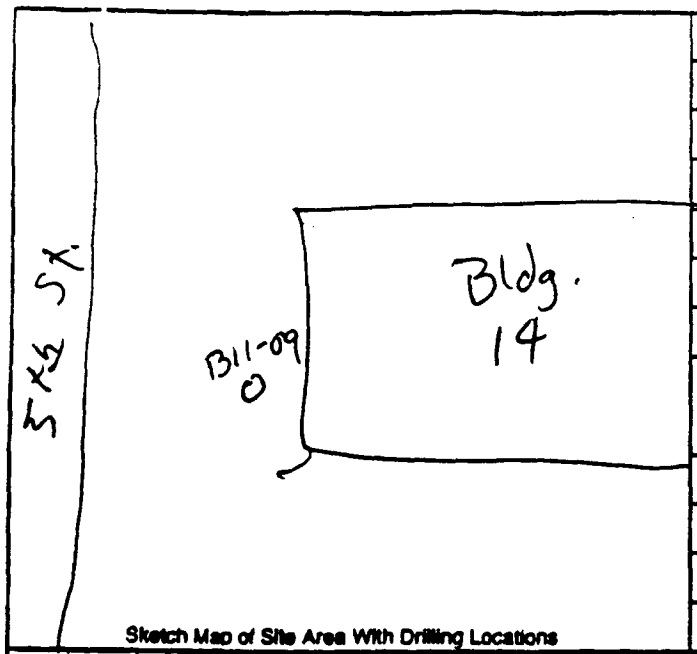
Completion Time: ~~0900~~ 0910 Date: 8/16/94

Backfill Time: 0910 Date: 8/16/94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 0905 | | | |
| Date | 8-16-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 4 | | | | | | | | | |
| | | 6 | | | | | | 13.5 | | 0900 | SAND (SP) lt brown, fine gr, v sl mst, |
| | | 4 | | | | | | | | 1 | |
| | | 9 | | | | | | 15 | | | |
| | | | | | | | | | | 2 | |
| 0 | | 4 | | | | | | | | 0902 | As above. |
| | | 6 | | | | | | | | 3 | |
| | | 16 | | | | | | | | | |
| | | 17 | | | | | | | geotech | 4 | |
| 0 | | 4 | | | | | | | | 0905 | As above w/ some silt on bottom. |
| | | 8 | | | | | | | | 5 | |
| | | 8 | | | | | | | | | Wet at ≈ 5' bgs. |
| | | 7 | | | | | | | | 6 | BOB = 6' |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

Annulus Filler: Cement 6 inch; Neat Cement

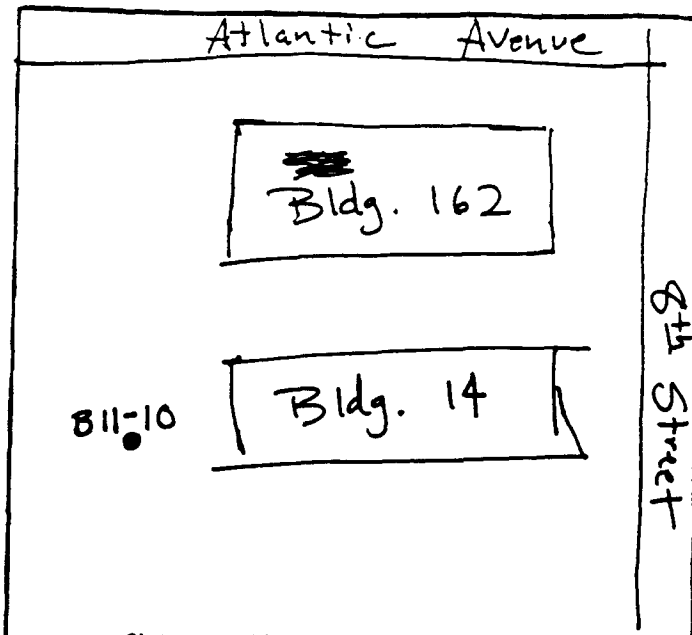



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B11-09 MW# | Sheet 1 of 1 |
| Project: Alameda NAS CTO-0280 | |
| Job # 2738.1404 | Site: 73/11 |
| Logged By: JEV | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward Drilling | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forstrom | |
| Borehole Diam./Drill Bit Type: 8½" | Total Depth: / Bot. Elev. |
| Hammer Wt: | Drop: |
| Start Time: 0915 | Date: 8/16/94 |
| Completion Time: 0930 | Date: 8/16/94 |
| Backfill Time: 0930 | Date: 8/16/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 0925 | | | |
| Date | 8-16-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 10 | | | | | Neat Cement Grout | | | | Gravelly SAND (SW), lt brown |
| | | 6 | | | | | | | | 0915 | dense, fine-med gr, med K. |
| | | 3 | | | | | | | | 1 | |
| | | 7 | | | | | | | | | |
| | | 4 | | | | | | | | 2 | As above |
| 0 | | 6 | | | | | | | | 0920 | |
| | | 6 | | | | | | | | 3 | |
| | | 7 | | | | | | | | | SAND (SP), dk br, sl mst, dense. |
| | | 5 | 4 | | | | | | | 900' fed 4 | As above w/ minor pebbles |
| | | 6 | 5 | | | | | | | | (moist) |
| 0 | | 7 | 5 | | | | | | | 5 0925 | Wet @ 5' |
| | | 8 | 3 | | | | | | | 0930 | |
| | | | | | | | | | | 6 | BOB = 6' |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

Boring # B11-10 MW# Sheet 1 of 1

Project: Alameda NAS CTO-0280

Job # 2738.1404 Site: 11

Logged By: DFK Proj. Eng: SMH Edited By:

Drilling Contractor: Woodward

Drill Rig Type/Method: HSA Mobile 57

Drillers Name: Erik Forsston

Borehole Diam./Drill Bit Type: 3.5" auger — 5'

Hammer Wt: 140lb Drop: 30"

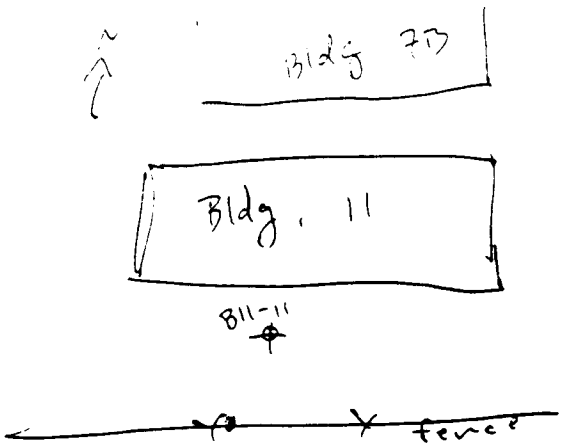
Start Time: 1425 Date: 8-12-99

Completion Time: 1450 Date: 8-12-99

Backfill Time: ~~1300~~ 1500 Date: ~~DF~~ 8-12-99

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.5 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1445 | | | |
| Date | 8-12-99 | | | |

| PID/OVA (ppm) | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | | 11 | ↓ | | | | | X | 1470 | | (01) Sand, SP, tan, loose, dry |
| | | 13 | ↓ | | | | | X | 280 | 5/1- | fine/med sand, trace silt |
| | | 11 | ↓ | | | | | | | 1 | |
| | | | | | | | | | | 2 | |
| 1.5 | | 5 | ↓ | ↓ | | | | | | | |
| | | 5 | ↓ | ↓ | | | Grout | X | 1440 | 3 | (02) Aa |
| | | 6 | ↓ | ↓ | | | | X | | | |
| | | 3 | ↓ | | | | Cement | | | 4 | |
| | | 4 | ↓ | | | | | X | 1 | | (03) Aa, Saturated at 4.75' |
| 0.5 | | 2 | ↓ | | | | Neat | X | 1445 | 5 | |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

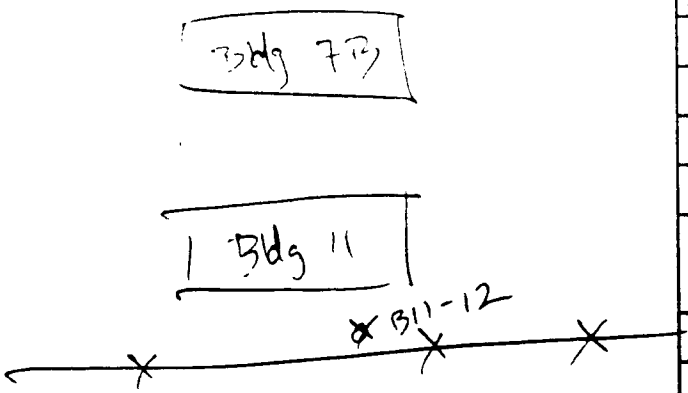



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | B11-01 MW# |
| Sheet | 1 of 1 |
| Project: | Alameda NAS CTO-0280 |
| Job # | 7738.1404 |
| Site: | 11 |
| Logged By: | JEV |
| Prot. Eng | SMH |
| Edited By: | |
| Drilling Contractor: | Woodward. |
| Drill Rig Type/Method: | HSA |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8½" |
| Total Depth | 6' |
| Ref. Elev. | |
| Hammer Wt: | 140 |
| Drop: | 30" |
| Start Time: | 1000 |
| Date: | 8/16/94 |
| Completion Time: | 1012 |
| Date: | 8/16/94 |
| Backfill Time: | 1012 |
| Date: | 8/16/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5.5' | | | |
| Time | 1010 | | | |
| Date | 8-16-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 18 | | | | | Neat Cement Grout | | | | gravelly SAND (SW), rust red/brown, dense, dry, fine-med gr, med K. |
| | | 25 | | | | | | | 1000 | 1 | |
| | | 19 | | | | | | | | | |
| | | 46 | | | | | | | | 2 | |
| 0 | | 17 | | | | | | | 1005 | | SAND (SP) w/ minor pebbles, lt brown, dense, dry, fine gr. |
| | | 31 | | | | | | | | 3 | |
| | | 33 | | | | | | | | | |
| | | 30 | | | | | | | | 4 | |
| | | 5 | | | | | | | | | As above |
| | | 9 | | | | | | | | 5 | |
| 0 | | 13 | | | | | | | 1010 | | |
| | | 14 | | | | | | | | 6 | As above, but wet. |
| | | | | | | | | | | | BOB = 6' |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

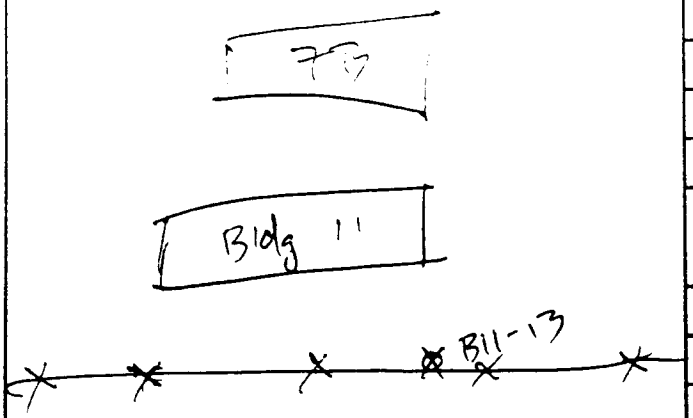



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B11-12 MW# | Sheet 1 of 1 |
| Project: Alameda NAS CTO-0280 | |
| Job # 2738.1409 | Site: 11 |
| Logged By: JEL | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forstrom | |
| Borehole Diam./Drill Bit Type: 8½" | Total Depth: 6' |
| | Ref. Elev: |
| Hammer Wt: 140 lb. | Drop: 30" |
| Start Time: 1045 | Date: 8/16/94 |
| Completion Time: 1100 | Date: 8/16/94 |
| Backfill Time: 1100 | Date: 8/16/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1100 | | | |
| Date | 8-16-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 20 | | | | | Neat Cement Grout | | | | gravelly SAND (SW), rust red brwn, |
| | | 15 | | | | | | | 1050 | 1 | dense, dry, fine-med gr, med K |
| | | 11 | | | | | | | | | |
| | | 22 | | | | | | | | 2 | |
| | | 5 | | | | | | | | | As Above |
| 11.0 | | 5 | | | | | | | 1055 | 3 | |
| | | 12 | | | | | | | | | |
| | | 11 | | | | | | | | 4 | |
| | | 4 | | | | | | | geo-tech | | ~~[illegible]~~ gr SAND (SP), lt br, |
| | | 6 | | | | | | | | | dense, ~~[illegible]~~ sl mst, fine-gr, |
| 0 | | 6 | | | | | | | 1100 | 5 | Wet @ 5' bgs |
| | | 5 | | | | | | | | 6 | BOTS = 6' |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

Boring # B11-13 MW# | Sheet 1 of 1

Project: Alameda NAS CTO-0280

Job # 2738.1404 Site: 11

Logged By: JEV Proj. Eng: SMH Edited By:

Drilling Contractor: Woodward

Drill Rig Type/Method: HSA

Drillers Name: Eric Forstrom

Borehole Diam./Drill Bit Type: 8½" | Total Depth: 6' | Ref. Elev.

Hammer Wt: 140 lb. Drop: 30"

Start Time: 1105 Date: 8/16/94

Completion Time: 1120 Date: 8/16/94

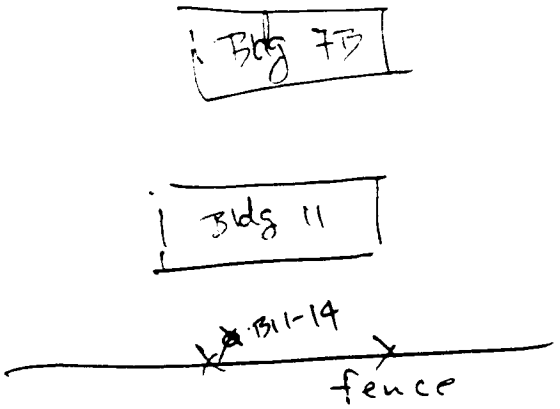
Backfill Time: 1120 Date: 8/16/94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1120 | | | |
| Date | 8-16-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 25 | | | | | | | | | gravelly SAND (SW) red brown + gray, dense, dry, med-coarse gr, med K. |
| | | 18 | | | | | | | 1112 | 1 | |
| | | 19 | | | | | | | | | |
| | | 20 | | | | | | | Dup of (1113) 2.5 | 2 | |
| | | 13 | | | | | | | | | As Above |
| 0 | | 19 | | | | | | | 1119 | 3 | |
| | | 21 | | | | | | | | | |
| | | 25 | | | | | | | 1120 | 4 | |
| | | 5 | | | | | | | geo. tech | | SAND (SP), lt br, dense, mst to wet (@ 5'), fine gr, high K |
| | | 9 | | | | | | | | 5 | |
| 0 | | 10 | | | | | | | | | |
| | | 7 | | | | | | | | 6 | BOB = 6' |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

Cement Grout

Neat Cement

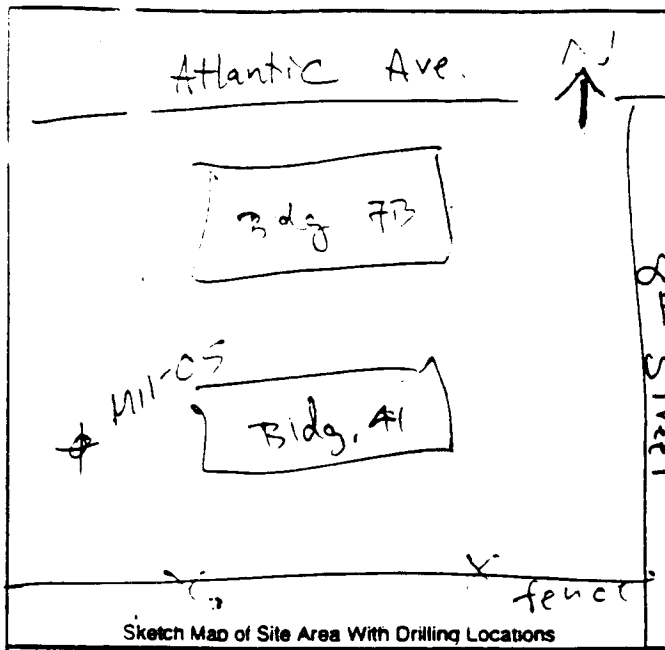



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B11-14 MW# | Sheet 1 of 1 |
| Project: Alameda NAS CTO-0280 | |
| Job # 2738.1407 | Site: 11 |
| Logged By: JEV | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward Drilling | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forstrom | |
| Borehole Diam./Drill Bit Type: 8 1/2" | Total Depth: 6' / Ref. Elev. |
| Hammer Wt: 140 lb. | Drop: 30" |
| Start Time: 1020 | Date: 8/16/94 |
| Completion Time: 1035 | Date: 8/16/94 |
| Backfill Time: 1035 | Date: 8/16/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1035 | | | |
| Date | 8-16-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 16 | | | | | Cement Grout | | | |
| | | 19 | | | | | | | 1025 | gravelly SAND (SW), red brown, |
| | | 23 | | | | | | | 1 | dense, dry, fine - med gr. |
| | | 30 | | | | | | | | |
| | | | | | | | | | 2 | |
| | | 6 | | | | | | | | SAND (SP) lt br, dense, v sl mst, |
| 1.9 | | 4 | | | | | | | 1030 3 | fine gr, high K. |
| | | 19 | | | | | | | | |
| | | 24 | | | | | | | | |
| | | 5 | | | | | Neat Cement | geo tech | 4 | As Above. |
| | | 9 | | | | | | | | |
| 0 | | 10 | | | | | | | 5 1035 | wet @ 5' |
| | | 8 | | | | | | | | |
| | | | | | | | | | 6 | BOB @ 6' |
| | | | | | | | | | 7 | |
| | | | | | | | | | 8 | |
| | | | | | | | | | 9 | |
| | | | | | | | | | 10 | |
| | | | | | | | | | 11 | |
| | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M11-05 Sheet 1 of 2 |
| Project: | Alameda NAS CTO-0280 |
| Job # | 2738 1404 Site: 11 |
| Logged By: | TEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8½" Total Depth 14' Ref. Elev |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 1410 Date: 8/16/94 |
| Completion Time: | 1530 Date: 8/16/94 |
| Backfill Time: | 1530 Date: 8/16/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 14' | | | |
| Casing Depth (ft.) | 14' | | | |
| Water Depth (ft.) | 6' | | | |
| Time | 1430 | | | |
| Date | 8-16-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 13 | | | | 3" Dia, Sch 40 Blank PVC | Grout | | | | | gravelly SAND (SW), lt. brown, |
| | | 10 | | | | | | | | 1410 | | dense, dry, fine to med gr, |
| | | 10 | | | | | | | | 1 | | med K. |
| | | 16 | | | | | Bent. | | | | | |
| | | 6 | | | | | | | | 2 | | SAND (SP), dk. brown, dense, dry, |
| | | 9 | | | | | | | | 1415 | | fine grained, ~~med~~ high K. |
| | | 10 | | | | | | | | 3 | SP | |
| | | 11 | | | | | | | | | | |
| | | 6 | | | | | | | | 4 | | As Above (except wet @ 5.5') |
| | | 6 | | | | | | | | | | |
| | | 9 | | | | | | | | 5 1420 | | |
| | | 5 | | | | | | | | | | |
| | | | | | | | | | | 6 | | As above except saturated |
| | | | | | | 3" Dia, Sch 40, 0.010 Slotted PVC Screen | Sand | | | | | |
| | | | | | | | 2/12 | | | 7 | | As above, except gravelly and grayish (7-7.5 = clay). |
| | | | | | | | | | | 8 | | ~~8-8.5 = clay~~ JV |
| | | | | | | | Monterey | | | 9 | | |
| | | | | | | | | | | | SM/SC | |
| | | 1 | | | | | | | | 10 | | silty, clayey SAND (SM/SC), |
| | | 1 | | | | | | | | | | gray to lt. brown, dense, |
| | | 4 | | | | | | | | 11 | | med gr, med K. |
| | | 8 | | | | | | | | | | |
| | | | | | | | | | | 12 | | |

| PID/OVA | Sample Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | SCREEN | | | | 12 | SM/4 | As Above. |
| | | | | | | | | | | 13 | | |
| | | | | | | | | | | 14 | | Bottom of Well @ 14' bgs. |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |
| | | | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

Boring # MW# MW-3E Sheet 2 of 2

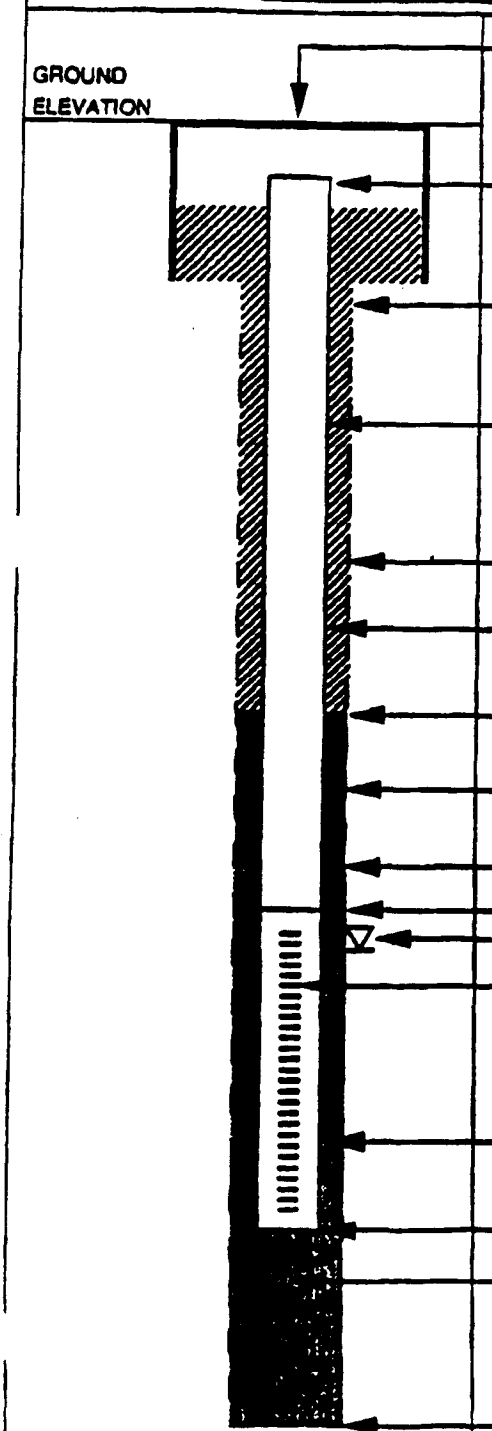
Project: Alameda NAS

Job # 2758.1404 Site: 11

BORING NO. M11-05

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT Alameda NAS | LOCATION Site 11 | DRILLER Woodward |
| PROJECT NO. 2738.1904 | BORING M11-05 | DRILLING METHOD Eric Forstrom HSA |
| ELEVATION – | DATE 8-16-94 | DEVELOPMENT METHOD Surge, Bail, Pump. |
| FIELD GEOLOGIST John Valett | | |




ELEVATION OF GROUND SURFACE: –

ELEVATION OF TOP OF WELL CASING: –

I.D. OF SURFACE CASING: ~~NA~~ 2"

TYPE OF SURFACE CASING: ~~NA~~ Blank 40 Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8 1/2"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 1.5'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 2.5'

ELEVATION / DEPTH TOP OF SCREEN: 4'

FIRST ENCOUNTERED SATURATED ZONE 6'

TYPE OF SCREEN: PVC Sch 40 Slotted.

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

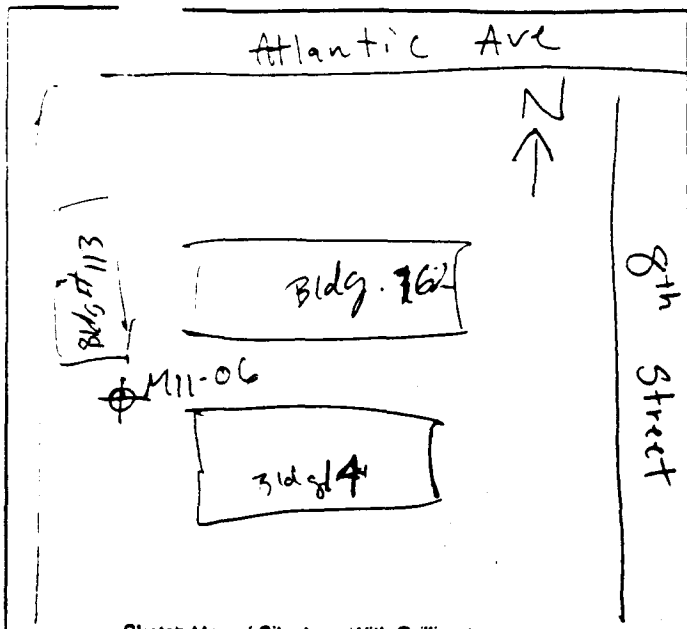
TYPE OF SAND PACK: 2/16 Monterey Sand.

ELEVATION / DEPTH BOTTOM OF SCREEN: 14'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 14'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 14'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # ~~[illegible]~~ MW# M11-06 | Sheet 1 of 2 |
| Project: Alameda NAS CTO-0280 | |
| Job # 2738.1409 | Site: 11 |
| Logged By: JEV | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forstrom | |
| Borehole Diam./Drill Bit Type: 8½" | Total Depth: 14' |
| | Ref. Elev: |
| Hammer Wt: 140 lb. | Drop: 30" |
| Start Time: 1230 | Date: 8/16/94 |
| Completion Time: 1330 | Date: 8/16/94 |
| Backfill Time: 1330 | Date: 8/16/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 14' | | | |
| Casing Depth (ft.) | 14' | | | |
| Water Depth (ft.) | 6' | | | |
| Time | 1300 | | | |
| Date | 8-16-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 17 | | | | | | | | | SAND (SP), lt br, dense, dry |
| | | 11 | | | | | | | 1230 | | fine-gr, high K. |
| | | 10 | | | | Sch 40 PVC | Bentonite Grout | | | 1 | |
| | | 29 | | | | | | | | | |
| | | 7 | | | | 3" DIA. BLANK | | | | 2 | As above, except sl mst |
| 0 | | 12 | | | | | | | 1235 | | and dk. brown |
| | | 15 | | | | | | | | 3 | |
| | | 18 | | | | | | | | | |
| | | 5 | | | | | | | geo tech | 4 | As above |
| | | 5 | | | | | | | | | |
| 0 | | 6 | | | | Screen | | | 1240 | 5 | Moist |
| | | 8 | | | | | | | | | ~~[illegible]~~ @ ≈ 5.5'-6' |
| | | | | | | | | | | 6 | |
| | | | | | | PVC | SAND | | | | |
| | | | | | | | | | | 7 | Sandy clay/clayey SAND (≈ 1' layer) |
| | | | | | | Slotted | 3/16 | | | | |
| | | | | | | | | | | 8 | Sand (as above 7') |
| | | | | | | 3" Dia, Sch 40, 0.010 | MONTEREY | | | | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | 1300 | 10 | |
| | | 2 | | | | | | | geo tech | | As above w/ some clay |
| | | 4 | | | | | | | | | |
| | | 6 | | | | | | | | 11 | |
| | | 12 | | | | | | | | | |
| | | | | | | | | | | 12 | |

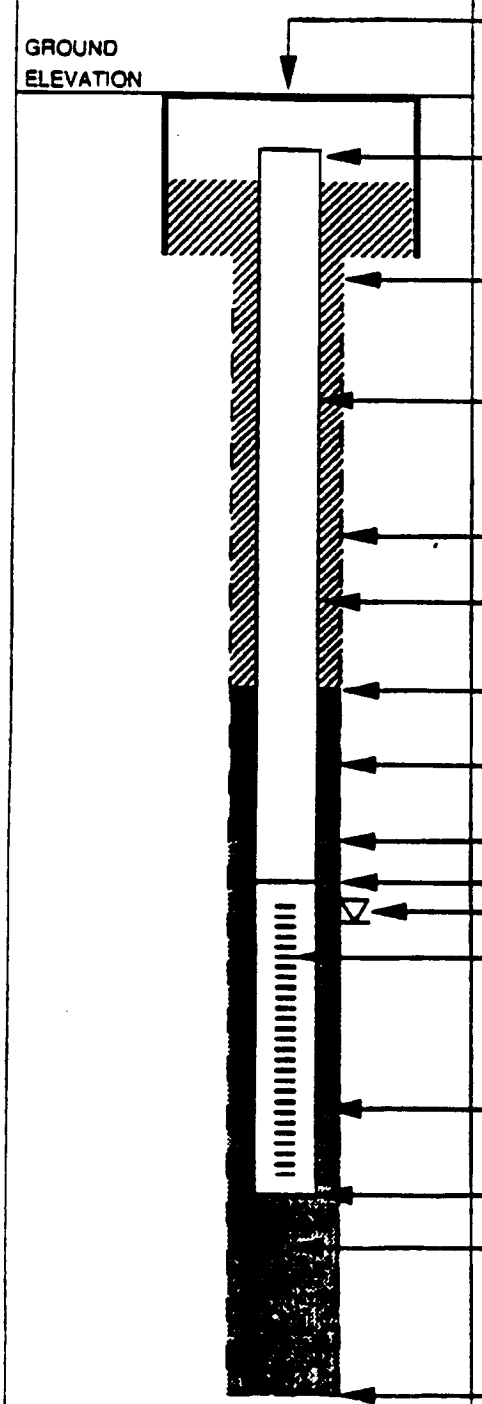
| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample Rec. | Analyses | Depth Feet | Boring # MW# M11-06 Sheet — of — |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: Alameda NAS |
| | | | | | | | | | | | Job # 2738.1404 Site: 11 |
| | | | | | | ← SCREEN | ← SAND | | | 12 | As Above (SAND) w/ some clay |
| | | | | | | | | | | 13 | |
| | | | | | | | | | | 14 | Bottom of Well = 14' |
| | | | | | | | | | | 5 | |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 0 | |
| | | | | | | | | | | 1 | |
| | | | | | | | | | | 2 | |
| | | | | | | | | | | 3 | |
| | | | | | | | | | | 4 | |
| | | | | | | | | | | 5 | |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 0 | |
| | | | | | | | | | | 1 | |
| | | | | | | | | | | 2 | |

MF

BORING NO. M11-06

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT Alameda NAS | LOCATION Site 11 | DRILLER Eric Forstrom | |
| PROJECT NO. 2738.1904 | BORING M11-06 | DRILLING METHOD Woodward. HSA | |
| ELEVATION — | DATE 8-16-94 | DEVELOPMENT METHOD Surge, Bail, Pump | |
| FIELD GEOLOGIST John Valett | | | |




ELEVATION OF GROUND SURFACE: -

ELEVATION OF TOP OF WELL CASING: —

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 40 Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8½"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 1.5'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 2.5'

ELEVATION / DEPTH TOP OF SCREEN: 4'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: PVC Sch 40 Slotted

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

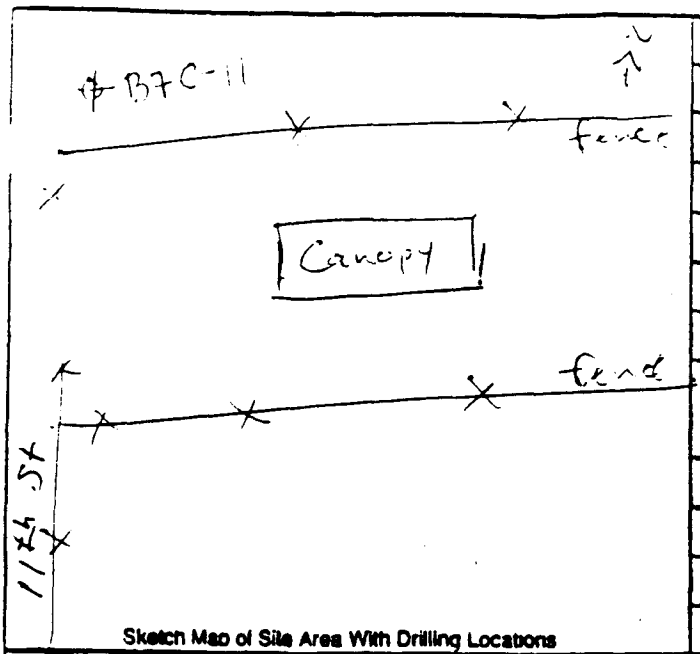
TYPE OF SAND PACK: 2/16 Monterey Sand.

ELEVATION / DEPTH BOTTOM OF SCREEN: 14' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 14'

TYPE OF BACKFILL BELOW OBSERVATION WELL: ~~Sand~~ N/A

ELEVATION / DEPTH OF HOLE: 14' bgs.



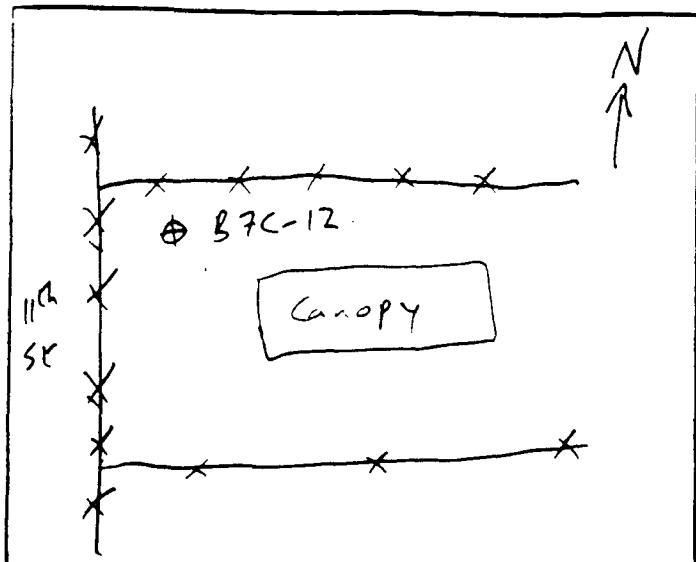

Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B7C-11 MW# | Sheet 1 of 1 |
| Project: Alameda NAS CTO-0280 | |
| Job # 2735 1404 | Site: 7C |
| Logged By: TEV | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forstrom | |
| Borehole Diam./Drill Bit Type 8.25" | 6" |
| Hammer Wt: 140 lb | Drop: 30" |
| Start Time: 1505 | Date: 8-17-94 |
| Completion Time: 1512 | Date: 8-17-94 |
| Backfill Time: 1515 | Date: 8-17-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 5' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1515 | | | |
| Date | 8-17-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | | 18 | | | | | Neat Cement Grout | | | | SAND (SP) lt br, dense, v sl mst, fine-gr, mod lk |
| | | 10 | | | | | | | 1510 | 1 | |
| | | 13 | | | | | | | | | |
| | | 16 | | | | | | | | 2 | |
| 2.5 | | 3 | | | | | | | | | As above, except dk br + mst. |
| | | 4 | | | | | | | 1512 | 3 | |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | | | 4 | |
| | | 1 | | | | | | | 20' tech | | As above, except saturated @ 5' bgs. |
| 3.0 | | 1 | | | | | | | | 5 | |
| | | 1 | | | | | | | 1515 | | |
| | | 1 | | | | | | | | 6 | LBC 15 |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

B7C-12

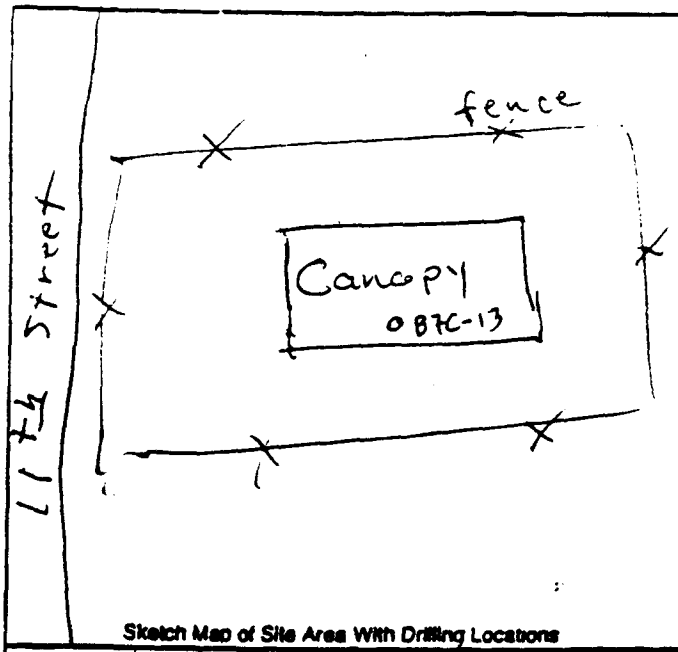



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B7C-12 MW# | Sheet 1 of 1 |
| Project: Alameda NAS CTO-0280 | |
| Job # 2738.1404 Site: 7C | |
| Logged By: JEL Proj. Eng: SMH Edited By: | |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forstrom | |
| Borehole Diam./Drill Bit Type 8.25" | Total Depth 6' |
| | Refusal |
| Hammer Wt: 140 lb. Drop: | |
| Start Time: 1335 Date: ~~8/16/94~~ 8/17/94 | |
| Completion Time: 1355 Date: ~~8/16/94~~ 8/17/94 | |
| Backfill Time: 1355 Date: ~~8/16/94~~ 8/17/94 | |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1405 | | | |
| Date | 8-17-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 110 | | 6 | | | | | Neat Cement Grout | | | | silty SAND (SM) w/ minor clay, |
| | | 9 | | | | | | | 1355 | 1 | grey, dense, sl mst, fine gr, |
| | | 12 | | | | | | | | | med K; slight hc odor |
| | | 15 | | | | | | | | 2 | |
| | | 7 | | | | | | | | | As above, but no clay. |
| 245 | | 8 | | | | | | | 1400 | 3 | moderate hc odor |
| | | 8 | | | | | | | | | |
| | | 3 | | | | | | | | 4 | |
| | | 2 | | | | | | | geo-tech | | As above, except saturated @ 5' |
| | | 3 | | | | | | | | | moderate hc odor |
| 315 | | 4 | | | | | | | 1405 | 5 | |
| | | 2 | | | | | | | | | |
| | | | | | | | | | | 6 | BOB |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

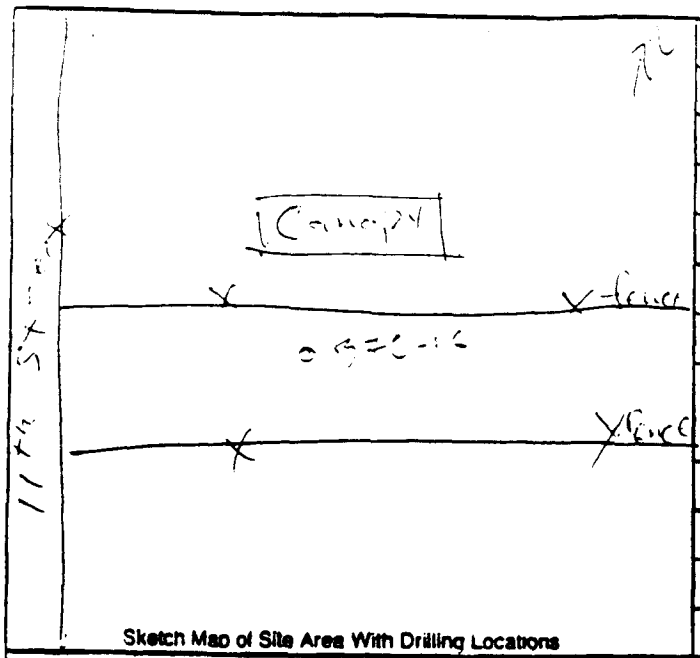



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B7C-13 MW# | Sheet 1 of 1 |
| Project: NAS ALAMEDA CTO 280 | |
| Job # 2738.1404 | Site: 7C |
| Logged By: DEK | Proj. Eng: SMH Edited By: |
| Drilling Contractor: N/A | |
| Drill Rig Type/Method: HAND AUGER | |
| Drillers Name: N/A | |
| Borehole Diam./Drill Bit Type: 4" HAND AUGER | Total Depth: 6' |
| Hammer Wt: NA | Drop: |
| Start Time: 10:55 | Date: 8-23-94 |
| Completion Time: 1315 | Date: 8-23-94 |
| Backfill Time: 1330 | Date: 8-23-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.75' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1250 | | | |
| Date | 8-23-94 | | | |

| PID/OVA ppm | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CONCRETE | | | | | | | | | Concrete to 6" |
| 12 | | | 6" | 6" | | | Grout | X | 1100 280-S7C-07 | 1 | | Sandy clay, black, loose, moist, med grained sand |
| | | | 6" | 6" | | | | X | 1145 280-S7C-08 | | | Return to trailer for supplies (1100-1145) |
| 20 | | | 6" | 6" | | | | X | 280-S7C-09 | 2 | | |
| 2 | | | 6" | 6" | | | | X | 280-S7C-03 | | | 2½ FOOT SAMPLE & DUPLICATE (1½-3½') |
| 5 | | | 6" | 6" | | | Cement | X | 280-S7C-04 | | | Aa - w/ strong hydrocarbon odor |
| | | | 6" | 6" | | | | X | 1210 280-S7C-02 | 3 | Sp | SP, sand, grayish green, loose, moist, fine |
| | | | 6" | 4" | | | | X | GEOTECH | | SP | sand ≈ 20%, mel sand ≈ 80%, no odor |
| 700 | | | 6" | 6" | | | | X | GEOTECH | 4 | SP | Aa odor at 4', hydrocarbon |
| | | | 6" | 6" | | | | X | GEOTECH | | SP | Aa Wet at 4.75' bgs |
| | | | 6" | 6" | | | Water | X | 1200 280-S7C-01 | 5 | SP | |
| | | | 6" | 6" | | | | X | | | CL | CL, clay, black, moist, soft, strong hydrocarbon odor. |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 10 | | |
| | | | | | | | | | | 11 | | |
| | | | | | | | | | | 12 | | |

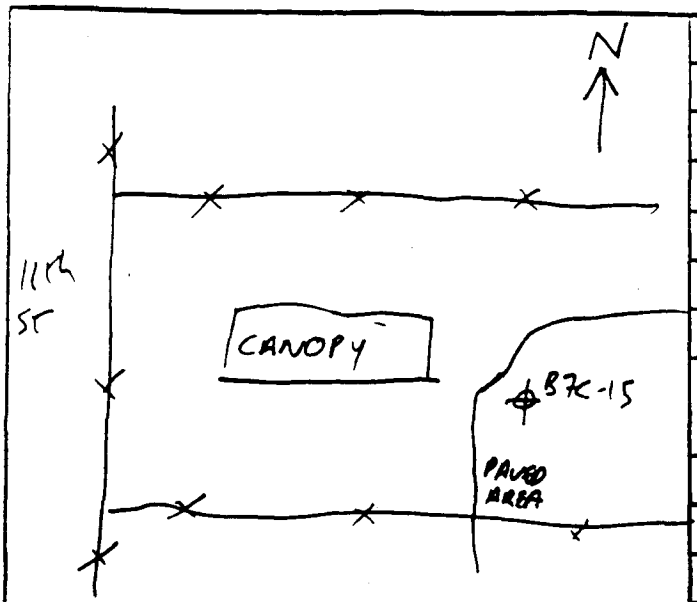



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B7C-14 MW# | Sheet 1 of 1 |
| Project: Alameda NAS CTO-0280 | |
| Job # 2138.1909 | Site: FC |
| Logged By: JEL | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forstrom | |
| Borehole Diam./Drill Bit Type: 8.25 | Total Depth: 6' |
| Hammer Wt: 140 lb. | Drop: 30' |
| Start Time: 1435 | Date: 8-17-94 |
| Completion Time: 1455 | Date: 8-17-94 |
| Backfill Time: 1500 | Date: 8-17-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1455 | | | |
| Date | 8-17-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 11 | | | | | Neat Cement Grout | | | | | gravelly SAND w/ minor silt |
| | | 21 | | | | | | | 1445 | 1 | | (SW), lt br, dense, dry, |
| | | 25 | | | | | | | | | | fine to med-gr, med K. |
| | | 23 | | | | | | | | 2 | 1.5 | SAND (SP), lt br, v sl mst, fg, hgh |
| | | 8 | | | | | | | | | | As above w/ minor pebbles, |
| 77 | | 15 | | | | | | | 1450 | 3 | | and some olk br color. |
| | | 12 | | | | | | | | | | |
| | | 12 | | | | | | | gec-tich | 4 | | |
| | | | | | | | | | | | | As Above w/ strong hc odor |
| 150 | | 12 | | | | | | | 1455 | 5 | | Sat @ 5' |
| | | | | | | | | | | 6 | | 6' = BOB |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 10 | | |
| | | | | | | | | | | 11 | | |
| | | | | | | | | | | 12 | | |

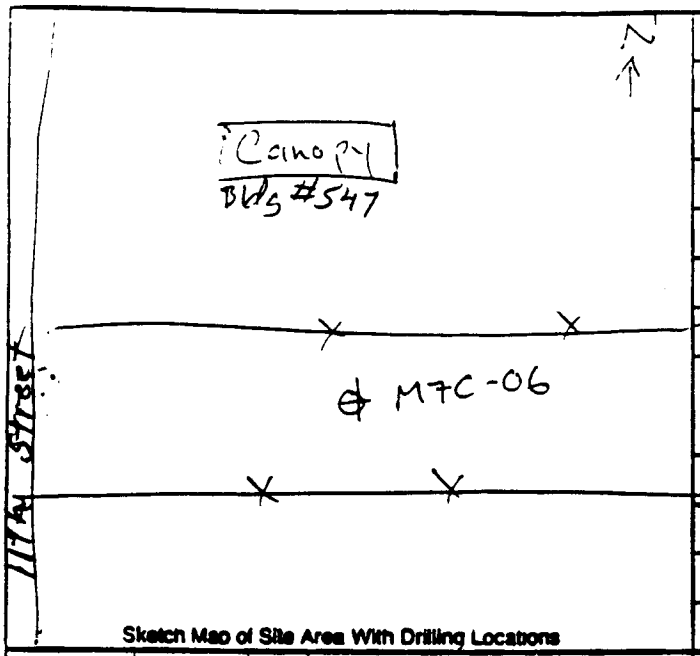



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B7C-15 MW# | Sheet 1 of 1 |
| Project: Alameda NAS CTO-0280 | |
| Job # 1438.1904 Site: +C | |
| Logged By: JEV Proj. Eng: SMH Edited By: | |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Eric Forstrom | |
| Borehole Diam./Drill Bit Type 8½" | 6' |
| Hammer Wt: 140 lb Drop: 30' | |
| Start Time: 1415 Date: 8-17-94 | |
| Completion Time: 1420 Date: 8-17-94 | |
| Backfill Time: 1425 Date: 8-17-94 | |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | — | | | |
| Water Depth (ft.) | 5.5 | | | |
| Time | 1420 | | | |
| Date | 8-17-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 7 | | | | | Neat Cement Grout | | | | ~dry SILT (ML), dk. br, |
| | | 9 | | | | | | | 1415 | | dense, dry, fine-gr, med K |
| | | 9 | | | | | | | | 1 | (w/ minor roots) |
| | | 15 | | | | | | | | | |
| | | 7 | | | | | | | | 2 | As above. |
| | | 10 | | | | | | | 1416 | | |
| | | 9 | | | | | | | | 3 | |
| | | 9 | | | | | | | geo- | | |
| | | 3 | | | | | | | tech | 4 | Silty SAND (SM), gray br, |
| | | 2 | | | | | | | | | dense, sl moist, med K. |
| | | 2 | | | | | | | 1420 | 5 | |
| | | 2 | | | | | | | | | Wet @ 5.5' bgs (clay). |
| | | | | | | | | | | 6 | BOB = 6' |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M7C-06 Sheet 1 of 1 |
| Project: | Alameda NAS CTO-0280 |
| Job # | 2738.1404 Site: 7C |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8½" 14' |
| Hammer Wt: | 140 lb. Drop: 30' |
| Start Time: | 1140 Date: 8-17-94 |
| Completion Time: | 1156 Date: 8-17-94 |
| Backfill Time: | 1200 Date: 8-17-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 14' | | | |
| Casing Depth (ft.) | 14" | | | |
| Water Depth (ft.) | 6' | | | |
| Time | 1230 | | | |
| Date | 8-17-94 | | | |

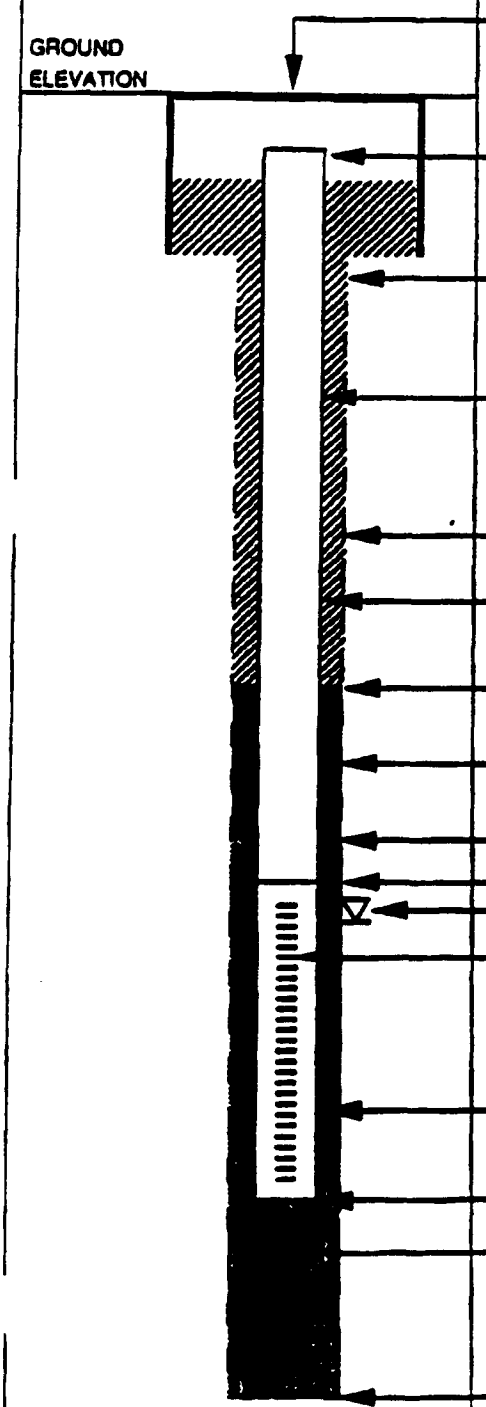
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. Analyses | Depth: Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.8 | | 27 | | | | 3" DIA SCH 40 BLANK PVC | Bent. | | | | silty SAND (SM), gray, dense, sl mst, fine, med lc (minor gravel) |
| | | 15 | | | | | | | 1150 | | |
| | | 18 | | | | | | | | 1 | |
| | | 17 | | | | | | | | | |
| | | 8 | | | | | | | | 2 | SM |
| 1.3 | | 9 | | | | | | | 1152 | | As Above |
| | | 9 | | | | | | | | 3 | |
| | | 11 | | | | | | | | | |
| | | 2 | | | | 3" DIA, SCH 40, 0.010 SLOTTED PVC | Monterey 3/8 SAND | | geo-tech | 4 | As Above |
| | | 2 | | | | | | | | | |
| 4.4 | | 4 | | | | | | | 1156 | 5 | |
| | | 5 | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | 2 | | | | | | | | | As above w/ some clay |
| | | 2 | | | | | | | geo-tech | 11 | |
| | | 3 | | | | | | | | | |
| | | 4 | | | | | | | | 12 | |
| | | | | | | 14 | | | 14 | | |

Bottom of Well = 14' bgs

BORING NO. M7C-06

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT Alameda NAS | LOCATION Site 7C | DRILLER Woodward |
| PROJECT NO. 2738.1404 | BORING M7C-06 | DRILLING Eric Forstrom |
| ELEVATION | DATE 8-17-94 | METHOD HSA |
| FIELD GEOLOGIST John Valett | | DEVELOPMENT METHOD Surge, Bail, Pump. |




ELEVATION OF GROUND SURFACE: –

ELEVATION OF TOP OF WELL CASING: –

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 40 Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8½"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 1.5'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 2.5'

ELEVATION / DEPTH TOP OF SCREEN: 4'

FIRST ENCOUNTERED SATURATED ZONE 6'

TYPE OF SCREEN: PVC Sch 40 Slotted

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

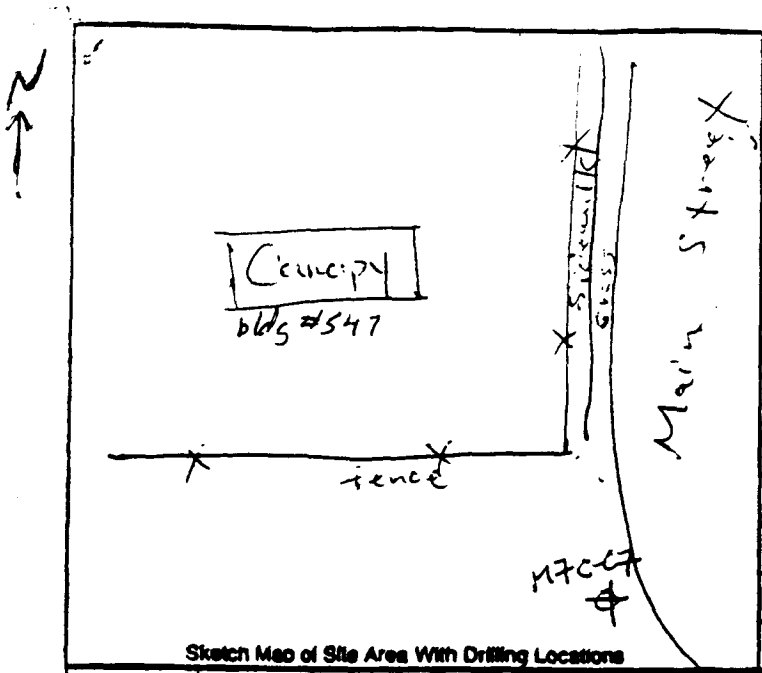
TYPE OF SAND PACK: 2/16 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 14'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 14'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A –

ELEVATION / DEPTH OF HOLE: 14'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M70-C7 Sheet 1 of 1 |
| Project: | Alameda NAS CTO-0280 |
| Job #: | 2738.1404 Site: 7C |
| Logged By: | JEL Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8.5" 13.5' |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 1000 Date: 8-18-94 |
| Completion Time: | 1030 Date: 8-18-94 |
| Backfill Time: | 1040 Date: 8-18-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 13.5 | | | |
| Casing Depth (ft.) | 13.5 | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1016 | | | |
| Date | 8-18-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C | | 36 | | | | | | | | | ROAD BASE |
| | | 21 | | | | | | | 1007 | | sandy GRAVEL (GW), dk. br, |
| | | 25 | | | | | | | | 1 | SAND (SP), lt br, dense, sl mst, |
| | | 17 | | | | | | | | | fine gr, med K. |
| C | | 7 | | | | | | | | 2 | gravelly SAND (SW), lt-dk br, |
| | | 11 | | | | | | | | | dense, v sl mst, med-gr, med K. |
| | | 3 | | | | | | | 1012 | 3 | saturated @ ≈ 5' |
| | | 3 | | | | | | | | | |
| | | 1 | | | | | | | geo-tech | 4 | SAND (SP) w/ minor clay, |
| | | 1 | | | | | | | | 5 | gray-br, dense, saturated, |
| O | | 1 | | | | | | | 1016 | | fine-gr, med K. |
| | | 4 | | | | | | | | | |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | 5 | | | | | | | | | As above |
| | | 17 | | | | | | | geo-tech | 11 | |
| | | 13 | | | | | | | | | |
| | | 21 | | | | | | | | 12 | |

Casing Type: Monterey 2/16 SAND
Annulus Filler: 2" DIA SCH 40, 0.010 SLOTTED PVC
BLANK PVC

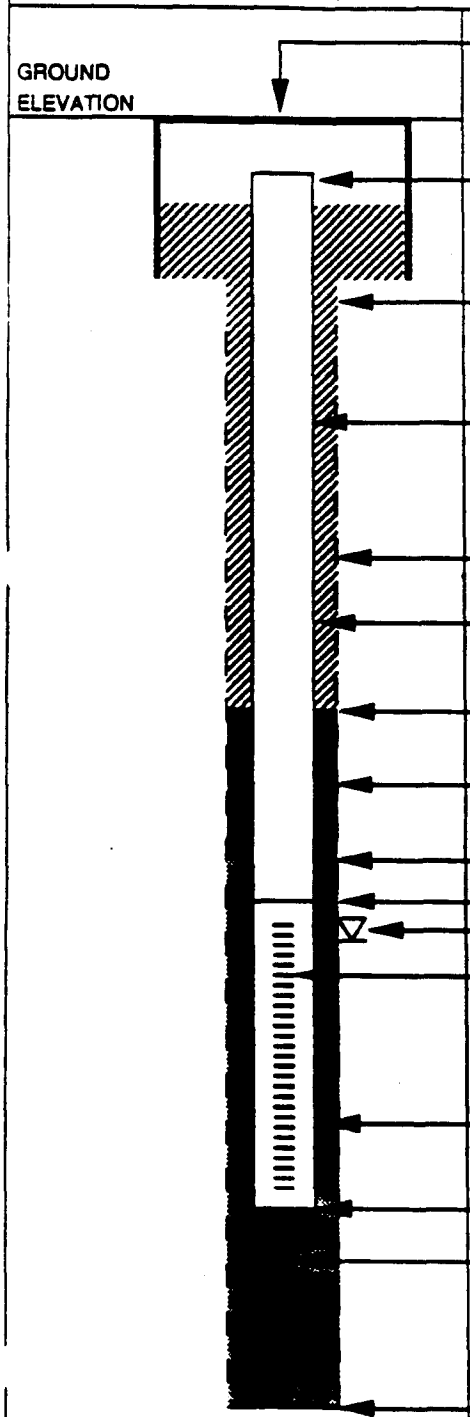
13.5'

13.5 Bottom of Well

BORING NO. M7C-07

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT Alameda NAS | LOCATION Site 7C | DRILLER [illegible] | |
| PROJECT NO. 2738.1404 | BORING M7C-07 | DRILLING METHOD HSA | |
| ELEVATION | DATE 8-18-94 | DEVELOPMENT METHOD | |
| FIELD GEOLOGIST John Valett | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 40 Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8 1/2"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 1.0'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 2.0'

ELEVATION / DEPTH TOP OF SCREEN: 3.5'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

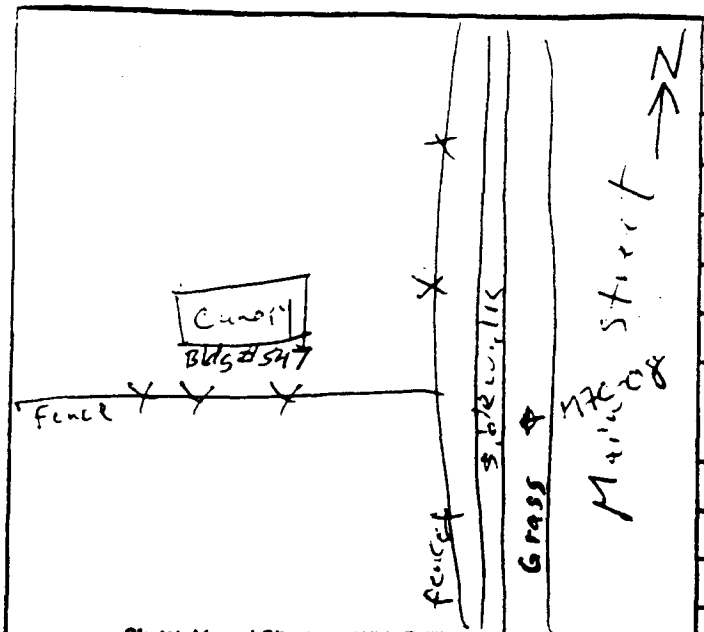
TYPE OF SAND PACK: 2/16 Monterey Sand. 2/12 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 13.5'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 13.5'

TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

ELEVATION / DEPTH OF HOLE: 13.5'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# MTC-C8 Sheet 1 of 1 |
| Project: | Alameda VA; CTO-0280 |
| Job # | 27-3?8.14?9 Site: 7C |
| Logged By: | JE Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward |
| Drill Rig Type/Method: | HSA Mobile B57 |
| Drillers Name: | Eric Faustrion |
| Borehole Diam./Drill Bit Type | 8 1/2" 13.5' |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 0845 Date: 8-18-94 |
| Completion Time: | 0920 Date: 8-18-94 |
| Backfill Time: | 0930 Date: 8-18-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 13.5' | | | |
| Casing Depth (ft.) | 13.5' | | | |
| Water Depth (ft.) | 5.5' | | | |
| Time | 0915 | | | |
| Date | 8-18-94 | | | |

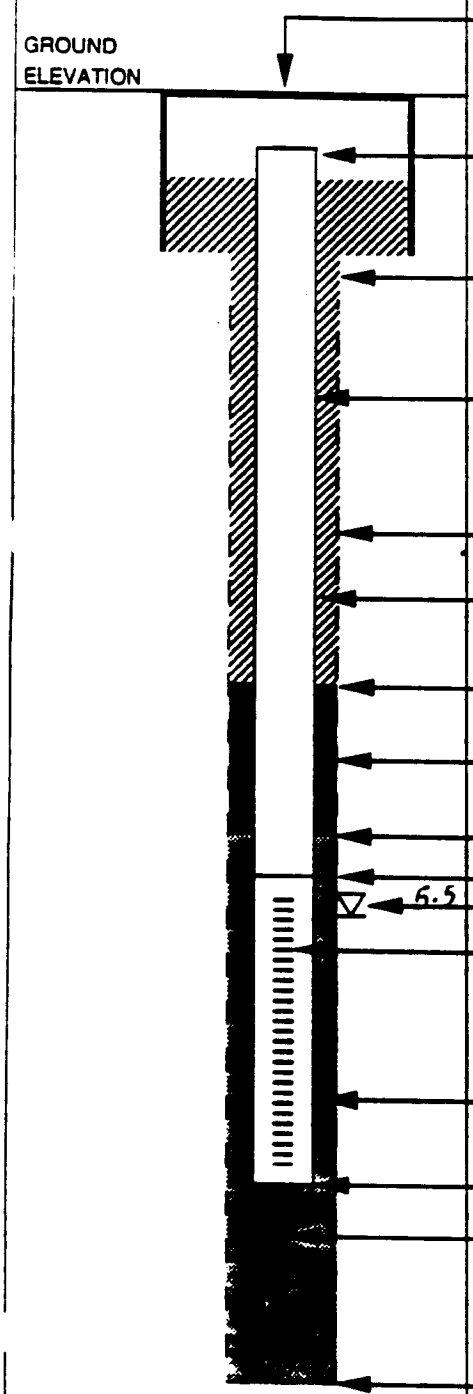
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 5 7 | | | | | Grout | 0845 | 1 | sandy silt (ML), gray, dense, dry, fine-gr, high K. |
| | | 10 13 | | | | BLANK PVC | Bent. | | 2 | SAND (SP), lt. brown, sl mst, dense, fine-gr, high K. |
| 0 | | 3 5 | | | | | | 0850 | 3 | As above |
| | | 3 3 | | | | | | | | |
| | | 2 2 | | | | | | (-8' tech) | 4 | Sandy CLAY (SC), gray, sl plastic, fine gr, low K. SAND (SP), lt to dk br, dense, fine-gr, med K. |
| 0 | | 3 1 | | | | SCREEN | SAND | 0900 (+Dup) 0905 | 5 | Saturated @ ≈ 5' |
| | | | | | | PVC | 2/12 | | 6 | |
| | | | | | | | | | 7 | |
| | | | | | | 3" Diam, Fitting, 0.010 SLOTTED | Monterey | | 8 | |
| | | | | | | | | | 9 | |
| | | | | | | | | | 10 | |
| | | 5 9 | | | | | | (-9' tech) | 11 | SAND (SP) w/ minor clay, gray & red-br, dense, fine-gr, high K. |
| | | 13 20 | | | | | | | 12 | |
| | | | | | | 13.5 | | | 13 | |

Total of well = 13.5' bgs

BORING NO. 47C-C8

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT Alameda NAS | LOCATION Site 7C | DRILLER Eric Forstrom Redwood | |
| PROJECT NO. 2735.1404 | BORING 47C-C8 | DRILLING METHOD HSA | |
| ELEVATION — | DATE 8-18-94 | DEVELOPMENT METHOD Surge, Bail, Pump. | |
| FIELD GEOLOGIST John Valett | | | |




ELEVATION OF GROUND SURFACE: —

ELEVATION OF TOP OF WELL CASING: —

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 4C Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8 1/2"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 1.0'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 2.0'

ELEVATION / DEPTH TOP OF SCREEN: 3.5'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 4C PVC

SLOT SIZE x LENGTH 0.01 x 16

I.D. OF SCREEN 2"

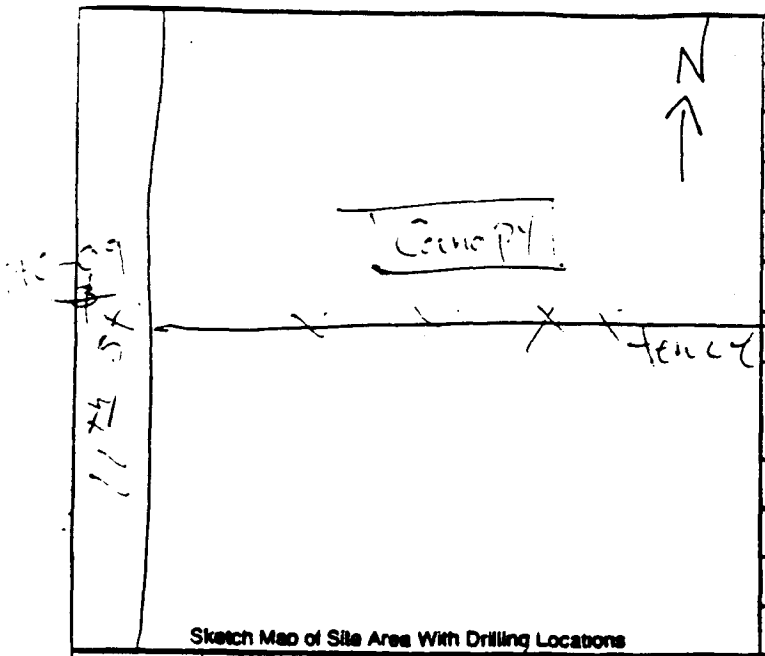
TYPE OF SAND PACK: 2/16 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 13.5'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 13.5'

TYPE OF BACKFILL BELOW OBSERVATION WELL: ~~Sa~~ Monterey 2/16 Sand.

ELEVATION / DEPTH OF HOLE: 13.5'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M70-09 Sheet 1 of 1 |
| Project: | Alameda NAS C70-0280 |
| Job # | 2738.1409 Site: 7C |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | HSA Mobile B57 |
| Drillers Name: | Eric Forstrom |
| Borehole Diam./Drill Bit Type | 8.25" 14' |
| Hammer Wt: | 140 lb. Drop: 30' |
| Start Time: | 1530 Date: 8-17-94 |
| Completion Time: | 1620 Date: 8-17-94 |
| Backfill Time: | 1630 Date: 8-17-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 14' | | | |
| Casing Depth (ft.) | 14' | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1550 | | | |
| Date | 8-17-94 | | | |

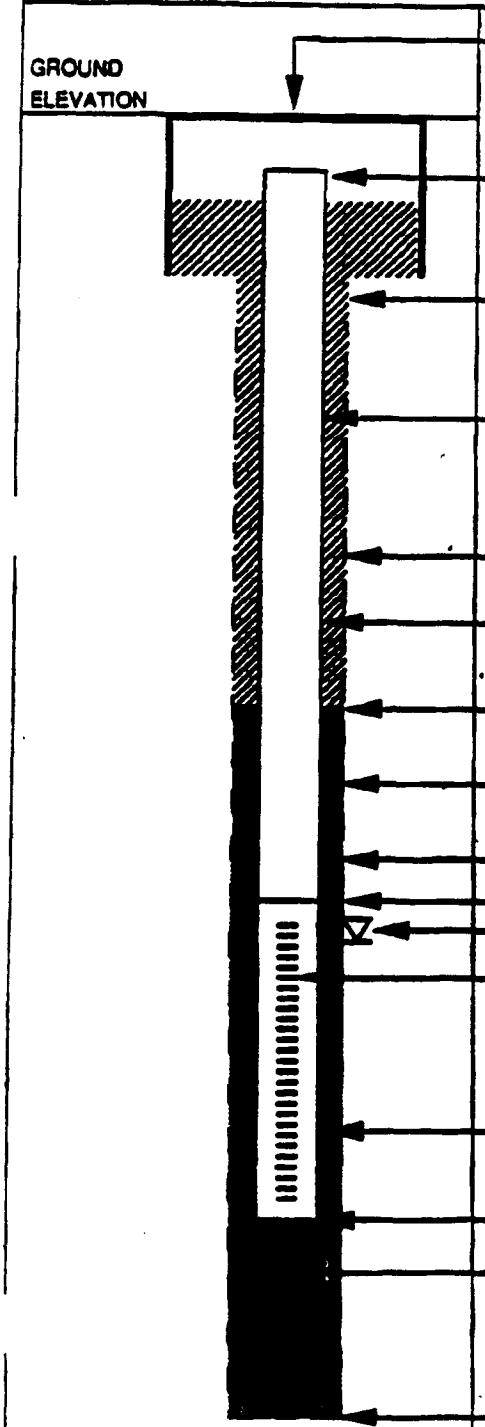
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | Casing Type & Size | Annulus Filler | Depth: Sample Rec. Analyses | Depth: Feet | Description |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | 15 | | | | | | | SAND (SP), lt br, dense, |
| | | 10 | | | | | 1540 | 1 | sl inst, fine-gr, high K. |
| | | 11 | | | | | | | |
| | | 15 | | | | | | 2 | |
| 1.3 | | 4 | | | 3" DIA, SCH 40 BLANK PVC | | | | As above w/ gravel |
| | | 8 | | | | | 1545 | 3 | |
| | | 7 | | | | | | | |
| | | 5 | | | | | geo-tech | 4 | |
| | | 2 | | | | | | | As above w/ no gravel, |
| | | 3 | | | | | | 5 | saturated @ 5' bgs. |
| 0.7 | | 3 | | | 3" DIA, SCH 40, 0.010 SLOTED PVC | SAND | 1550 | | |
| | | 1 | | | | | | 6 | |
| | | | | | | | | 7 | |
| | | | | | | | | 8 | |
| | | | | | | | | 9 | |
| | | | | | | | | 10 | |
| | | 12 | | | | | | | As above |
| | | 14 | | | | | geo-tech | 11 | |
| | | 20 | | | | | | | |
| | | 25 | | | | | | 12 | |

14 13 Bottom of well

BORING NO. M7C-09

# MONITORING WELL SHEET

| | | | | | |
|---|---|---|---|---|---|
| PROJECT | Alameda NAS | LOCATION | Site 7C | DRILLER | Eric Forstrom |
| PROJECT NO. | 2738.1404 | BORING | M7C-09 | DRILLING METHOD | HSA |
| ELEVATION | | DATE | 8-17-94 | DEVELOPMENT METHOD | Surge, Bail, Pump. |
| FIELD GEOLOGIST | John Valett | | | | |




ELEVATION OF GROUND SURFACE: –

ELEVATION OF TOP OF WELL CASING: –

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank 40 Sch PVC

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8½"

TYPE OF BACKFILL: Neat Cement Grout

ELEVATION / DEPTH OF SEAL: 1.5'

TYPE OF SEAL: Bentonite Pellets

DEPTH TOP OF SAND PACK: 2.5'

ELEVATION / DEPTH TOP OF SCREEN: 4'

FIRST ENCOUNTERED SATURATED ZONE 6'

TYPE OF SCREEN: PVC Sch 40 slotted

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

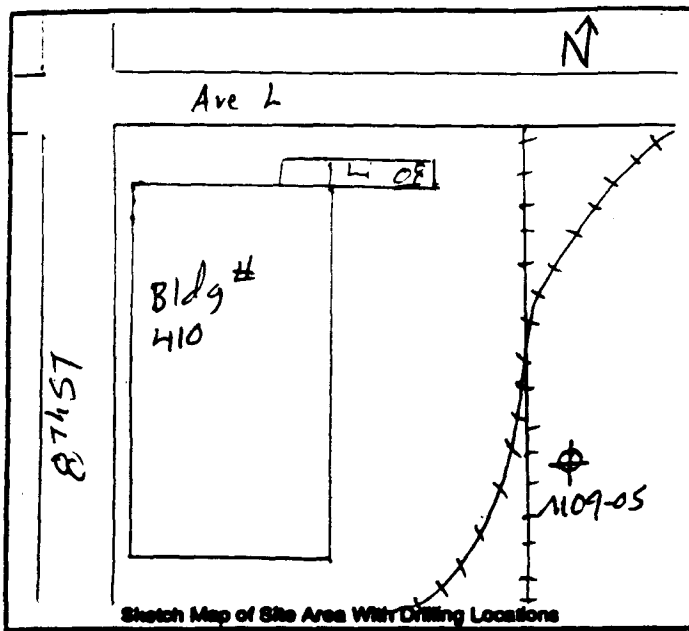
TYPE OF SAND PACK: 2/16 Monterey Sand.

ELEVATION / DEPTH BOTTOM OF SCREEN: 14'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 14'

TYPE OF BACKFILL BELOW OBSERVATION WELL: ~~N~~ N/A

ELEVATION / DEPTH OF HOLE: 14'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M09-05 Sheet 1 of 2 |
| Project: | CTO-0280 NAS Alameda |
| Job # | 2738.1405 Site: 9 |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | Mobile B53 HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" 14 |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 1535 Date: 11/5/94 |
| Completion Time: | 1610 Date: 11/5/94 |
| Backfille Time: | 1700 Date: 11/5/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

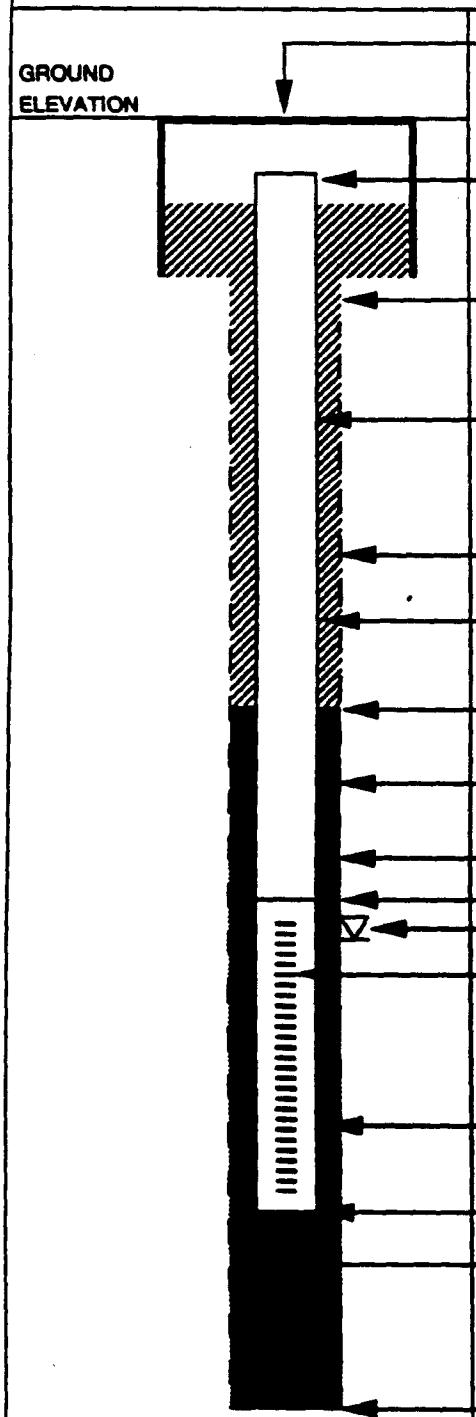
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 5" Asphalt over Sand + gravel base |
| | | | | | | | | | 1 | | |
| | California 2" Split Spoon | 16 | | | | Solid 2" casing | Neat Cement | X 1545 | 2 | | fine grained Sand (SP) moist, dense, light olive brown 2.5y (5/4) Traces of sea shells. |
| | | 11 | | | | | | X | | | |
| | | 10 | | | | | | | 3 | | |
| | | 5 | | | | | | X 1555 | | | |
| | | 7 | | | | | | X | | SP | |
| | | 8 | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | 7 | | | | | | X | | | Fine grained Sand (SP) Saturated, med. dense, light yellowish brown 2.5y (6/3) Trace sea shells |
| | | 7 | | | | | | X 1600 | | | |
| | | 12 | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | 8 | | | | 2" SCH 40 #0.010 factory slot | #2/12 Monterey Sand | | | | fine grained Sand (SP) Saturated, med. dense, light yellowish brown 2.5y (6/3) |
| | | 10 | | | | | | | 10 | | |
| | | 10 | | | | | | | | | |
| | | | | | | | | | 11 | | |
| | | | | | | | | | | SM | SM |
| | | | | | | | | | 12 | | |

| OVA | Sampler Type | Blow Counts | Advance | Rod (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# M09-05 Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: CTO-0280 - NAS Alameda |
| | | | | | | | | | | | Job # 2738.1405 Site: 9 |
| | | | | | | | | | 2 | SM | Silty Sand (SM) Saturated loose, Pale Olive 5Y (6/3). |
| | | 2 | | | | | | | | | |
| | | 2 | | | | | | | 3 | | Silty Sand (SM) Saturated loose, Dark Green, Olive Gray 5GY (4/1) |
| | | 3 | | | | | | | 4 | SM | Trace organic matter. |
| | | | | | | | | | 5 | | TD=14' |
| | | | | | | | | | 6 | | 10' screen |
| | | | | | | | | | | | 3.5 solid |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | # Note - heavy Rain - PID wont work - No odors in breathing zone encountered. |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. MO9-05

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT CTO-0280 | LOCATION Site 9 Alameda | DRILLER Woodward |
| PROJECT NO. 2738.1405 | BORING MO9-05 | DRILLING METHOD H.S.A. |
| ELEVATION | DATE 11-5-94 | DEVELOPMENT METHOD Surge/bail/pump |
| FIELD GEOLOGIST WPWoston | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 2

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 3

ELEVATION / DEPTH TOP OF SCREEN: 3.5

FIRST ENCOUNTERED SATURATED ZONE 5.2'

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH #0.010 Factory Slot

I.D. OF SCREEN 2"

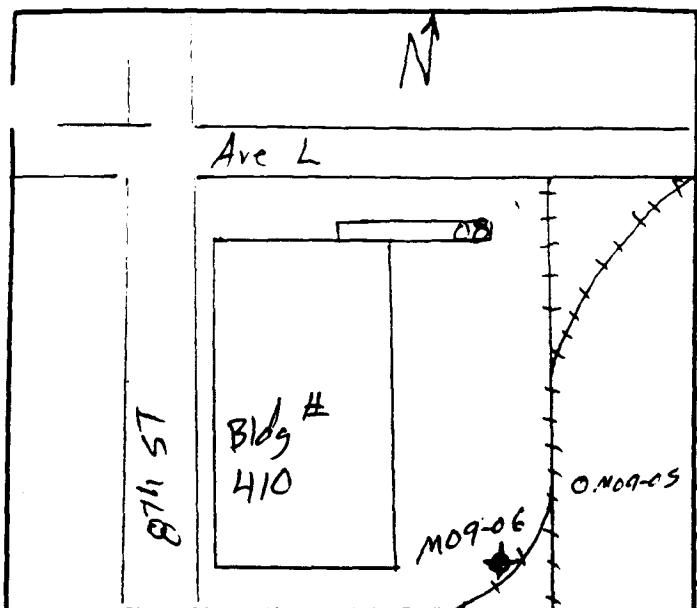
TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 13.5

ELEVATION / DEPTH BOTTOM OF SAND PACK: 14

TYPE OF BACKFILL BELOW OBSERVATION WELL: #2/12 Monterey Sand.

ELEVATION / DEPTH OF HOLE: 14




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#MO9-06 Sheet 1 of 2 |
| Project: | CTO-0260 NAS Alameda |
| Job # | 2738.1405 Site: 9 |
| Logged By: | JPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | Mobile B53 HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" 14 |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 1400 Date: 11/5/94 |
| Completion Time: | 1445 Date: 11/5/94 |
| Backfill Time: | 1530 Date: 11/5/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

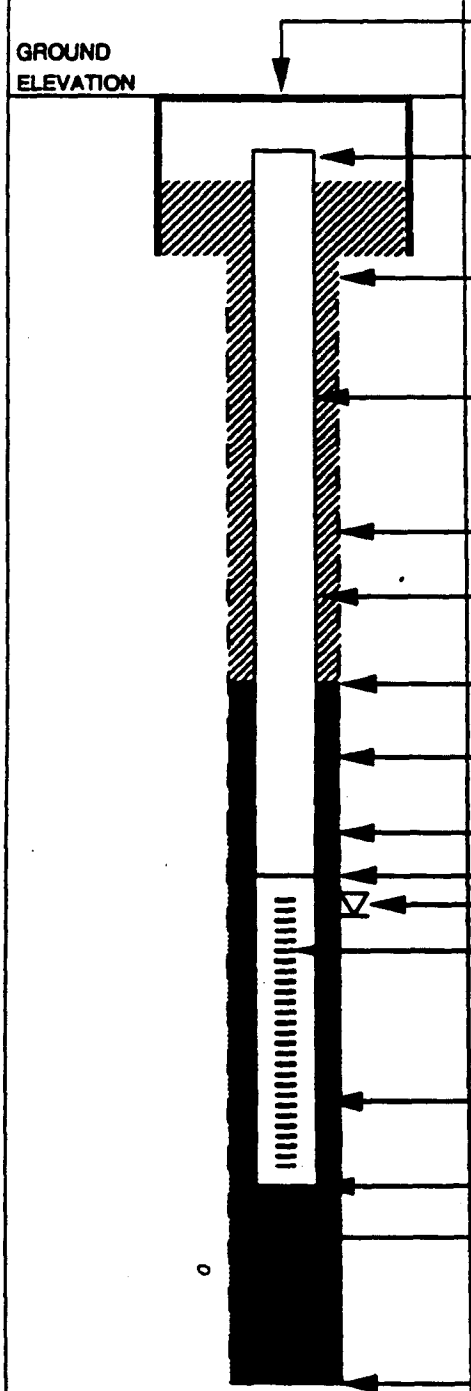
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (ft.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PVC | Cement | | | | 5" Asphalt over Sand & gravel base |
| | | | | | | | | | 1 | | |
| | | 14 | | | | Solid Casing | | X | | | fine grained Sand (SP) moist, |
| | | 10 | | | | | | X | 1405 2 | | Dense light olive brown 2.5Y (5/4) |
| | Spl-T spoon | 21 | | | | | | | | | Sea shells common |
| | | 8 | | | | | | X | 1410 3 | | |
| | | 13 | | | | | Drill Cuttings | X | | | |
| | | 15 | | | | | | | 4 | | |
| | | | | | | | | | | | |
| | | | | | | | | | 5 | | |
| | 2" | 10 | | | | | | | | | Very fine To fine grained Sand |
| | | 11 | | | | | | X | 1410 6 | | (SP) Very moist. To saturated, |
| | | 13 | | | | | | X | | | med. dense, light yellowish brown |
| | California | | | | | Factory Slot | Sand | | ▽ 7 | SP | 2.5Y (6/3) To light olive brown |
| | | 7 | | | | | | | | | 2.5Y (5/4), Trace sea shells |
| | | 7 | | | | 0.01 | Monterey | | | | |
| | | 8 | | | | | | | 8 | | |
| | | | | | | | | | | | |
| | | | | | | 40 PVC | | | 9 | | |
| | | | | | | | #2/12 | | | | |
| | | 4 | | | | | | | 10 | | Sand (SP) As above, Saturated |
| | | 4 | | | | 2" SCH | | | | | loose, light olive brown 2.5Y |
| | | 5 | | | | | | | 11 | | (5/4). Trace Silt, Trace sea |
| | | | | | | | | | | | shells. |
| | | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# M09-06 Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: CTO-0280 NAS Alameda |
| | | | | | | | | | | | Job # 2738.1405 Site: 9 |
| | | 3 | | | | | | | 2 | SP | Very fine to fine grained |
| | | 4 | | | | | | | | | sand (SP), Saturated med dense |
| | | 6 | | | | | | | 3 | | greenish gray 5GY(5/1) Trace |
| | | | | | | | | | | | silt |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | TD 14' 2:45 |
| | | | | | | | | | | | 10' screen 04' solid casing |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. MC9-06

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT C70-0280 Alameda | LOCATION Site 9 | DRILLER Woodward |
| PROJECT NO. 2738.1405 | BORING MC9-06 | DRILLING METHOD HSA |
| ELEVATION | DATE 11-5-94 | DEVELOPMENT METHOD Surge bail pump |
| FIELD GEOLOGIST LWPW | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 2.5'

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 3.5'

ELEVATION / DEPTH TOP OF SCREEN: 4'

FIRST ENCOUNTERED SATURATED ZONE 6.8'

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH #0.01 factory slot

I.D. OF SCREEN 2"

TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 14'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 14'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 14'

Bldg. 530

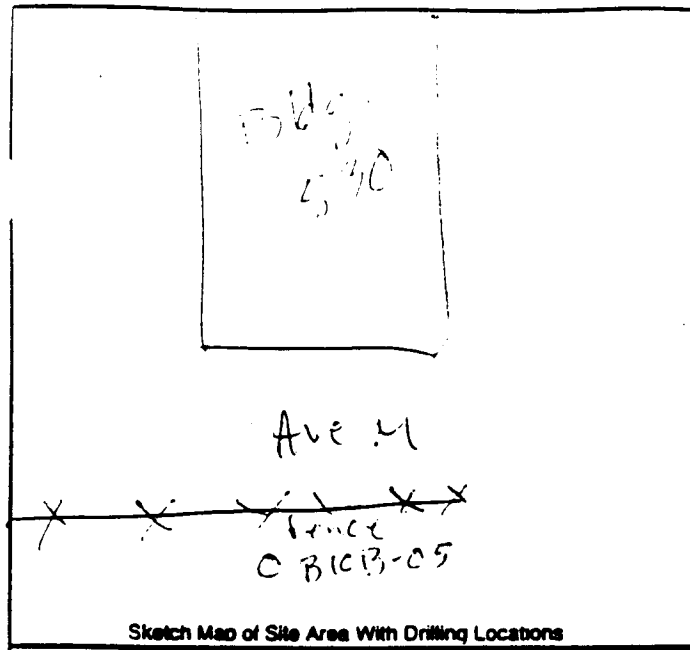
Ave M

Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # BKB-04 MW# | Sheet of |
| Project: Alameda NAS CTO-0280 | |
| Job # 2738.1409 | Site: 10 |
| Logged By: TEV | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Wayne Woodward | |
| Borehole Diam./Drill Bit Type: 8 1/2 | Total Depth: 6' |
| | Ref. Elev: |
| Hammer Wt: 140 lb. | Drop: 30 |
| Start Time: 1512 | Date: 8-19-94 |
| Completion Time: 1530 | Date: 8-19-94 |
| Backfill Time: 1540 | Date: 8-19-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6 | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 4 | | | |
| Time | 1530 | | | |
| Date | 8-19-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C | | 4 | | | | | | | | | sandy gravel (GW), gray-brown, |
| | | 5 | | | | | | | 1520 | 1 | med dense, dry, med-gr, med K. |
| | | 7 | | | | | Grout | | | | SAND (SP), lt br, dense, |
| | | 9 | | | | | | | | 2 | v sl inst, f-g, high |
| | | 6 | | | | | | | | | As Above. |
| C | | 9 | | | | | Cement | | | | |
| | | 7 | | | | | | | 1523 | 3 | |
| | | 14 | | | | | | | | | (moist) |
| | | 4 | | | | | | | geo-tech | 4 | As Above, except Saturated |
| | | 6 | | | | | Neat | | | | |
| C | | 7 | | | | | | | 1530 | 5 | |
| | | 5 | | | | | | | | | BOB = 6' |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

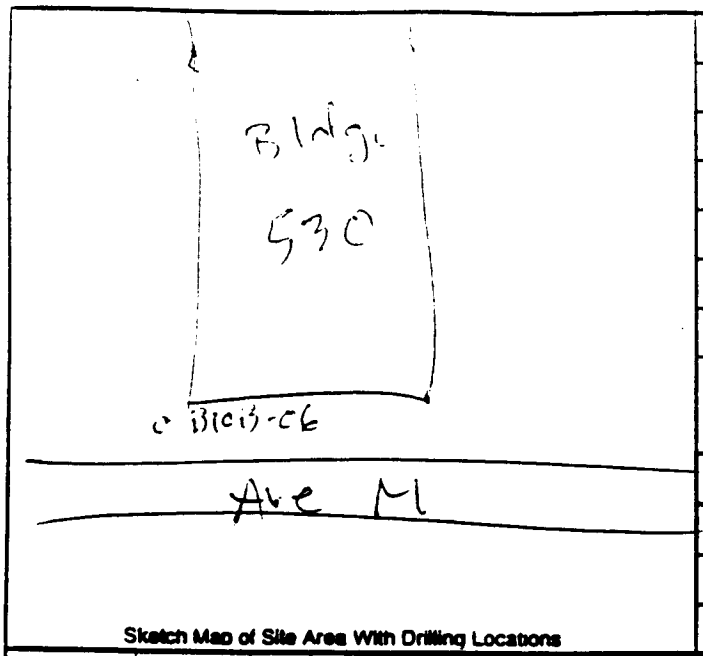



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # [illegible] MW# | Sheet of |
| Project: [illegible] | CTO-0280 |
| Job # [illegible] 1401 | Site: 10B |
| Logged By: TEV | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Wayne Woodward | |
| Borehole Diam./Drill Bit Type: 8½" | Total Depth: 6' |
| | Ref. Elev. |
| Hammer Wt: 140 lb. | Drop: 30" |
| Start Time: 1425 | Date: 8-19-94 |
| Completion Time: 1450 | Date: 8-19-94 |
| Backfill Time: 1500 | Date: 8-19-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6 | | | |
| Casing Depth (ft.) | V.A | | | |
| Water Depth (ft.) | 3' | | | |
| Time | 1450 | | | |
| Date | 8-19-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 14 | | | | | Neat Cement Grout | | | | gravelly SAND (SW), gray br, dry, |
| | | 13 | | | | | | | 1435 | 1 | dense, fine-med gr, med K. |
| | | 18 | | | | | | | | | ~~As above~~ SAND (SP) lt br, |
| | | 21 | | | | | | | | 2 | v sl mst, dense, f-g, high K. |
| | | 14 | | | | | | | | | As Above w/ minor shells |
| | | 17 | | | | | | | 1440 | 3 | |
| | | 21 | | | | | | | + Dup | | |
| | | 25 | | | | | | | (1443) | | |
| | | 12 | | | | | | | geo-tech | 4 | As Above, except grayish color, |
| | | 15 | | | | | | | | | |
| | | 19 | | | | | | | 1450 | 5 | saturated @ 5' |
| | | 22 | | | | | | | | | BOB = 6' |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

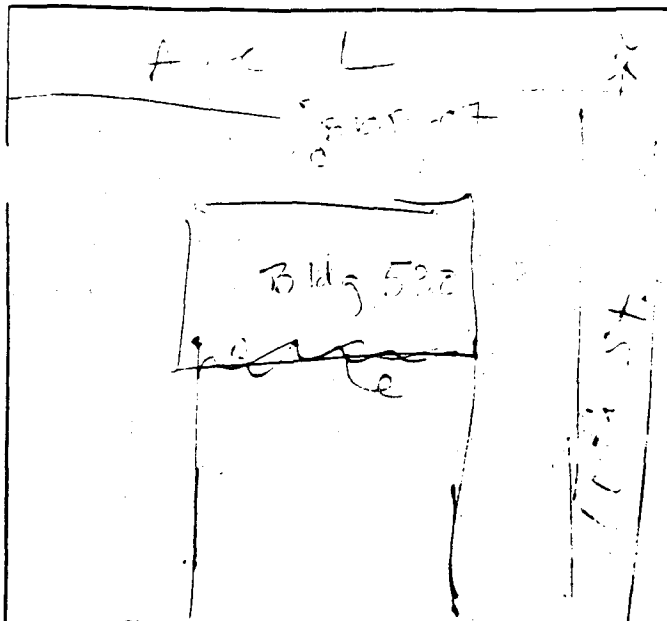



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # [illegible] MW# | Sheet 1 of 1 |
| Project: [illegible] NAS CTO-0280 | |
| Job # [illegible] 1404 | Site: 10B |
| Logged By: TSL | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Wayne Woodward | |
| Borehole Diam./Drill Bit Type: 8 1/2 | Total Depth: 6' |
| | Ref. Elev. |
| Hammer Wt: 140 lb. | Drop: 30" |
| Start Time: 1350 | Date: 8-19-94 |
| Completion Time: 1405 | Date: 8-19-94 |
| Backfill Time: 1410 | Date: 8-19-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | [illegible] | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1405 | | | |
| Date | 8-19-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 15 | | | | | Neat Cement Grout | | | | SAND (SP) w/ minor pebbles/gravel, |
| | | 18 | | | | | | | 1355 | 1 | lt br., sl mst, dense, fine-gr, |
| | | 24 | | | | | | | | | med k. |
| | | 26 | | | | | | | | 2 | |
| | | 10 | | | | | | | | | As above, except no pebbles/gravel |
| 0 | | 12 | | | | | | | 1400 | 3 | |
| | | 15 | | | | | | | | | |
| | | 18 | | | | | | | 900' | | |
| | | 8 | | | | | | | | 4 | As above, except grayish color, |
| | | 14 | | | | | | | | | mild hc odor, + wet @ 5'. |
| 101 | | 24 | | | | | | | 1405 | 5 | |
| | | 30 | | | | | | | | | BOB = 6' |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

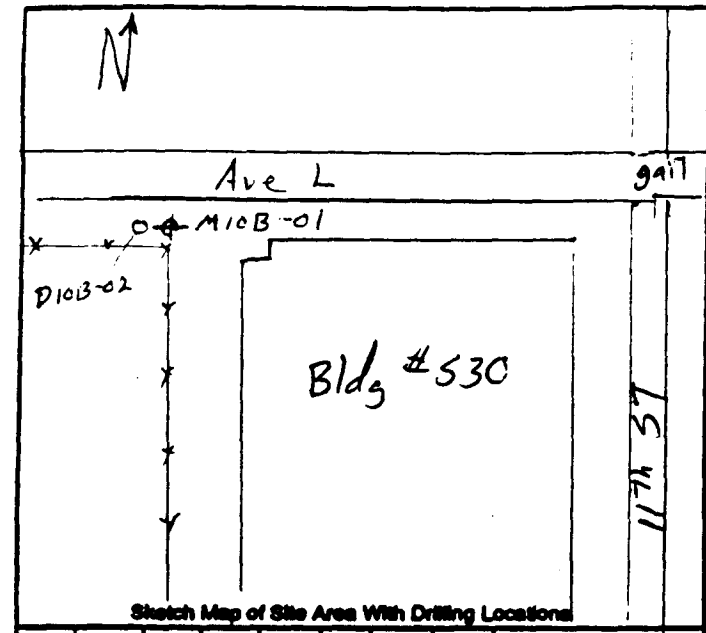



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # 810B-07 MW# | Sheet 1 of 1 |
| Project: Alameda NAS CTO-0280 | |
| Job # 2738.1404 Site: 10B | |
| Logged By: JEV Proj. Eng: SMH Edited By: | |
| Drilling Contractor: Woodward | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Wayne Woodward | |
| Borehole Diam./Drill Bit Type 8 1/2" | Total Depth 6' |
| | Ref. Elev |
| Hammer Wt: 140 lb. Drop: 30" | |
| Start Time: 1300 Date: 8-19-94 | |
| Completion Time: 1330 Date: 8-19-94 | |
| Backfill Time: 1340 Date: 8-19-94 | |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 6' | | | |
| Time | 1325 | | | |
| Date | 8-19-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.3 | | 22 | | | | | | | | | gravelly SAND (SW), lt br, |
| | | 24 | | | | | | | 1305 | | dense, dry, med-gr, med K. |
| | | 26 | | | | | | | | 1 | No gravel @ 1' (SP Sand). |
| | | 28 | | | | | | | | | |
| | | 12 | | | | | | | | 2 | SAND (SP), lt br, dense, v sl mst, |
| 0 | | 14 | | | | | | | 1315 | | fine-gr, high K. |
| | | 43 | | | | | | | | 3 | |
| | | 42 | | | | | | | geo tcd | | |
| | | 10 | | | | | | | | 4 | As Above, except wet @ 6' |
| | | 14 | | | | | | | | | |
| 0 | | 18 | | | | | | | 1325 | 5 | |
| | | 24 | | | | | | | | | BOB = 6' |
| | | | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M10B-01 Sheet 1 of 1 |
| Project: | CTO-0280 NAS Alameda |
| Job # | 2738.1405 Site: 10B |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | Mobile B53 HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" Total Depth 11 |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 1135 Date: 11/5/94 |
| Completion Time: | 1205 Date: 11/5/94 |
| Backfill Time: | 1245 Date: 11/5/94 |

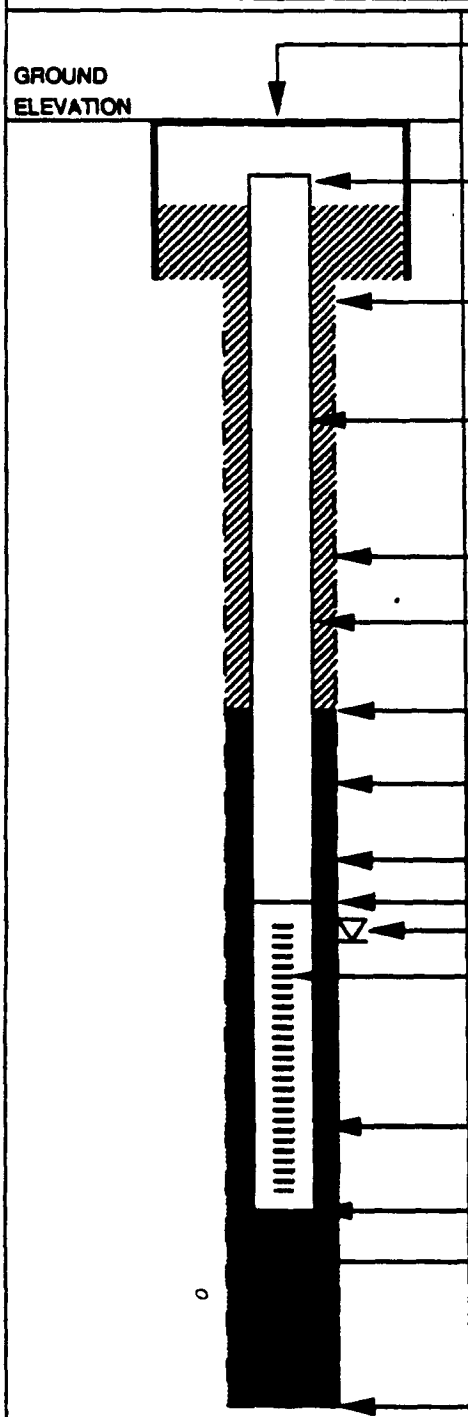
| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 3" Asphalt over Sand + gravel base |
| | | | | | | Solid Casing | Cement | | 1 | | |
| | California 2" Split Spoon | 8 | | | | | | Surface 1145 | | SP | |
| | | 15 | | | | | | | 2 | | Very fine to fine grained Sand |
| | | 18 | | | | | Bentonite | X | | | (SP) moist, dense, light olive |
| | | 7 | | | | | | X 2' 1150 | 3 | | brown 2.5Y(5/4) |
| | | 8 | | | | | | X | | | |
| | | 8 | | | | | | X 2' dup 1155 | 4 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | 6 | | | | #0.01 factory slot 2" PVC | #2/12 Monterey Sand | X 1200 5' | 5 | | Very fine to fine grained Sand (SP) |
| | | 8 | | | | | | X | | | Saturated, med. dense, light |
| | | 9 | | | | | | | 6 | | olive brown 2.5Y(5/4) Trace |
| | | | | | | | | | 7 | SP | Sea shells. |
| | | | | | | | | | | | |
| | | | | | | | | | 8 | | Sea shells common. |
| | | | | | | | | | | | Very fine to fine grained Sand (SP) |
| | | 1 | | | | | | | 9 | | Saturated, Very loose, greenish gray 5GY(5/1) Sea shells common |
| | | 1 | | | | | | | | | Silty Clay with Sand, Very moist, |
| | | 1 | | | | | | | 10 | CL | Very Soft, dark greenish gray 5GY(4/1) |
| | | | | | | | | | 11 | | |
| | | | | | | | | | | | |
| | | | | | | | | | 12 | | TD 11' 1205 |

BORING NO. M10B-01

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT C70-0280 | LOCATION Site 10B Alameda | DRILLER Woodward | |
| PROJECT NO. 2738.1405 | BORING M10B-01 | DRILLING METHOD HSA | |
| ELEVATION | DATE 11-5-94 | DEVELOPMENT METHOD Surge/bail Pump | |
| FIELD GEOLOGIST LJPW | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 2

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2.5

ELEVATION / DEPTH TOP OF SCREEN: 3

FIRST ENCOUNTERED SATURATED ZONE 5

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 factory slot

I.D. OF SCREEN 2"

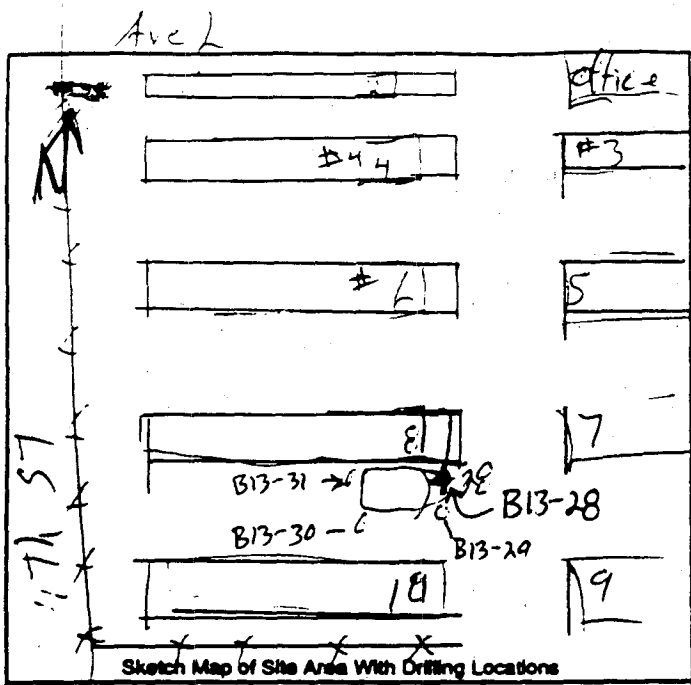
TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 11

ELEVATION / DEPTH BOTTOM OF SAND PACK: 11

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 11




Sketch Map of Site Area With Drilling Locations

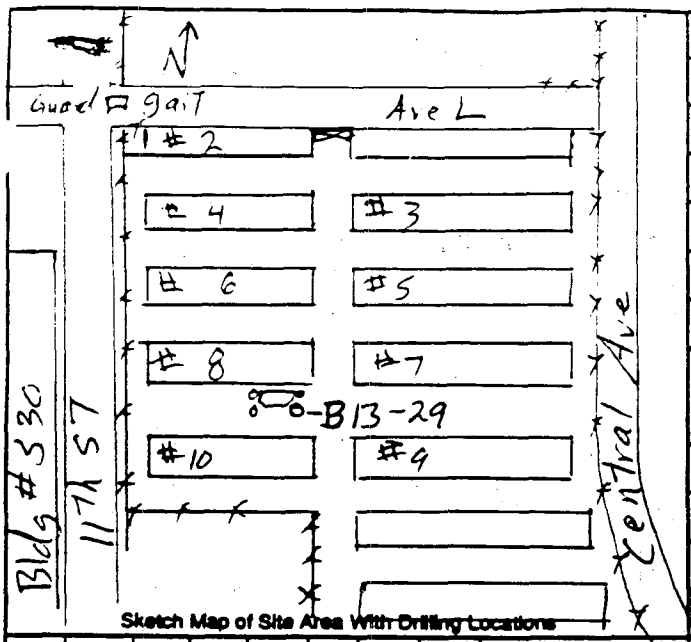
| | |
|---|---|
| Boring # B13-28 MW# | Sheet 1 of 1 |
| Project: CTC-0280 - NAS Alameda | |
| Job # 2738.1404 | Site: 13 |
| Logged By: WPW | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward Drilling | |
| Drill Rig Type/Method: Mobile B53 | |
| Drillers Name: Erick Forrstrom | |
| Borehole Diam./Drill Bit Type: 8" | Total Depth: 8' / Ref. Elev: |
| Hammer Wt: 140 Lb | Drop: 30" |
| Start Time: 0940 | Date: 12-9-94 |
| Completion Time: 1015 | Date: 12-9-94 |
| Backfille Time: 1100 | Date: 12-9-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample | Depth: Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | 2" Asphalt over sand & gravel base |
| | | 30 | | | | | | | 9.50 | 1 | | |
| 2ppm | | 14 | | | | | | X | | | SP | fine grained sand (SP) moist, Dense |
| | | 22 | | | | | | X | | 2 | | very dark gray N 3/, Trace gravel |
| | | 7 | | | | | | X | | 3 | | fine grained sand |
| 110ppm | | 13 | | | | | | X | | | | |
| | | 19 | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | Very fine to fine grained sand (SP) |
| | | 7 | | | | | | | | | | very moist to saturated, med. dense |
| 450 | | 10 | | | | | | X | | 6 | | greenish gray 5BG(4/1) Traces of |
| | | 11 | | | | | | X | | | | root poors + wood fragments. Odor |
| | | | | | | | | | | 7 | | Approx 5-10% silt. |
| | | | | | | | | | | 8 | | TD 8" collect grab water sample |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 10 | | |
| | | | | | | | | | | 11 | | |
| | | | | | | | | | | 12 | | |

Neat cement grout

Boxed for Relic 1075

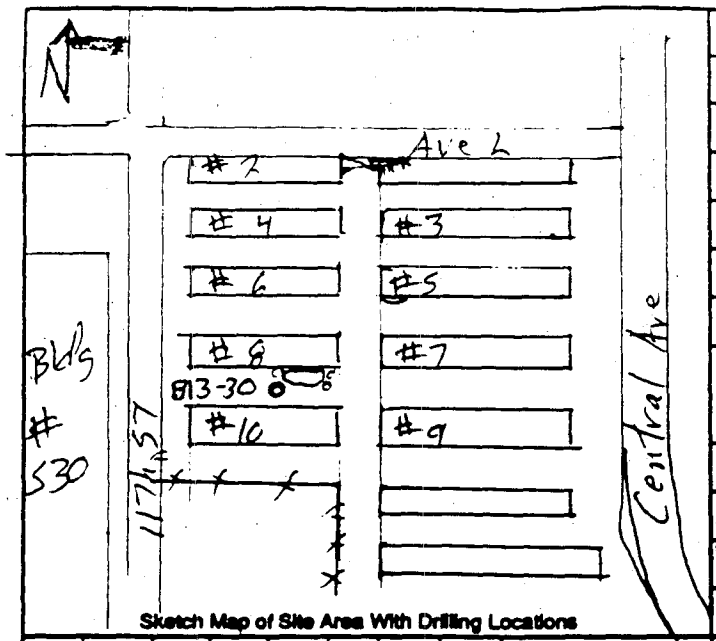



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B13-29 MW# | Sheet 1 of 1 |
| Project: CTC-C280 NAS Alameda | |
| Job # 2738 1404 | Site: 13 |
| Logged By: LWPW | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward Drilling | |
| Drill Rig Type/Method: Mobile B53 | |
| Drillers Name: Erick Farstrom | |
| Borehole Diam./Drill Bit Type: 8" | Total Depth: 6.5 / Ref Elev: |
| Hammer Wt: 140 Lb | Drop: 30" |
| Start Time: 1100 | Date: 12-9-94 |
| Completion Time: 1130 | Date: 12-9-94 |
| Backfille Time: 1230 | Date: 12-9-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 2" Asphalt over Sand & gravel base |
| | | 26 | | | | | | DMP | 1 | | |
| 6.0 | | 17 | | | | | Neat Cement Grout | | | | Fine grained Sand (SP) with debris |
| | | 30 | | | | | | | 2 | SP | Charchol & yellow + red brick common. |
| | | | | | | | | | | | Traces of gravel, moist, dense, |
| | | 4 | | | | | | | 3 | | very dark gray N3/ |
| ~~6.0~~ ~~14~~ | | 6 | | | | | | | | | Silty Sand (SM) very moist, to saturated med |
| 37 | | 7 | | | | | | | 4 | SM | dense, Very dark grayish brown |
| | | | | | | | | | | | 10yR (3/2), slight sheen on soil Trace rootlets |
| | | | | | | | | | 5 | | |
| | | 5 | | | | | | | | SC | Clayey Sand (SC), very moist, med. |
| 208 | | 9 | | | | | | | 6 | | dense, greenish gray, 5GY (5/1), |
| | | 12 | | | | | | 112S | | | Sand is fine grained, Caliche common, |
| | | | | | | | | | 7 | | Trace silt + rootlets |
| | | | | | | | | | | | TD 6.5' |
| | | | | | | | | | 8 | | Collect grab water Sample |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

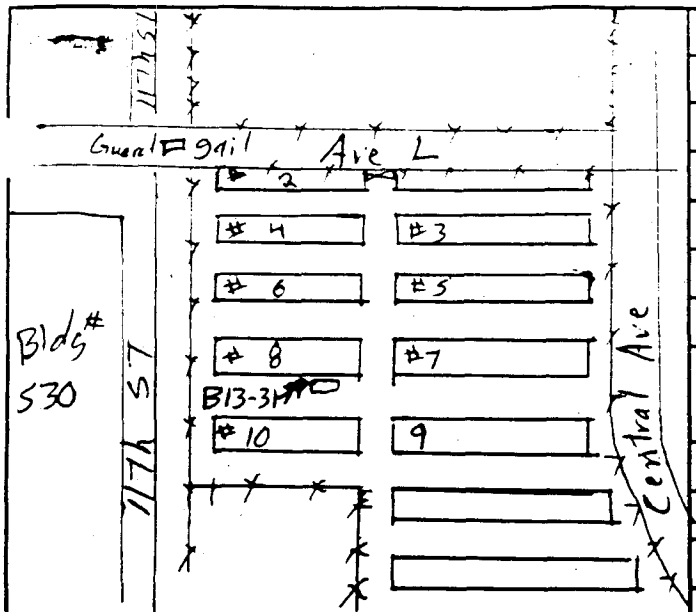



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B13-30 MW# | Sheet 1 of 1 |
| Project: CTC-0280 NAS Alameda | |
| Job # 2738.1404 Site: 13 | |
| Logged By: WPW Proj. Eng: SMH Edited By: | |
| Drilling Contractor: Woodward Drilling | |
| Drill Rig Type/Method: Mobile B53 | |
| Drillers Name: Erick Forrstrom | |
| Borehole Diam./Drill Bit Type: 8" | Total Depth: 6.5' / Ref Elev |
| Hammer Wt: 140 | Drop: 30" |
| Start Time: 1140 | Date: 12-9-94 |
| Completion Time: 1200 | Date: 12-9-94 |
| Backfille Time: 1250 | Date: 12-9-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 2" Asphalt over sand/gravel base |
| | | 12 | | | | | | | | | |
| | | 14 | | | | | | X 1145 | 1 | | fine grained sand with silt & debris |
| | | 16 | | | | | | X | 2 | | red brick & black charcoal common. |
| | | 6 | | | | | | X | 3 | SM | fine grained sand with silt. very moist to saturated, med dense, very |
| | | 8 | | | | | | X | | | |
| 75 | | 11 | | | | | | | 4 | | dark gray N 3/ |
| | | | | | | | | | 5 | | |
| | | 5 | | | | | | X | | SM | Silty sand with clay (SM), very |
| 238 | | 9 | | | | | | X 1200 | 6 | | moist to saturated, greenish |
| | | 18 | | | | | | | | | gray SCY (5/1) |
| | | | | | | | | | 7 | | TD = 6.5' |
| | | | | | | | | | 8 | | Collect grab water sample |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |



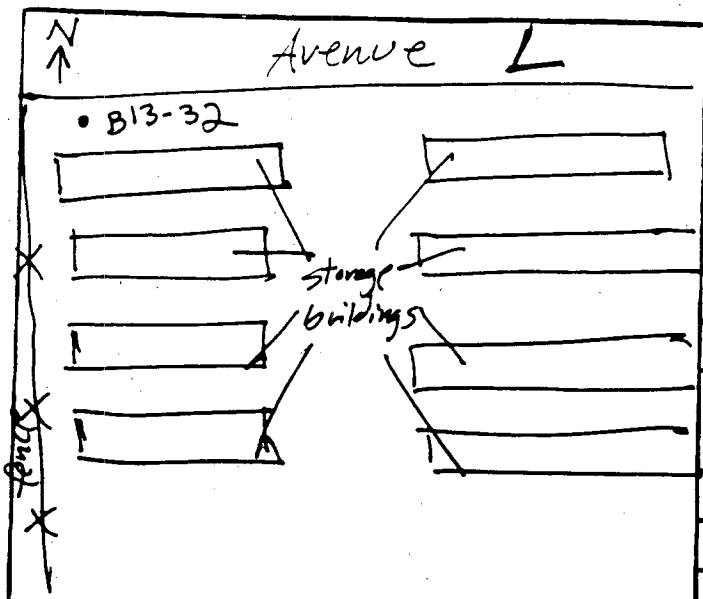

Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B13-31 MW# | Sheet 1 of 1 |
| Project: CTC-C28C - NAS Alameda | |
| Job # 2738.1404 Site: 13 | |
| Logged By: JPW Proj. Eng: SMH Edited By: | |
| Drilling Contractor: Woodward Drilling | |
| Drill Rig Type/Method: Mobile B53 | |
| Drillers Name: Erick Forrstrom | |
| Borehole Diam./Drill Bit Type: 8" | Total Depth: 7' / Ref. Elev: |
| Hammer Wt: 140 Lb. Drop: 30" | |
| Start Time: 1250 Date: 12-9-94 | |
| Completion Time: 13 Date: 12-9-94 | |
| Backfill Time: Date: 12-9-94 | |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Bear Set Concrete | | | | 2" Asphalt over Sand & gravel Base |
| | | 16 | | | | | | | | | |
| .1 | | 26 | | | | | Grout | 1300 | 1 | SP | Fine grained sand with debris |
| | | 34 | | | | | | | | | brick wood + coal common, |
| | | | | | | | | | 2 | | very moist very dense, gray |
| | | 3 | | | | | | 1305 | | | 5Y(6/1). |
| 72 | | 14 | | | | | Cement | | 3 | | |
| | | 16 | | | | | | | | | |
| | | | | | | | | | 4 | | |
| | | 4 | | | | | | 1315 | | | Fine grained sand (SP) very moist |
| | | 6 | | | | | | | 5 | | To saturated, med. dense, greenish |
| 123 | | 9 | | | | | Neat | 1325 | | | gray 5GY(5/1), root peels common |
| 68 | | 5 | | | | | | 1320 | 6 | | with oil staining approx 5% silt |
| | | 10 | | | | | | | | | Trace Clay |
| | | | | | | | | | 7 | | |
| | | | | | | | | | | | TD=7' |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

B13-32




Sketch Map of Site Area With Drilling Locations

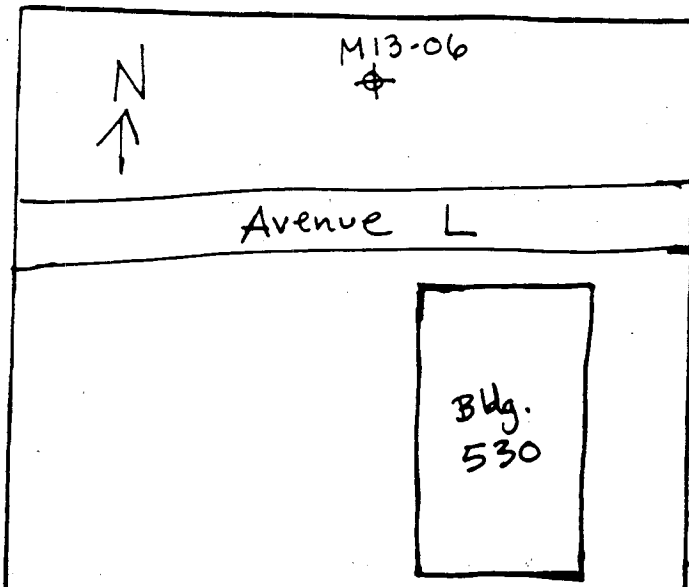
| | |
|---|---|
| Boring # B13-32 MW# | Sheet 1 of 1 |
| Project: NAS ALAMEDA CTO 280 | |
| Job # 2738 1404 | Site: 13 |
| Logged By: DEK | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward Drilling Co | |
| Drill Rig Type/Method: HSA Mobil B57 | |
| Drillers Name: Erik Forsstrom | |
| Borehole Diam./Drill Bit Type: 8.5" augen | 5' |
| Hammer Wt: 140 lb | Drop: 30" |
| Start Time: 13 | Date: 8-12-94 |
| Completion Time: 1350 | Date: 8-12-94 |
| Backfill Time: 1410 | Date: 8-12-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 5' | | | |
| Casing Depth (ft.) | - | | | |
| Water Depth (ft.) | - | | | |
| Time | 1350 | | | |
| Date | 8-12-94 | | | |

| PID/OVA (ppm) | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.5 | | 11 | ↓ | ↓ | | | ↑ | X | | | SP | Concrete |
| | | 12 | ↓ | ↓ | | | | X | 1340 | | | 280-513-15 |
| | | 18 | ↓ | ↓ | | | | X | 280-513-15 | | SP | Sand, SP brown, dry, loose, |
| | | | | | | | | | | | | of ~25% med ~75% |
| | | 6 | ↓ | ↓ | | | Neat cement Grout | X | 1340 | | | ~~Wood~~ Wood encountered @ 2½ |
| | | 10 | ↓ | ↓ | | | | X | 280-513-16 | | | Wood |
| 81 | | 17 | ↓ | | | | | | | | | SP - brown, moist, loose, med sand |
| | | 4 | ↓ | ↓ | | | | | | | | |
| 15 | | 7 | ↓ | ↓ | | | | X | 280-513-17 | | | GP/SC black, med stiff, |
| | | 6 | ↓ | ↓ | | | | X | 1350 | | | v. strong hydrocarbon odor |

TD = 5'

M13-06




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M13-06 Sheet 1 of 1 |
| Project: | NAS Alameda CTO-0280 |
| Job # | 2738.1404 Site: 13 |
| Logged By: | DEK Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co. |
| Drill Rig Type/Method: | HSA Mob. 6B57 |
| Drillers Name: | Erik Forsstrom |
| Borehole Diam./Drill Bit Type | 8½" auger 12' |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 0850 Date: 8-11-94 |
| Completion Time: | 1000 Date: 8-11-94 |
| Backfill Time: | 1200 Date: 8-11-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4.0' | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 920 | | | |
| Date | 8 12 94 | | | |

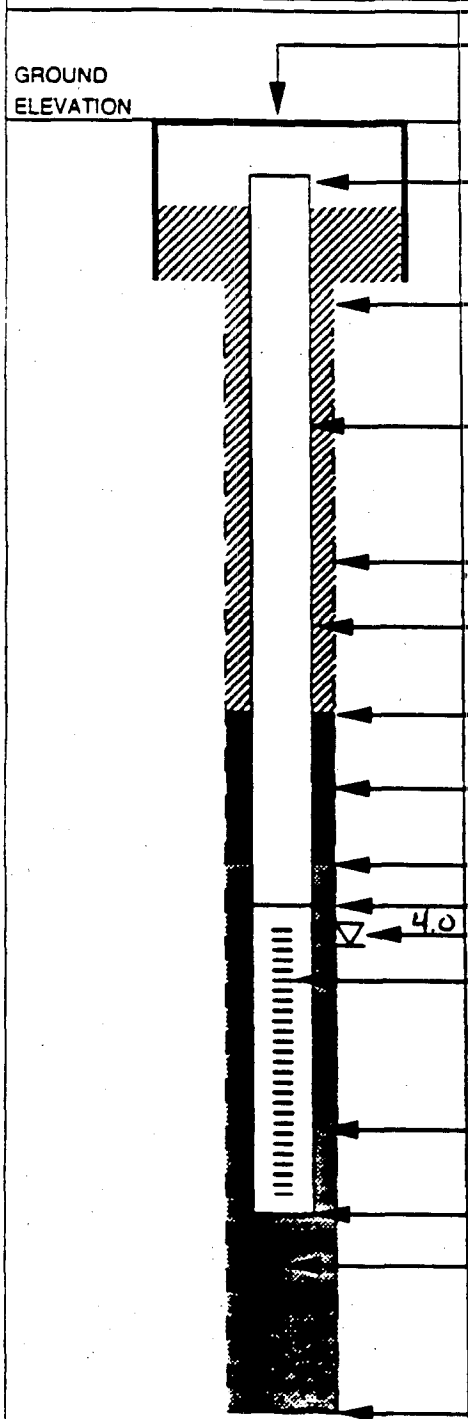
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5 | | | | | | X | 910 | | | SP/SP Sand SP, brown, fine/med |
| | | 6 | | | | | | X | 280.513.15 | | | loose dry, trace gravels, |
| ∅ | | 13 | | | | Blank PVC | Bentonite | | | 1 | | ~10% silt. |
| | | | | | | | | | | 2 | | |
| ∅ | | 5 | | | | | | | | | | SP sand, loose brown moist, med |
| | | 8 | | | | | | X | 915 | 3 | | sand, very clean (bch sand) |
| | | 7 | | | | | Sand | X | 280.513.19 | | | |
| ∅ | | 5 | | | | | | | | 4 | ▼ | |
| | | 6 | | | | | | X | 920 | | | SP Aa, saturated at 4' |
| | | 9 | | | | | 2/10 | X | 280.513.20 | 5 | | |
| | | | DRILL OUT | | | | | | | | | |
| | | | | | | | | | | 6 | SP | ? |
| | | | | | | | | | | ? | | |
| | | | | | | Slotted 0.01 screen | Sand 2/10 | | | 7 | SP | |
| | | | | | | | | | | 8 | | |
| | | 3 | | | | | | | SP | 9 | | Sand, SP, black, med dense/loose, ~~fine~~ med sand, well sorted, saturated |
| | | 1 | | | | | | | | | | |
| | | 1 | | | | | Sand | | CL | 10 | | CL, clay, grey w/ black mottling |
| | | 1 | | | | | Bentonite pellets | | CL | | CL | med stiff/soft, moist |
| | | 1 | | | | | | | CL | | | |
| | | 9 | | | | | | | SP | 11 | SP | SP/SC black, loose, saturated, |
| | | | | | | | | | | 12 | | med sand, gravels to ~½" angular |

TD = 11.5'

BORING NO. M-13-06

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS ALAMEDA CTO 280 | LOCATION Site 13 | DRILLER Eric Fossum |
| PROJECT NO. 2738.1404 | BORING M-13-06 | DRILLING METHOD HSA |
| ELEVATION | DATE 8-12-94 | DEVELOPMENT METHOD Surge, Bail, Pump |
| FIELD GEOLOGIST DANIEL KRAMER | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: 40 sch PVC Blank

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8.5"

TYPE OF BACKFILL: Neat cement grout

ELEVATION / DEPTH OF SEAL: 1.0

TYPE OF SEAL: Bentonite pellets

DEPTH TOP OF SAND PACK: 1.5

ELEVATION / DEPTH TOP OF SCREEN: 2.0

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC slotted

SLOT SIZE x LENGTH 0.01 x 10

I.D. OF SCREEN 2"

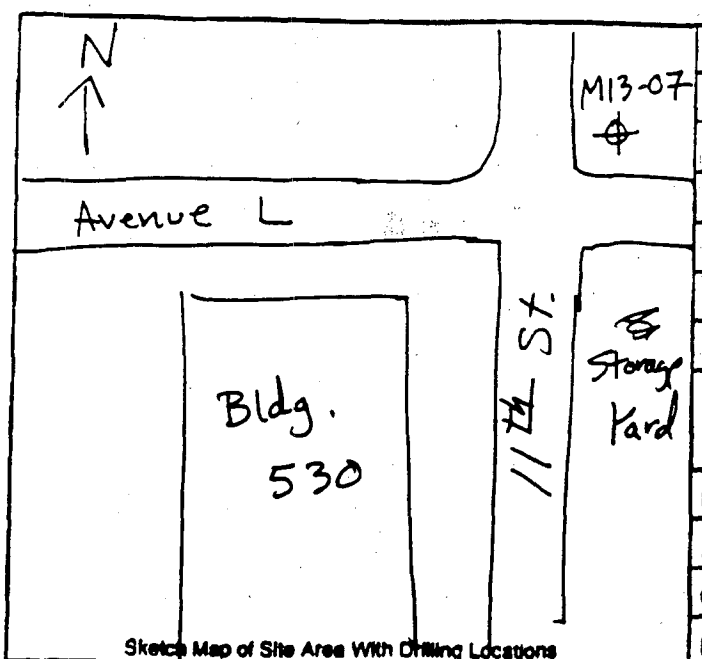
TYPE OF SAND PACK: 2/12 monterey sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 9.75

ELEVATION / DEPTH BOTTOM OF SAND PACK: 9.75

TYPE OF BACKFILL BELOW OBSERVATION WELL: Bentonite

ELEVATION / DEPTH OF HOLE: 11.25




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M13-07 Sheet 1 of 2 |
| Project: | NAS ALAMEDA CTO 280 |
| Job # | 2778.1404 Site: 13 |
| Logged By: | DEK Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Inc. |
| Drill Rig Type/Method: | HSA Mobile B57 |
| Drillers Name: | Erik Forsstrom |
| Borehole Diam./Drill Bit Type | 8.5" auger B |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 1045 Date: 8-12-94 |
| Completion Time: | 1115 Date: 8-12-94 |
| Backfill Time: | 1300 Date: 8-12-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 3.5' | 5 | | |
| Casing Depth (ft.) | | 5.5 | | |
| Water Depth (ft.) | | in auger | | |
| Time | 1108 | 1108 | | |
| Date | 8-12-94 | 8-12-94 | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 21 | | | | Black PVC | Bent grout | | 280 S13.21 1100 | | GP | Gravelly sand GP gray, loose, dry |
| | | 16 | | | | | | | | 1 | | med sand, gvl → to pebble size |
| 0.1 | | 12 | | | | | | | | | SP | |
| | | 19 | | | | | | | 280 S13.22 1105 | 2 | | dry |
| | | 20 | | | | | Sand | | | | | Sand SP, tan, loose, moist |
| 1.2 | | 12 | | | | | | | 280 S13.23 1105 | 3 | SP | med-fine sand. 2.5' duplicate |
| | | 5 | | | | | | | | | | |
| | | 7 | | | | | | | | 4 | | SP, sand black, loose, saturated, |
| | | 8 | | | | | | | | | | fine sand, ~10% silt |
| 1.2 | | 11 | | | | | | X | 280 S13.24 | 5 | | coarsens downward to med sand |
| | | 7 | | | | | | X | 1108 | | | at approx 4.5 ft |
| | | 8 | | | | Sand 0.01 slotted | Sand 2/10 mortar | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | 9 | | | | | | | | 9 | | Clayey sand - Sandy clay SC/CL |
| 200 | | 17 | | | | | | X | 1115 | | | black, fine sand moist to wet |
| | | 27 | | | | | | X | 1115 | 10 | | med stiff, v. strong petroleum odor |
| | | 10 | | | | | | | | | | |
| | | 13 | | | | | | | | 11 | | Clayey sand SC, blk, moist/wet, |
| | | 20 | | | | | | | | | | med stiff, |
| | | 12 | | | | | | | | 12 | | |

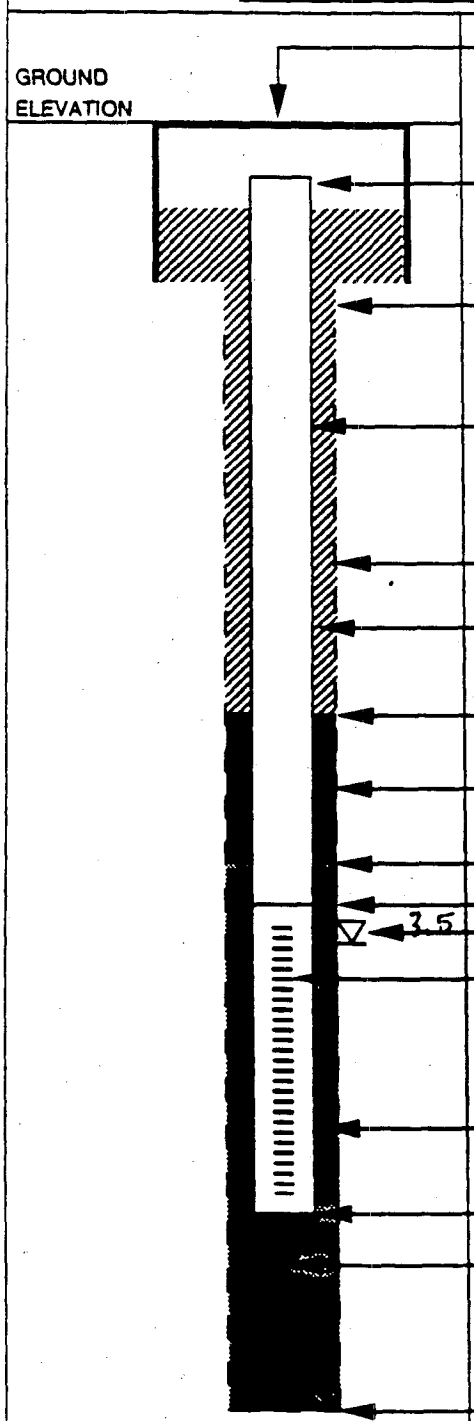
| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Analyses | Depth: Feet | | Boring # MW# M13-07 Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS ALAMEDA CTO 120 |
| | | | | | | | | | | | | Job # 2738.1404 Site: 13 |
| | | 18 | | | | 5 [illegible] | | | | 12 | | Aa |
| | | 2E | | | | | [illegible] | | | | | Odor Aa. |
| | | | | | | | | | | 13 | | TD=13' |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |
| | | | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

MF

BORING NO. M-13-07

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS ALAMEDA | LOCATION Site 13 | DRILLER E. Forsstrom |
| PROJECT NO. 2738.1104 | BORING M-13-07 | DRILLING METHOD [illegible] B57 |
| ELEVATION | DATE 8-12-94 | DEVELOPMENT METHOD Surge, Bail, Pump. |
| FIELD GEOLOGIST DANIEL KEAMER | | |




ELEVATION OF GROUND SURFACE:

ELEVATION OF TOP OF WELL CASING:

I.D. OF SURFACE CASING: 2"

TYPE OF SURFACE CASING: Blank [illegible]

RISER PIPE I.D.: NA

TYPE OF RISER PIPE: NA

BOREHOLE DIAMETER: 8½"

TYPE OF BACKFILL: Neat cement [illegible]

ELEVATION / DEPTH OF SEAL: 1.0

TYPE OF SEAL: Bentonite pellets

DEPTH TOP OF SAND PACK: 2½

ELEVATION / DEPTH TOP OF SCREEN:

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: PVC 40 sch slotted

SLOT SIZE x LENGTH 0.01 x10

I.D. OF SCREEN 2"

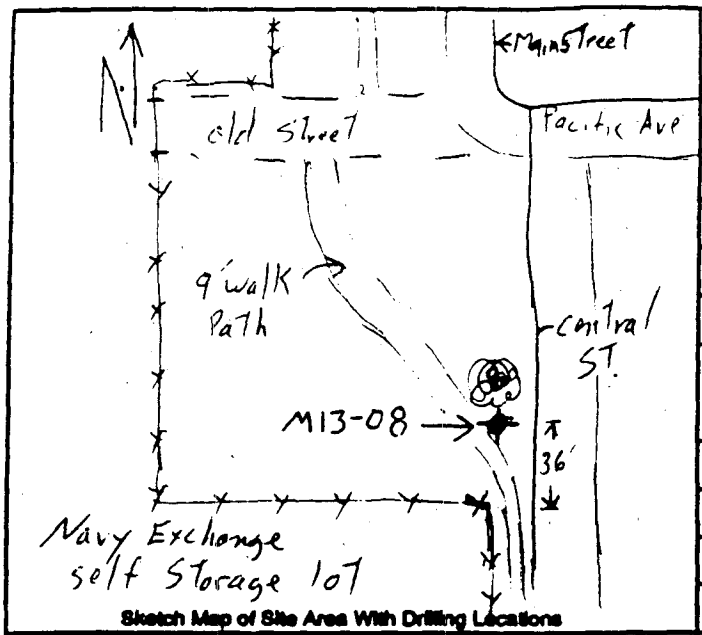
TYPE OF SAND PACK: 2/16 monterey sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12½

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12½

TYPE OF BACKFILL BELOW OBSERVATION WELL: [illegible] monterey sand.

ELEVATION / DEPTH OF HOLE: 1[illegible]




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M13-08 Sheet 1 of 2 |
| Project: | NAS Alameda CTC-028C |
| Job # | 2738.1405 Site: 13 |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B57 HSA |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | 8" Total Depth: 32' Bot. Elev. |
| Hammer Wt: | 140 Lb Drop: 30" |
| Start Time: | 1045 Date: 11/19/94 |
| Completion Time: | 1130 Date: 11/19/94 |
| Backfill Time: | 1300 Date: 11/19/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Sand & gravel base, gravels to 3" ø. |
| | | | | | | | | | 1 | | |
| | | 5 | | | | | | X | | | |
| | | 6 | | | | | | X | 2 | SP | Very fine to fine grained Sand (SP) |
| | | 5 | | | | | | | | | very moist to saturated below 3', |
| | | 2 | | | | | | X | 3 | | loose to very loose, grayish brown |
| | | 2 | | | | | | X | | | 10YR (5/2) |
| | | 1 | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | 2 | | | | | | X | | SP | Very fine to fine grained Sand (SP) |
| | | 3 | | | | | | X | 6 | | Saturated, loose, dark gray 5Y (4/1) |
| | | 7 | | | | | | | | | grading to light olive brown 2.5Y (5/4) |
| | | | | | | | | | 7 | | Trace silt, |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | Very fine to fine grained Sand (SP) |
| | | 21 | | | | | | | | | moist to very moist, Dense, yellowish |
| | | 19 | | | | | | | 11 | | brown 10YR (5/4) and light brownish |
| | | 26 | | | | | | 1100 | | | gray 10YR (6/2) mottled, 5% silt, 5% |
| | | | | | | | | | 12 | | Clay, Trace rootlets, Slightly consolidated. |

Boring # MW# M13-08 Sheet 2 of 2

Project: NAS Alameda CTC-C280

Job # 2738.1405 Site: 13

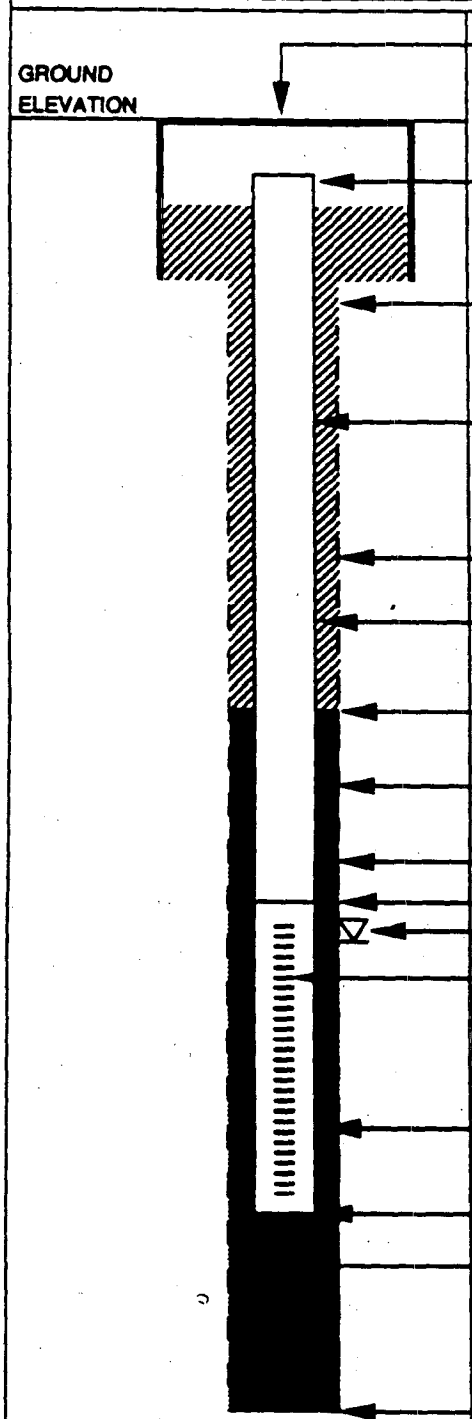
| OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 12 | | |
| | | | | | | 2" Sch 40 PVC Casing | Neat Cement | | 13 | | |
| | | | | | | | | | 14 | | |
| | | 12 | | | | | | | 15 | SP | fine grained Sand (SP) Saturated, Dense, yellowish brown 10YR (5/4), Trace silt. |
| | | 23 | | | | | | | | | |
| | | 29 | | | | | | | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | 2" Sch 40 PVC Solid | bentonite | | 18 | | |
| | | | | | | | | | 19 | | |
| | | 16 | | | | | | | 20 | | fine grained Sand (SP) Saturated, Denise, Pale brown 10YR (6/3) |
| | | 25 | | | | | | | | | |
| | | 29 | | | | | | | 21 | | |
| | | | | | | | | | 22 | | |
| | | | | | | | | | 23 | | |
| | | | | | | 2" Sch 40 PVC Factory Slot | #2/12 Monterey Sand | | 24 | | |
| | | | | | | | | | 25 | | |
| | | 8 | | | | | | | | | fine grained Sand (SP) Saturated, Denise, Pale brown 10YR (6/3) and yellowish brown 10YR (5/6) mottled. |
| | | 17 | | | | | | | 26 | | |
| | | 32 | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | fine grained Sand (SP) Saturated, Denise, Pale brown 10YR (6/3), Trace silt. |
| | | 9 | | | | | | | 30 | | |
| | | 24 | | | | | | | 31 | | |
| | | 35 | | | | | | | 32 | | TD 32' 10' Screen - 22' Solid |

15

BORING NO. M13-08

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT Alameda CTO-0290 | LOCATION Site 13 | DRILLER Woodward |
| PROJECT NO. 2738.1405 | BORING M13-08 | DRILLING METHOD HSA |
| ELEVATION | DATE 11-19-94 | DEVELOPMENT METHOD Surge bail Pump |
| FIELD GEOLOGIST LWPW | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 18

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 20

ELEVATION / DEPTH TOP OF SCREEN: 22

FIRST ENCOUNTERED SATURATED ZONE 3'

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 factory slot

I.D. OF SCREEN 2"

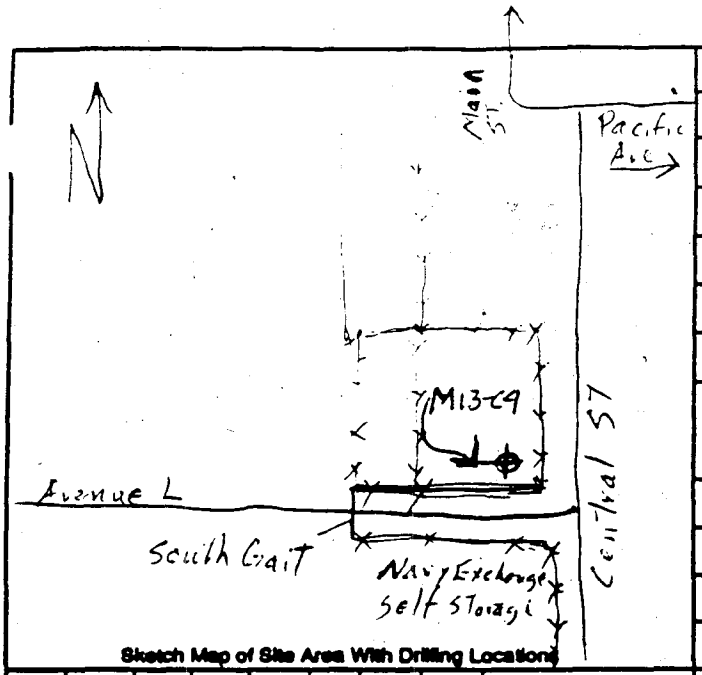
TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 32'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 32'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 32'




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M13-C9 Sheet 1 of 2 |
| Project: | NAS Alameda CTO-C28C |
| Job # | 2738.1405 Site: 13 |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B57 HSA |
| Drillers Name: | Erick Forsstrom |
| Borehole Diam./Drill Bit Type | 8" Total Depth 13 Ref. Elev. |
| Hammer Wt: | 140 Drop: 30 |
| Start Time: | 1310 Date: 11/19/94 |
| Completion Time: | 1400 Date: 11/19/94 |
| Backfill Time: | 450 Kristy Date: 11/19/94 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

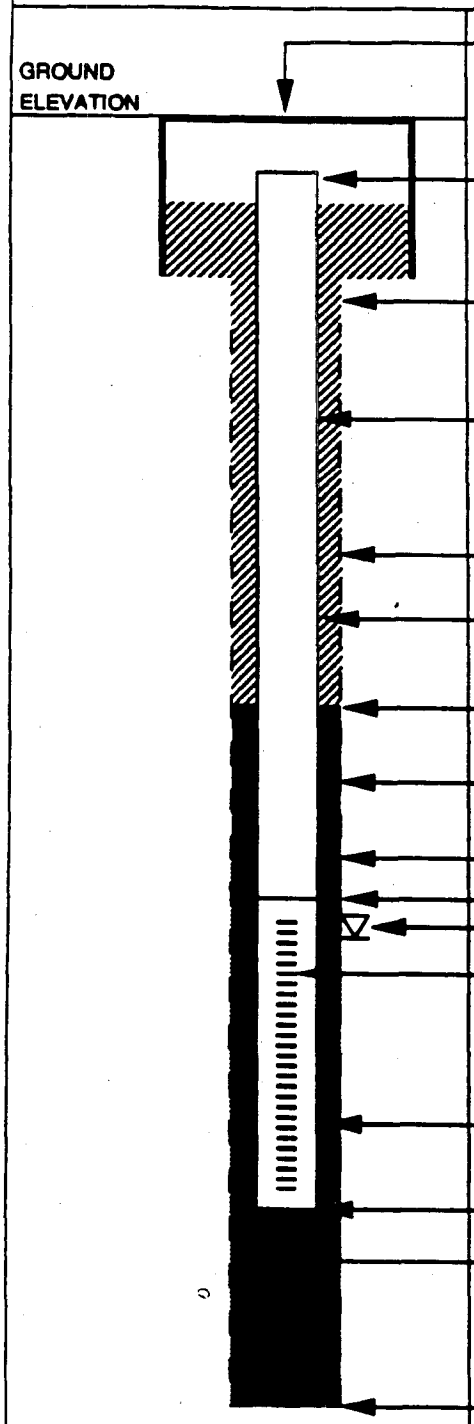
| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Solid 2" Casing | Neat Cement | | | | 3" Asphalt over gravel base, gravel to 3" Ø |
| | | 14 | | | | | | X 1320 | 1 | | |
| | | 7 | | | | | Bentonite | X | 2 | SP | fine grained Sand (SP) very moist, |
| | | 12 | | | | | | | | | med. dense, Very dark grayish |
| | | 3 | | | | | | | 3 | | brown 10YR (3/2) Trace gravels to 3/4" Ø |
| | | 5 | | | | | | | | | |
| | | 4 | | | | | | 1326 | 4 | | |
| | | 4 | | | | | | | 5 | | Very fine to fine grained Sand (SP) |
| 32 | | 4 | | | | | | X 1335 | | | Saturated, loose, dark bluish gray 5B(4/1) |
| | | 3 | | | | | | X | 6 | | Trace silt, odor (oil) |
| | | | | | | 2" SCH 40 PVC #0.01 factory slot | #2/12 Monterey Sand | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | fine grained Sand (SP) very moist to saturated, |
| | | 17 | | | | | | | 10 | | Very dense, greenish gray 5GY(5/1), rootlets |
| | | 26 | | | | | | | | | common with greenish gray 5G(6/1) |
| | | 50 | | | | | | | 11 | | Staining, Trace silt, Trace clay. |
| | | | | | | | | | | | color change @ 11.5' to yellowish brown |
| | | 9 | | | | | | | 12 | | 10YR (5/4) with light gray 10YR 6/1 mottling. |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW#M13-09 Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: CAS Alameda CTC-0280 |
| | | | | | | | | | | | Job # 2738.1405 Site: 13 |
| | | 16 | ↓ | ↓ | | ↓ | ↓ | | 12 | | Fine grained Sand (SP) as above |
| | | 23 | ↓ | ↓ | | | ↓ | | | SP | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | | | TD = 13' well set @ 12.5' |
| | | | | | | | | | 14 | | |
| | | | | | | | | | | | 10' of screen - 2.5' solid |
| | | | | | | | | | 15 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. M13-09

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT Alameda CTC-0280 | LOCATION Site 13 | DRILLER Woodward |
| PROJECT NO. 2738.1405 | BORING M13-09 | DRILLING METHOD HSA |
| ELEVATION | DATE 11-19-94 | DEVELOPMENT METHOD Surge bail Pump |
| FIELD GEOLOGIST WPW | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 1.5

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 2'

ELEVATION / DEPTH TOP OF SCREEN: 2.5

FIRST ENCOUNTERED SATURATED ZONE 3

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH 0.01 factory slot

I.D. OF SCREEN 2"

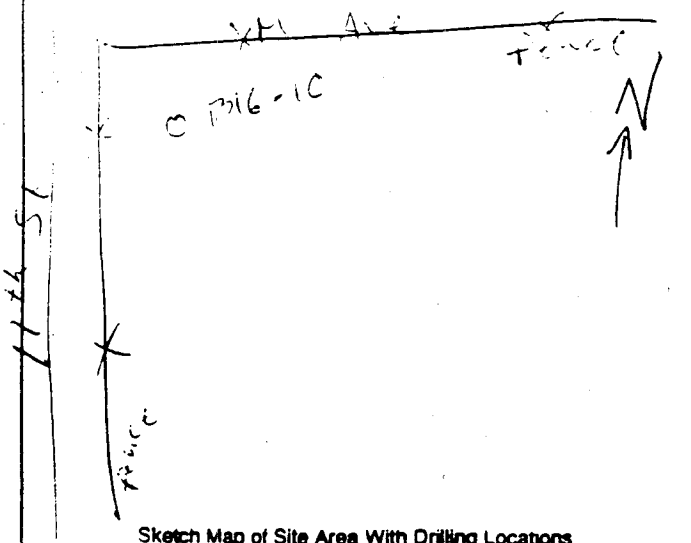
TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 12.5

ELEVATION / DEPTH BOTTOM OF SAND PACK: 13

TYPE OF BACKFILL BELOW OBSERVATION WELL: 6" of #2/12 Monterey Sand

ELEVATION / DEPTH OF HOLE: 13

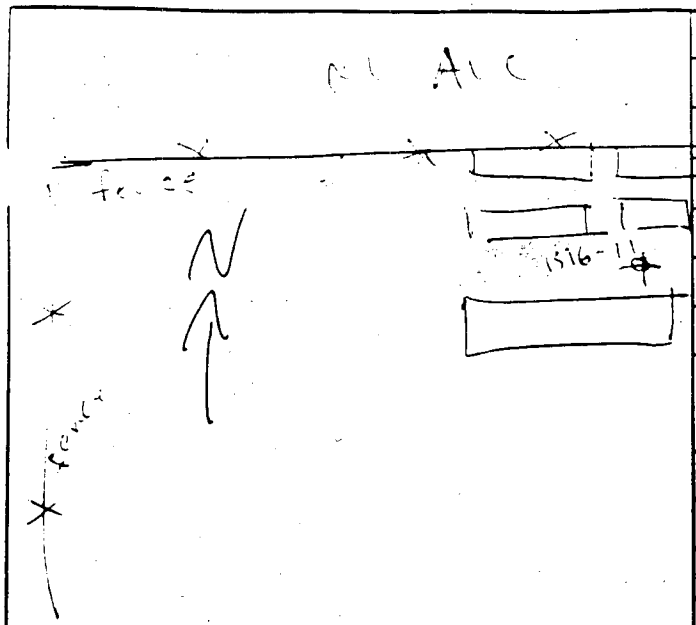



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # B16-1C MW# | Sheet 1 of 1 |
| Project: Alameda NAS CTO-0280 | |
| Job # 2738.1409 | Site: 16 |
| Logged By: TEV | Proj. Eng: SMH Edited By: |
| Drilling Contractor: Woodward Drilling | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Wayne Woodward | |
| Borehole Diam./Drill Bit Type 8.25" | Total Depth 6' / Ref. Elev |
| Hammer Wt: 140 lb | Drop: 30" |
| Start Time: 0915 | Date: 8/19/94 |
| Completion Time: 0935 | Date: 8-19-94 |
| Backfill Time: 0945 | Date: 8-19-94 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | ≈5.5' | | | |
| Time | 0930 | | | |
| Date | 8-19-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.3 | | 11 | | | | | Cement Grout | | | Sandy GRAVEL, gray/brown, dense, sl mst, med gr, med K |
| | | 13 | | | | | | 0917 | 1 | |
| | | 20 | | | | | | | | |
| | | 18 | | | | | | | 2 | |
| | | 18 16 | | | | | | | | Sandy CLAY (CL/SC), lt. br, plastic, v sl mst, fine-med gr, ~~[illegible]~~ low K. |
| C | | 20 22 | | | | | | 0926 + Dup (0930) geotech | 3 | |
| | | 22 22 | | | | | | | | SAND (SP), lt. br, dense, v sl mst, fine gr, high K. |
| | | 23 23 | | | | | | | 4 | |
| | | ~~4~~ 6 | | | | | Neat | | | As above. |
| C | | 9 | | | | | | 0935 | 5 | |
| | | 11 | | | | | | | | 6' = BOB |
| | | | | | | | | | 6 | |
| | | | | | | | | | 7 | |
| | | | | | | | | | 8 | |
| | | | | | | | | | 9 | |
| | | | | | | | | | 10 | |
| | | | | | | | | | 11 | |
| | | | | | | | | | 12 | |

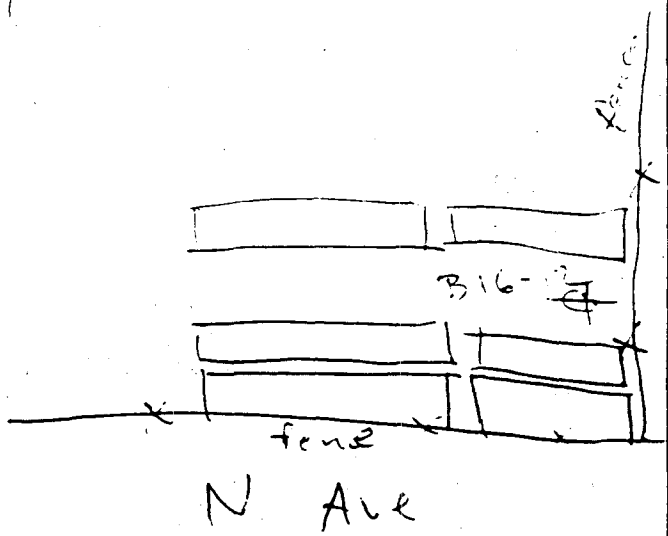



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # [illegible] MW# | Sheet [illegible] of 1 |
| Project: [illegible] | CTO-0280 |
| Job # [illegible] Site: 16 | |
| Logged By: [illegible] Proj. Eng: SMH | Edited By: |
| Drilling Contractor: Woodward Drilling | |
| Drill Rig Type/Method: HSA | |
| Drillers Name: Wayne Woodward | |
| Borehole Diam./Drill Bit Type: 8 1/2" | Total Depth: 7' |
| | Ref. Elev: |
| Hammer Wt: 140 lb. | Drop: 30 |
| Start Time: 0955 | Date: 8-19-94 |
| Completion Time: 1230 (Stop [illegible] Start 1200) | Date: 8-19-94 |
| Backfill Time: 1240 | Date: 8-19-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 7 | | | |
| Casing Depth (ft.) | N.A. | | | |
| Water Depth (ft.) | 5.5' | | | |
| Time | 1225 | | | |
| Date | 8-19-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 | | | | | Neat Cement Grout | | 1215 | | Top 1 = Asphalt & Base Rock. |
| | | 32 | | | | | | | | 1 | SAND (SP), lt br, dense sl mst, fine-gr, high K @ 1'-3' |
| | | 15 | | | | | | | | | |
| | | 33 | | | | | | | | 2 | |
| | | 25 | | | | | | | 1220 | | |
| | | 35 | | | | | | | | 3 | |
| | | 8 | | | | | | | | | As Above |
| | | 10 | | | | | | | | 4 | |
| | | 11 | | | | | | | 900 tech | | |
| | | 13 | | | | | | | | | |
| | | 5 | | | | | | | 1225 | 5 | As Above |
| | | 5 | | | | | | | | | 5.5 = Saturated |
| | | 6 | | | | | | | | 6 | |
| | | 7 | | | | | | | | | BOB = 7' |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

Boring # B16-12MW# | Sheet ___ of 1

Project: Alameda NAS CTO-0280

Job # 27358.1404 Site: 16

Logged By: JEV Proj. Eng: SMH Edited By:

Drilling Contractor: Woodward Drilling

Drill Rig Type/Method: HSA

Drillers Name: Wayne Woodward

Borehole Diam./Drill Bit Type: 8 1/2" | Total Depth: 6'

Ref. Elev:

Hammer Wt: 140 lb. Drop: 30"

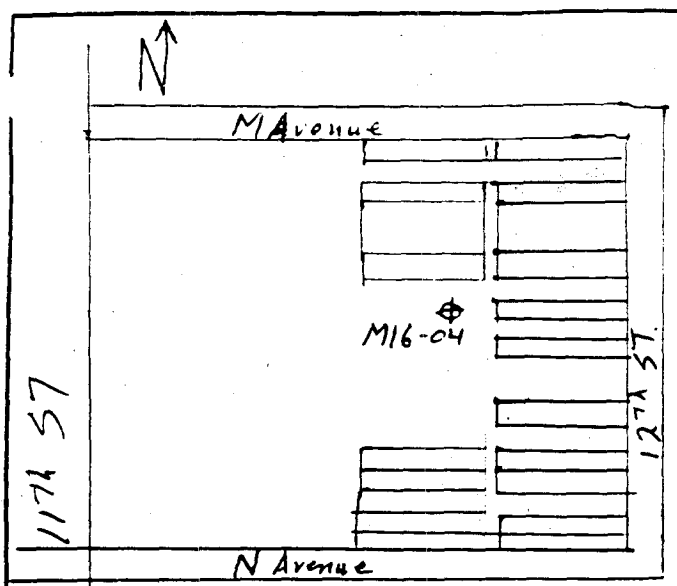
Start Time: 1040 Date: 8-19-94

Completion Time: 1100 Date: 8-19-94

Backfill Time: 1105 Date: 8-19-94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5.5' | | | |
| Time | 1054 | | | |
| Date | 8-19-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | | | | | Neat Cement Grout | | 1045 | | | SAND (SP) w/ minor gravel & silt, lt br, loose, dry, fine gr, med lt (v sl inst) @ 1' bgs) |
| | | 9 | | | | | | | | 1 | | |
| | | 12 | | | | | | | | | | |
| | | 11 | | | | | | | | 2 | | |
| | | 6 | | | | | | | | | | As Above, except v sl inst |
| | | 10 | | | | | | | 1050 | 3 | | |
| | | 14 | | | | | | | | | | |
| | | 22 | | | | | | | 920 tech | | | |
| | | 6 | | | | | | | | | | As above |
| | | 7 | | | | | | | | | | |
| | | 8 | | | | | | | 1254 | 5 | | Saturated @ 5.5' |
| | | 8 | | | | | | | | 6 | | BOB. |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 10 | | |
| | | | | | | | | | | 11 | | |
| | | | | | | | | | | 12 | | |




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M16-04 Sheet 1 of 2 |
| Project: | CTO-0280 NAS Alameda |
| Job # | 2738.1405 Site: 16 |
| Logged By: | WPW Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling |
| Drill Rig Type/Method: | Mobile B57 HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" Total Depth: 14 Ref. Elev. |
| Hammer Wt: | 140 Drop: 30" |
| Start Time: | 8 SC Date: 11/6/94 |
| Completion Time: | 0940 Date: 11/6/94 |
| Backfill Time: | 1035 Date: 11/6/94 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 4" Asphal Tover Sand & gravel base. |
| | | | | | | Solid PVC casing | Neat cement | | 1 | | |
| | | 6 | | | | | | X | surface | | |
| 0 | | 8 | | | | | ↓ | X | 900 | | |
| | California 2" Split Spoon | 14 | ↓ | ↓ | | | beat | X | 905 | | |
| | | 10 | | | | | enite | X | 2' | | |
| | | 16 | | | | | ↑ | X | 2' dup | SP | Very fine To fine grained Sand |
| 0 | | 16 | ↓ | ↓ | | | | X | 910 | | (SP), moist, dense, light yellowish |
| | | | | | | | | | 4 | | brown 2.5Y 6/3 |
| | | | | | | | | | 5 | | |
| | | 10 | | | | 2" SCH 40 PVC casing 0.01 slot | | X | 915 ▽ color | | Very fine To fine grained Sand |
| | | 12 | | | | | | X | | | (SP). Saturated below 5.5', med. |
| | | 14 | ↓ | ↓ | | | #4/12 Monterey Sand | | 6 | | dense, greenish gray SGY (5/1) |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | 3 | | | | | | | 920 | | Sand AA - Trace sea shells |
| | | 4 | | | | | | | | | Saturated, loose To med. dense |
| | | 6 | ↓ | ↓ | | | | | 10 | | greenish gray SGY (5/1) |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rod (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# M16-04 Sheet 2 of 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: CTO-0280 NAS Alameda |
| | | | | | | | | | | | Job # 2738.1405 Site: 16 |
| | | 3 | ↓ | ↓ | | ↓ | ↓ | | 12 | SP | Sand A.A. |
| | | 4 | | | | | | | | | |
| | | 5 | ↓ | ↓ | | | | | 13 | CL | Silty Clay (CL) Very moist, stiff, dark gray (N4/) and dark greenish gray 5G (4/1) mottled, Traces of sea shells, Trace sand |
| | | 4 | 6" end cap | | | ↓ | ↓ | | 14 | | |
| | | | | | | | | | 15 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | TD 9.4C |
| | | | | | | | | | 8 | | 3.5' Solid<br>10' screen<br>6" end cap. |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | Note Screen section of casing starts @ 3.5' but slots actually start @ 4' |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

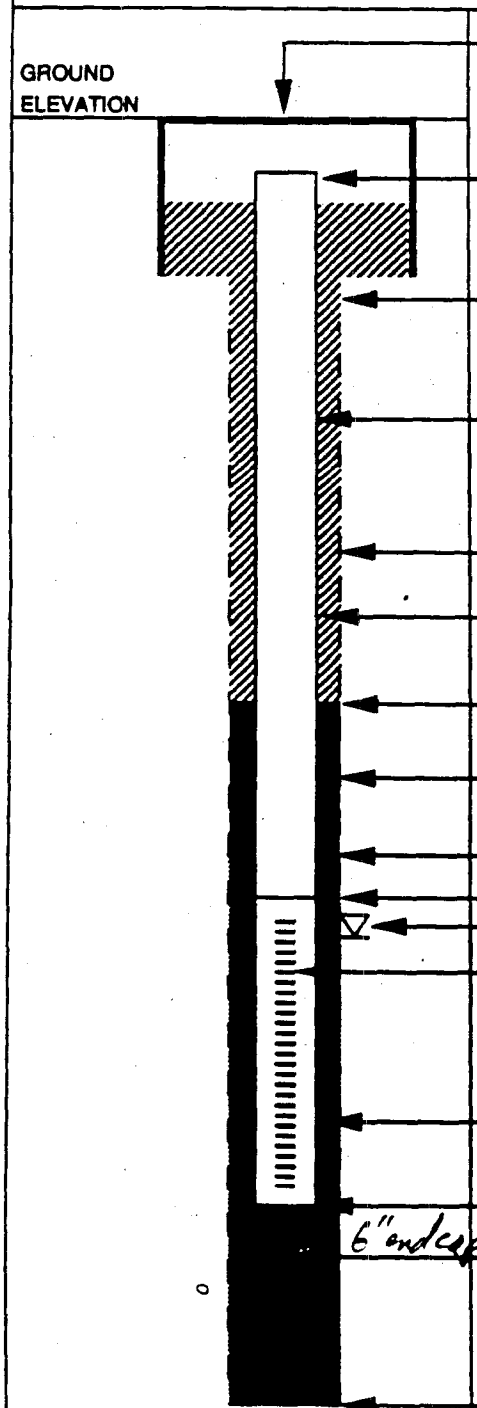
BORING NO. M16-04

# MONITORING WELL SHEET

PROJECT C70-028C
PROJECT NO. 2738.1405
ELEVATION
FIELD GEOLOGIST LJPLJ

LOCATION Site 16 Alameda
BORING M16-04
DATE 11-6-94

DRILLER Woodward
DRILLING METHOD HSA
DEVELOPMENT METHOD Surge, bail, Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A
TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"
TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 2

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 3'
ELEVATION / DEPTH TOP OF SCREEN: 3.5
FIRST ENCOUNTERED SATURATED ZONE 5.5
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH 0.01 factory slot
I.D. OF SCREEN 2"

TYPE OF SAND PACK: #2/12 monterey sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 13.5
ELEVATION / DEPTH BOTTOM OF SAND PACK: 14
TYPE OF BACKFILL BELOW OBSERVATION WELL: _____

ELEVATION / DEPTH OF HOLE: 14

1-17 ~~4~~ 9 ~~4~~ 5X

Sketch Map of Site Area With Drilling Locations

Boring # B19-17-MW# Sheet 1 of 1

Project: Alameda NAS CTO-0280

Job # ~~2738~~. 1404 Site: 19

Logged By: JEV Proj. Eng: SMH Edited By:

Drilling Contractor: Woodward

Drill Rig Type/Method: HSA

Drillers Name: Eric Forstrom

Borehole Diam./Drill Bit Type 8 1/2" Total Depth 6'

Hammer Wt: 140 lb. Drop: 30"

Start Time: 1250 Date: 8-22-94

Completion Time: 1310 Date: 8-22-94

Backfill Time: 1320 Date: 8-22-94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 4.5' | | | |
| Time | 1310 | | | |
| Date | 8-22-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 2 | | | | | Grout | | | | |
| | | 4 | | | | | | | | | |
| | | 6 | | | | | | | BO 5' | | |
| | | 7 | | | | | | | | 2 | |
| | | 8 | | | | | Cement | | | | |
| 0 | | 12 | | | | | | | JV 1307 | 3 | |
| | | 15 | | | | | | | | | |
| | | 19 | | | | | | | JV ~~1310~~ | 4 | |
| | | 6 | | | | | | | geo-tech | | |
| | | 8 | | | | | | | | 5 | |
| 0 | | 8 | | | | | Neat | | 1310 | | |
| | | 9 | | | | | | | | 6 | |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 10 | |
| | | | | | | | | | | 11 | |
| | | | | | | | | | | 12 | |

Top 1' = sand gravel (GW), gry/brown, dense, v sl mst, f-g, high K.
At 1' = as above, but more sand + some tar/asphalt.
2-2½' = gravelly SAND (SW), orange-br, dense, sl mst, med-gr, high K
2½-4 = SAND (SP), lt br (6/3, 7.5 YR), dense, sl mst, fine gr, high K
As Above, except Saturated @ 4.5'.

6' = BOB

Boring # B19-18MW# Sheet 1 of 1

Project: Alameda NAS CTO-0280

Job # 2738.1404 Site: 19

Logged By: JEV Proj. Eng: SMH Edited By:

Drilling Contractor: Woodward

Drill Rig Type/Method: HSA

Drillers Name: Eric Forstrom

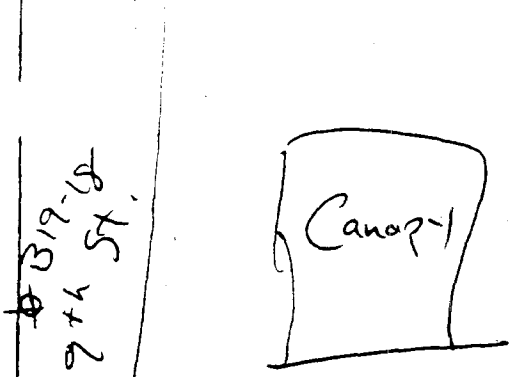
Borehole Diam./Drill Bit Type 8½" | Total Depth 8'

Hammer Wt: 140 lb. Drop: 30"

Start Time: 1330 Date: 8-22-94

Completion Time: 1350 Date: 8-22-94

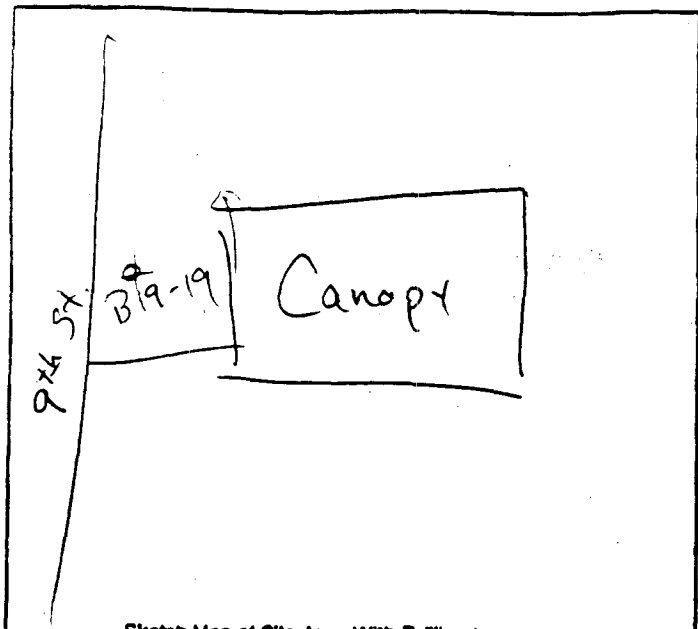
Backfill Time: 1400 Date: 8-22-94




Sketch Map of Site Area With Drilling Locations

| | 1st Water |
|---|---|
| Boring Depth (ft.) | 8' |
| Casing Depth (ft.) | NA |
| Water Depth (ft.) | 5' |
| Time | 1345 |
| Date | 8-22-94 |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. Analyses | Depth Feet | Description |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 13 | | | | | | | | gravelly SAND (SW), red-br (4/3, 2.5YR), |
| | | 14 | | | | | | | | dense, dry, med-gr, med K. |
| | | 12 | | | | | | 1330 | | |
| | | 11 | | | | | | | | |
| 0 | | 13 | | | | | Grout | 1335 | 2 | SAND (SP), lt br (6/3, 7.5YR), dense, |
| | | 25 | | | | | | | | sl mst, fine-gr, high K |
| | | 27 | | | | | | 90' tech | 3 | |
| | | 26 | | | | | | | | |
| 0 | | 5 | | | | | Cement | | 4 | As Above, except saturated @ 4.5' |
| | | 7 | | | | | | 1340 | 5 | |
| | | 8 | | | | | | | | |
| | | 7 | | | | | Heat | 1345 | 6 | |
| | | 3 | | | | | | | | As Above |
| | | 4 | | | | | | | 7 | |
| | | 9 | | | | | | | | |
| | | 16 | | | | | | | 8 | BOB = 8' bgs |
| | | | | | | | | | 9 | |
| | | | | | | | | | 10 | |
| | | | | | | | | | 11 | |
| | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

Boring # B19-19 MW# Sheet 1 of 1

Project: Alameda NAS CTO-0280

Job # 2738.1404 Site: 19

Logged By: JEV Proj. Eng: SMH Edited By:

Drilling Contractor: Woodward

Drill Rig Type/Method: HSA

Drillers Name: Eric Forstrom

Borehole Diam./Drill Bit Type 8½" [redacted] 6"

Hammer Wt: 140 lb. Drop: 30"

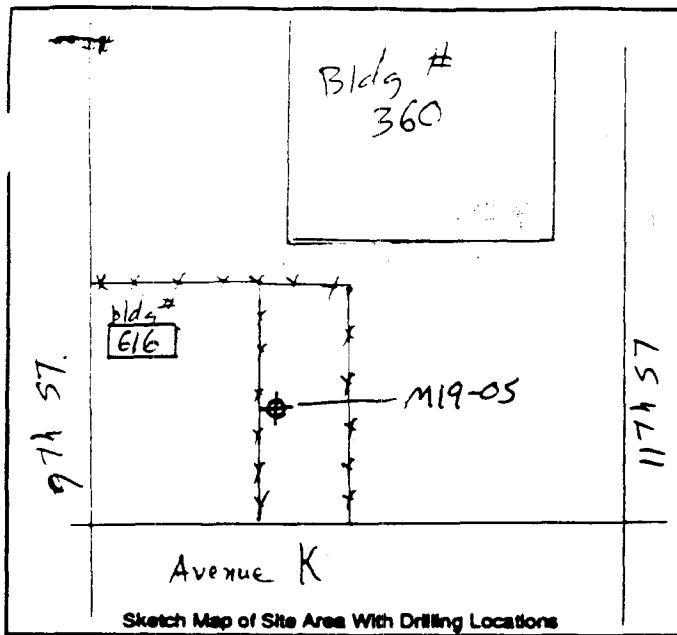
Start Time: 1415 Date: 8-22-94

Completion Time: 1430 Date: 8-22-94

Backfill Time: 1450 Date: 8-22-94

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 6' | | | |
| Casing Depth (ft.) | NA | | | |
| Water Depth (ft.) | 5' | | | |
| Time | 1430 | | | |
| Date | 8-22-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3.0 | | 18 | | | | | Neat Cement Grout | | | Sandy GRAVEL (GW), gray/br, dense, dry, fine-gr, high K. |
| | | 31 | | | | | | | | |
| | | 37 | | | | | | 1420 | 1 | |
| | | 50/4 | | | | | | | 2 | |
| | | 13 | | | | | | | | SAND (SP), lt br, dense, v sl mst, fine-gr, high-med K. |
| 0 | | 28 | | | | | | 1425 | 3 | |
| | | 30 | | | | | | | | |
| | | 50 | | | | | | 50' tech | 4 | |
| | | 13 | | | | | | | | SAND (SP), lt br, dense, mst, high K. Saturated @ 5' bgs. |
| | | 27 | | | | | | | 5 | |
| 0 | | 30 | | | | | | 1430 | | |
| | | 31 | | | | | | | 6 | 6' = BOB. |
| | | | | | | | | | 7 | |
| | | | | | | | | | 8 | |
| | | | | | | | | | 9 | |
| | | | | | | | | | 10 | |
| | | | | | | | | | 11 | |
| | | | | | | | | | 12 | |




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M19-05 Sheet 1 of 2 |
| Project: | Alameda CTO-0280 |
| Job # | 2736.1405 Site: 19 |
| Logged By: | L. Pl. Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Woodward Drilling Co |
| Drill Rig Type/Method: | Mobile B57 HSA |
| Drillers Name: | Wayne Woodward |
| Borehole Diam./Drill Bit Type | 8" Total Depth: 30 Ref Elev |
| Hammer Wt: | 140 Drop: 30 |
| Start Time: | 1050 Date: 11-6-94 |
| Completion Time: | 0900 Date: 11-19-94 |
| Backfille Time: | 0950 Date: 11-19-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Asphalt pavement over oiled sandbase |
| | | 6 | | | | | | X | 1100 1 | | |
| | | 12 | | | | | | X | | SP | |
| | | 15 | ↓ | ↓ | | | | | 2 | | Fine grained Sand (SP) moist, med. dense, light brownish gray 10YR (6/2) |
| | | 2 | | | | | | X | 1105 3 | | |
| | | 2 | | | | | | X | | | Fine grained Sand (SP) Very moist, loose, light brownish gray 10YR (6/2) and dark grayish brown 10YR (4/2) mottled. |
| | | 3 | ↓ | ↓ | | | | | 4 | | |
| | | 1 | | | | | | X | 1110 5 | | |
| | | 1 | | | | | | X | | | Fine grained Sand (SP) Saturated, Very loose, very dark gray 10YR 3/1 and dark yellowish brown 10YR 4/4 mottled, Trace silt & organic matter. |
| | | 0 | ↓ | ↓ | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | *Note. Stopped 6" due to heavy Rain boring sealed |
| | | | | | | | | | 9 | | *Re start drilling on 11-19-94 |
| | | 11 | | | | | | | 10 | SM | Silty Sand (SM) Very moist to Saturated, dense, Yellowish brown 10YR 5/6 and Pale brown 10YR 6/3 Sand is very fine grained, Trace Clay |
| | | 15 | | | | | | | 11 | | |
| | | 20 | ↓ | ↓ | | | | | 12 | | |

Boring # MW# M19-05 Sheet 2 of 2

Project: CTO-0280

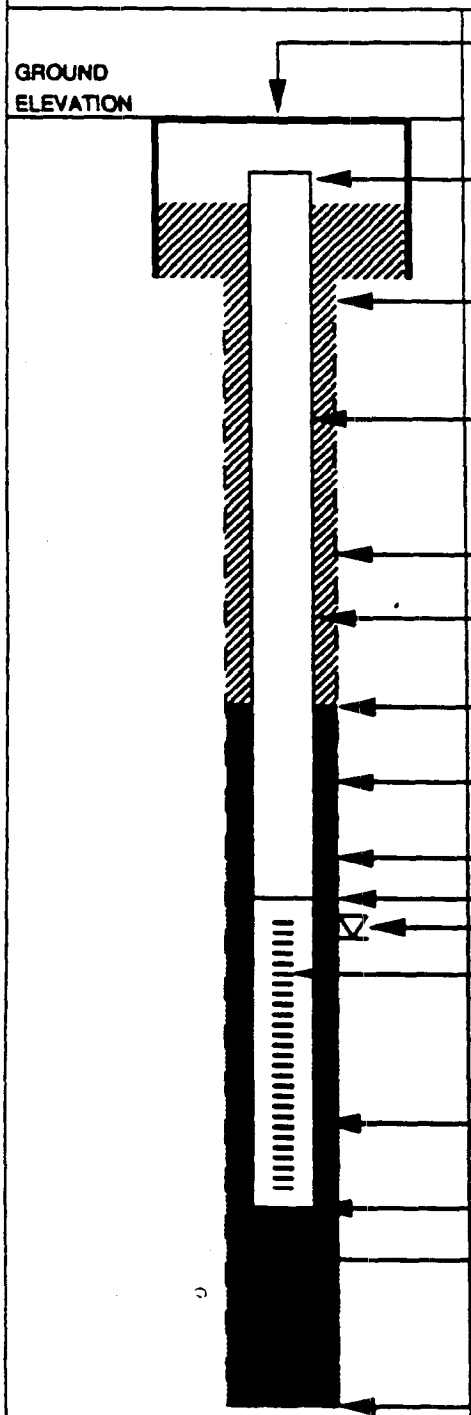
Job # Site: 19

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 12 | SM | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | 10 | | | | | Neat Cement | | 15 | | Very fine to fine grained Sand (SP) Saturated, Dense, yellowish brown 10yR(5/4) - Trace silt. |
| | | 18 | | | | 2" solid casing | | | | | |
| | | 22 | | | | | bentonite | | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | SP | |
| | | 9 | | | | | | | 20 | | Very fine To fine grained Sand (SP), Saturated, Dense, yellowish brown 10yR(5/4), Trace - 5% silt. |
| | | 22 | | | | | | | | | |
| | | 30 | | | | | | | 21 | | |
| | | | | | | 0.010 factory slott | | | 22 | | |
| | | | | | | | | | 23 | | |
| | | | | | | | | | 24 | | |
| | | 8 | | | | 2" Sch 40 PVC | #2/12 Monterey Sand | | 25 | | Very fine to fine grained Sand (SP) Saturated, Dense, yellowish brown 10yR (5/4) and light brownish gray 2.5Y (6/2) mottled. Trace - 5% silt. |
| | | 19 | | | | | | | | | |
| | | 27 | | | | | | | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | Very fine To fine grained Sand (SP) Saturated, Dense, light brownish gray 2.5Y (6/2) with yellowish brown 10yR(5/6) mottling. 5% silt. |
| | | 7 | | | | | | | | | |
| | | 15 | | | | | | | 29 | | |
| | | 25 | | | | | | | 30 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | TD 30' @ set well @ 30' 20' solid casing 10' screen. Trimmied Neat cement to surface |
| | | | | | | | | | 2 | | |

BORING NO. M19-05

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT Alameda CTO-0280 | LOCATION Site 19 | DRILLER Woodward |
| PROJECT NO. 2738.1405 | BORING M19-05 | DRILLING METHOD HSA |
| ELEVATION | DATE 11-19-94 | DEVELOPMENT METHOD Surge bail Pump |
| FIELD GEOLOGIST WPW | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 16

TYPE OF SEAL: bentonite

DEPTH TOP OF SAND PACK: 18

ELEVATION / DEPTH TOP OF SCREEN: 20

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 factory slot

I.D. OF SCREEN 2"

TYPE OF SAND PACK: #2/12 Monterey Sand

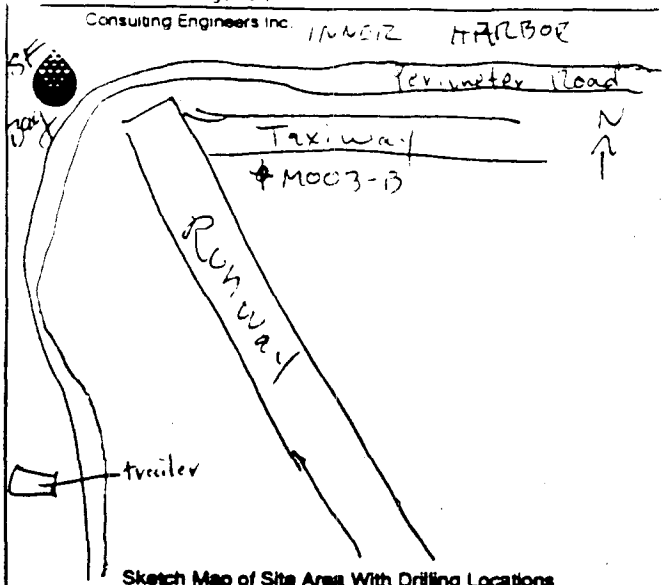
ELEVATION / DEPTH BOTTOM OF SCREEN: 30'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 30'

TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A

ELEVATION / DEPTH OF HOLE: 30'

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-003-B Sheet 1 of 3 |
| Project: | NAS Alameda |
| Job # | 2738.1406 Site: 1 |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | TONTO |
| Drill Rig Type/Method: | HSA / Mud Rotary |
| Drillers Name: | Randy Gustafson |
| Borehole Diam./Drill Bit Type | 12" / HSA |
| Total Depth | 44.5' |
| Ref. Elev. | |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 0840 Date: 10/14/94 |
| Completion Time: | 1135 Date: 10/24/94 |
| Backfille Time: | 1340 Date: 10/24/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 44.5 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1135 | | | |
| Date | 10/24/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | Conductor Casing | Casing Type & Size | Annulus Filler | Depth (Sample Recovery) | Feet | Graphics | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 16 | ↓ | ↓ | ↑ | ↑ | ↑ | | 0840 | GW | sandy GRAVEL (GW), dk br (7.5Y, 3/3) |
| | | 21 | | | | | | | | | dense, sl mst, f to m-gr, med K. |
| | | 17 | ↓ | ↓ | | | | | 1 | | |
| | | 5 | ↓ | ↓ | | | | | 0845 | SP | SAND (SP), brown (7.5Y, 5/3), dense, |
| | | 5 | | | | | | | 2 | | sl mst, f-gr, high K. |
| | | 6 | ↓ | ↓ | | | | | | | |
| | | 5 | ↓ | | | | | | 3 | | No Recovery |
| | | 5 | | | | | | | No Recovery | | |
| | | 5 | ↓ | | | | | | 4 | | |
| | | 9 | ↓ | ↓ | | | | | 0848 | | As Above (SP) except lt br |
| | | 10 | | | | | | | 5 | | (7.5Y, 6/3) w/ minor clay stringers |
| | | 12 | ↓ | ↓ | | | | | | | |
| | | 4 | ↓ | ↓ | | | | | 0853 | | As Above, except moist + minor |
| | | 6 | | | | | | | | | shell fragments. At 7' = silty |
| | | 5 | ↓ | ↓ | | | | | 7 | CL | CLAY (CL), dk gry (7.5Y, N6), plastic m lo |
| | | 6 | ↓ | ↓ | | | | | 0856 | SM | silty SAND (SM), gray (7.5Y, N5), |
| | | 7 | | | | | | | 8 | | dense, moist, f-gr, med K, minor |
| | | 7 | ↓ | ↓ | | | | | | | clay + abundant shell fragments. |
| | | 4 | ↓ | ↓ | | | | | 0859 | | As Above |
| | | 6 | | | | | | | | | |
| | | 6 | ↓ | ↓ | | | | | 10 | | |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

8" STEEL CONDUCTOR CASING
SCH. 40 BLANK PVC, 3" Diam.
PORTLAND CEMENT GROUT

Boring # MW# M-003-D **Sheet** 2 of 3

Project: NAS Alameda

Job # 2738.1406 Site: 1

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | Casing Pipe/CASING | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | 5 | | | | 3 INCH DIAMETER PVC, BLANK | Grout Cement Portland | 0906 | 15 | SP | SAND (SP), gray (7.5Y, N5) w/ slight green tinge, dense, moist, f-gr, high K, JV |
| | | 8 | | | | | | | | | |
| | | 8 | | | | | | | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | | |
| | | 5 | | | | | | 0910 | 20 | | 20'-21' = As Above |
| | | 2 | | | | | | | | | |
| | | 2 | | | | | | | 21 | CL | 21' = CLAY (CL), dk gray (7.5Y, N4), plastic, |
| | | 3 | | | | | | | | | |
| | | 2 | | | | | | No Recovery | 22 | | No Recovery (Sluff) |
| | | 2 | | | | | | | | | |
| | | 2 | | | | | | 0915 | 23 | | As Above (CL) except very dk gray (7.5Y, N3). Bott of Conductor = 24' bgs |
| | | 2 | | | | | | | | | |
| | | 2 | | | | | | | 24 | | |
| | | | | | | | | | | | (Continue drilling on 10/24/94 @ 0920) |
| JV hammered twice due to grout core in pipe 1st time | | 5 | | | | | | 0955 JV (10/24/94) | 25 | | As Above (CL) except dk olive gray (5Y, 3/2), med stiff, w/ minor shell fragments |
| | | 4 | | | | | | | | | |
| | | 1 | | | | | | 1020 | 26 | | |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | | 27 | | |
| | | 3 | | | | | | | | | |
| | | 5 | | | | | Bentonite | | 28 | | |
| | | 6 | | | | | | | | | |
| | | JV | | | | | | | 29 | | |
| | | 5 | | | | | Non-reactive sand | 1045 | 30 | | As Above w/ minor sand and abundant shells |
| | | 4 | | | | | | | | | |
| | | 4 | | | | | | | 31 | | |
| | | 11 | | | | | | | 32 | | |

Boring # MW# M-003-TB Sheet 3 of 3

Project: 2738.1406

Job # Alameda NAS Site: 1

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | Casing | Annulus | Sample Rec. | Analyses | Depth Feet | | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 24 | | | Black PVC | | | | 32 | CL | As Above w/ dk gr @ 32' (2.5Y, N4) |
| | | 25 | | | | | | | | | |
| | | 30 | | | | | | | 33 | SP | SAND (SP), very dk gry (7.5Y, N3), med dense, wet, med K |
| | | 50 | | | | | | | | | |
| | | | | | | | | | 34 | | |
| | | 31 | | | | | | | 35 | | As Above (SP) w/ minor shell fragments |
| | | 45 | | | | | | 1100 | | | |
| | | 56 | | | | | | | 36 | | |
| | | 38 | | | | | | | | | |
| | | 41 | | | | | | | 37 | | |
| | | 53 | | | | | | | | | At 37.5' = Becoming olive brown (2.5Y, 4/4) w/ tra of cl |
| | | | | | | | | | 38 | | |
| | | | | | | | | | 39 | | |
| | | 41 | | | | | | | 40 | | As Above (SP) except yellowish brown (10Y, 5/8) and no clay. |
| | | 62 | | | | | | 1125 | | | |
| | | 67 | | | | | | | 41 | | |
| | | | | | | | | | 42 | | |
| | | 31 | | | End Cap | | | | 43 | | As Above (SP) |
| | | 33 | | | | | | 1135 | | | 43.5' = bottom of Well |
| | | 50 | | | | | | | 44 | | 44.5' = bottom of borehole. |
| | | | | | | | | | 45 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

Casing: SCH. 40 SLOTTED PVC, 0.01 slot, 3" Diam.

Annulus: SAND 2/12 MONTEREY

Depth: 1100, 1125, 1135

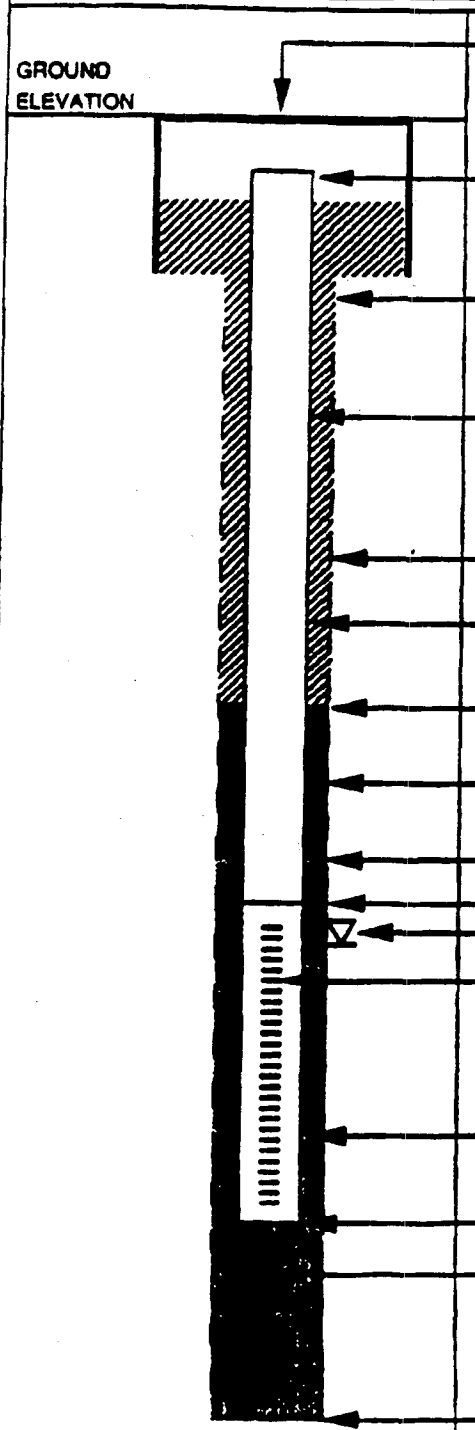
Meer Sa

BORING NO. M-003-B

# MONITORING WELL SHEET

PROJECT NAS Alameda (STO 280) LOCATION Site 1
PROJECT NO. 2738.1406 BORING M-003-B
ELEVATION _____ DATE 10/24/94
FIELD GEOLOGIST John Valett

DRILLER Randy Gustafson
DRILLING METHOD HSA/Mud Rotary
DEVELOPMENT METHOD Surge, Bail, Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: Steel Conductor

RISER PIPE I.D.: 3"
TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 26.5' bgs

TYPE OF SEAL: Bentonite

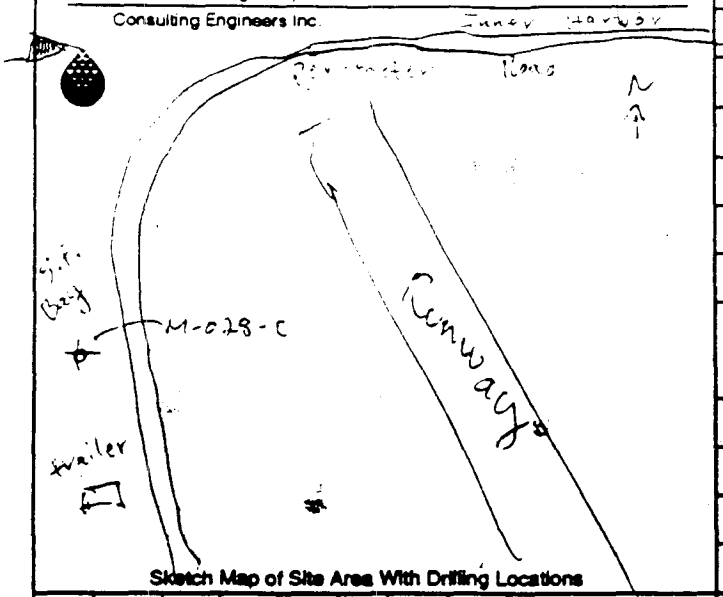
DEPTH TOP OF SAND PACK: 29.5' bgs
ELEVATION / DEPTH TOP OF SCREEN: 33' bgs
FIRST ENCOUNTERED SATURATED ZONE
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH 0.010 x 10 feet
I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 43' bgs
ELEVATION / DEPTH BOTTOM OF SAND PACK: 44.5' bgs
TYPE OF BACKFILL BELOW OBSERVATION WELL: Monterey 2/12 Sand

ELEVATION / DEPTH OF HOLE: 44.5' bgs

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-028-C Sheet 1 of 6 |
| Project: | NAS Alameda |
| Job # | 27738.1906 Site: |
| Logged By: | JEV/MM Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Tonto |
| Drill Rig Type/Method: | HSA / |
| Drillers Name: | Randy Gustafson |
| Borehole Diam./Drill Bit Type | 12" / HSA — Total Depth 92.5' — Ref. Elev |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 1040/1415 Date: 10/13/94 / 10/17/94 |
| Completion Time: | 0930 Date: 10/28/94 |
| Backfille Time: | 1245 Date: 10/28/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 92.5' | | | |
| Casing Depth (ft.) | 90' | | | |
| Water Depth (ft.) | | | | |
| Time | 0930 | | | |
| Date | 10/28/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5 | | | | | | | 1045 | SW | gravelly SAND (SW), brown (7.5Y, 5/2) |
| | | 13 | | | | | | | 1 | | loose, f-m gr, dry, mod K. |
| | | 22 | | | | | | | | | (minor glass fragments) |
| | | 9 | | | | | | | 1098 2 | SP | SAND (SP) w/ minor cobbles, |
| | | 14 | | | | | | | | | Edk br (7.5Y, 3/2), dense, |
| | | 31 | | | | | | | 3 | | dry, med K. |
| | | 11 | | | | | | | 1053 | | As Above |
| | | 16 | | | | | | | 4 | | |
| | | 10 | | | | | | | | | |
| | | 8 | | | | | | | 1057 5 | | As Above except brown (7.5Y, 5/2) |
| | | 7 | | | | | | | | | w/ minor charred wood pieces. |
| | | 3 | | | | | | | | | |
| | | 6 | | | | | | | 1102 6 | | As Above except moist @ 7'. |
| | | 2 | | | | | | | 7 | | |
| | | 3 | | | | | | | | | |
| | | 6 | | | | | | | 1108 8 | SW | gravelly SAND (SW), brown (7.5Y, 5/2), |
| | | 7 | | | | | | | | | dense, med-gr, moist, med K. |
| | | 15 | | | | | | | 9 | | (black gravel @ 8.5'). |
| | | 17 | | | | | | | | | |
| | | 36 | | | | | | | | | |
| | | 31 | | | | | | | 10 | | Leave site for day, due to refusal. |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

Casing: 3" Sch 40 PVC Solid Casing
Annulus Filler: Neat Cement Grout

Not retrieved (sampler broke)

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | Conductor Casing | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# M-028-C Sheet 2 of 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: WAS Alameda |
| | | | | | | | | | | | Job # 2738 1406 Site: 1 |
| | | | | | | | | | 12 | SW | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | | | | | | | | 15 | | |
| | | 2 | | | | | | 1425 (10/17/94) | | SP | SAND (SP), dk-gray (10Y, 4/1), ~~dense~~ loose WW moist, fine-gr, high K. |
| | | 2 | | | | | | | | | |
| | | 3 | | | | | | | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | | |
| | | 2 | | | | | | 1440 | 20 | | 20-20.5 = As above w/ minor clay |
| | | 4 | | | | | | | | CL | At 20.5 = CLAY (CL), dk gray (10Y, 4/1). |
| | | 5 | | | | | | | 21 | | firm ~~Med stiff~~, moist, low K. |
| | | 2 | | | | | | 1442 | | | As Above |
| | | 3 | | | | | | | 22 | | |
| | | 3 | | | | | | | | | |
| | | 2 | | | | | | | 23 | | As Above |
| | | 3 | | | | | | 1446 | | | |
| | | 2 | | | | | | | 24 | | |
| | | 2 | | | | | | 1450 | | | As Above (Bottom of casing @ 25 bgs) |
| | | 2 | | | | | | | 25 | | |
| | | 2 | | | | | | | | | |
| | | | | | | | | | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | 3 | 18 in | | | | | | | | Slough from 29-29.5 |
| | | 3 | | | | | | | | | Silty CLAY (CL), green-gray (5Y 3/1) |
| | | 2 | | | | | | | 30 | | Soft, wet, 10% shell fragments, Lowest K |
| | | | | | | | | | 31 | | |
| | | | | | | | | | 32 | | |

Steel conductor casing

3" sch 40 PVC solid casing

Neat Cement grout

conductor casing

HSA

Mud

10/27/94

Boring #M028C MW# M-028-C Sheet 3 of 6

Project: Alameda NAS

Job # 2738.1406 Site: 1

| PID/OVA | Sampler Type | Blow Counts | Advance | Rovd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 32 | | |
| | | | | | | | | | 33 | | |
| | | 2 | 18" | | | | | | 34 | ML | Clayey SILT (ML), green gray (5Y 3/2) |
| | | 2 | | | | | | | 35 | | Soft, wet, trace shells. Mod rst K. |
| | | 3 | | | | | | | | | |
| | | | | | | | | | 36 | | |
| | | | | | | | | | 37 | | |
| | | | | | | | | | 38 | | |
| | | | | | | 3" Sch 40 PVC Spiral Casing | | | 39 | CL | Silty Clay (CL), dark greenish gray (5GY 4/1), |
| | | 1 | | | | | | | | | soft, wet, 15% shells. Low rst K. |
| | | 2 | | | | | | | 40 | | |
| | | 1 | | | | | | | | | |
| | | | | | | | | | 41 | | |
| | | | | | | | | | 42 | | |
| | | | | | | | | | 43 | | |
| | | | | | | | Neat Cement Grout | | 44 | | |
| | | 9 | | | | | | | | | SAND (SP), dark greenish gray (5GY 4/1), |
| | | 29 | | | | | | | 45 | SP | med dense, damp, tr. shells. Mod rst K. |
| | | 35 | | | | | | | | | |
| | | | | | | | | | 46 | | |
| | | | | | | | | | 47 | | |
| | | | | | | | | | 48 | | |
| | | 26 | | | | | | | 49 | | Sand (SP) Saturated, Very |
| | | 47 | | | | | | | | | dense, dark greenish gray |
| | | 58 | | | | | | | 50 | | 5GY (4/1), Sand is fine grained |
| | | | | | | | | | 51 | | |
| | | | | | | | | | 52 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Feet | Graph | Boring # MW#MO-28-C Sheet 4 of 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda - CTO-0280 |
| | | | | | | | | | | | Job # 2738.1406 Site: 1 |
| | | | | | | | | | 52 | | |
| | | | | | | | | | 53 | | ~ - Color Change |
| | | 38 | | | | | | X | 54 | SP | Sand (SP), Saturated, Very dense, |
| | | 42 | | | | | | | 55 | | Yellowish brown 10YR (5/4), Sand |
| | | 50-4" | | | | | | | | | is very fine To fine grained. |
| | | | | | | | | | 56 | | Trace silT, |
| | | | | | | | | | 57 | | |
| | | | | | | | | | 58 | | |
| | | 25 | 2 | | | | Neat Cement Grout | X | 59 | | Sand SP, Very moist To saturated |
| | | 58 | | | | | | | 60 | | Very dense, light yellowish brown |
| | | 55 | | | | | | | | | 2.5Y (6/3), approx 5% Clay + |
| | | | | | | | | | 61 | | Trace to Sole Silt |
| | | | | | | | | | 62 | | |
| | | | | | | | | | 63 | | |
| | | 26 | | | | | | X | 64 | | Sand (SP), yellowish brown (10YR 5/8) |
| | | 65 | 4" | | | | | | 65 | | vy-dense, moist. High at K. |
| | | | | | | 3" Solid casing | | | 66 | | |
| | | | | | | | | | 67 | | |
| | | | | | | | | | 68 | | |
| | | 1 | | | | | | | 69 | | |
| | | 17 ~~44~~ | | | | | | X | | | As Above, except dk yellowish |
| | | 44 | | | | | | | 70 | | brown (10Y, 4/4), w/ trace of |
| | | 47 | | | | | | | | | silt + Clay. |
| | | | | | | | | | 71 | | |
| | | | | | | | | | 72 | | |

Boring # MW#M-028-C Sheet 5 of 6

Project: NAS Alameda

Job # 2738.1406 Site: 1

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 72 | | |
| | | | | | | | | | 73 | | |
| | | | | | | | | | 74 | SP | Sand (SP) Saturated, very dense, greenish gray 5GY (5/1) Traces of red sand grains. |
| | | 17 | | | | Solid casing | bentonite Seal | | | | |
| | | 25 | | | | | | | 75 | | |
| | | 42 | | | | | | | | | |
| | | | | | | 4" PVC | | | 76 | | |
| | | | | | | | | | 77 | | |
| | | | | | | 3" Sch | | | 78 | | |
| | | 17 | | | | | | | 79 | | Sand (SP), dark blue gray (5B 4/1), m. dense, wet. high est K |
| | | 22 | | | | | | | | | |
| | | 45 | | | | | | | 80 | | |
| | | | | | | | rock | | 81 | | |
| | | | | | | | filter | | | | |
| | | 27 | | | | Slot Casing | sand | | 82 | | Fine-med. SAND (SP), greenish gray (5GY 5/1) med. dense, wet high est K, tr. silt |
| | | 30 | | | | | | | | | |
| | | 28 | | | | | | | 83 | | |
| | | | | | | | Moitbey | | 84 | | |
| | | | | | | 0.010 | | | | | |
| | | 28 | | | | | | | 85 | | Fine-med SAND (SP) dark greenish gray (5GY 4/1), damp, tr. Silt, high est K. |
| | | 53 | | | | | | | | | |
| | | 53 | | | | PVC | #2/12 | | 86 | | |
| 1/27/94 Stop | | 50/5" | | | | | | | 87 | | |
| 1/28/94 | | | | | | 4" Sch | | | | | |
| | | | | | | | | | 88 | | |
| | | | | | | 3" | | | | | |
| | | | | | | | | | 89 | | |
| | | 17 | | | | | | | | | Clayey SAND (SP), dark greenish gray (5GY 4/1), wet, trace fine Sand, Med est K |
| Water level | | 36 | | | | | | | 90 | | |
| | | 51 | | | | | | | | | ~~Sandy~~ Silty CLAY (CL), dark greenish gray (5GY 4/1), 10% root fragments, damp. Low est K. |
| | | 17 | | | | | | | 91 | | |
| | | 16 | | | | | Native | | | | |
| | | 25 | | | | | | | 92 | | |

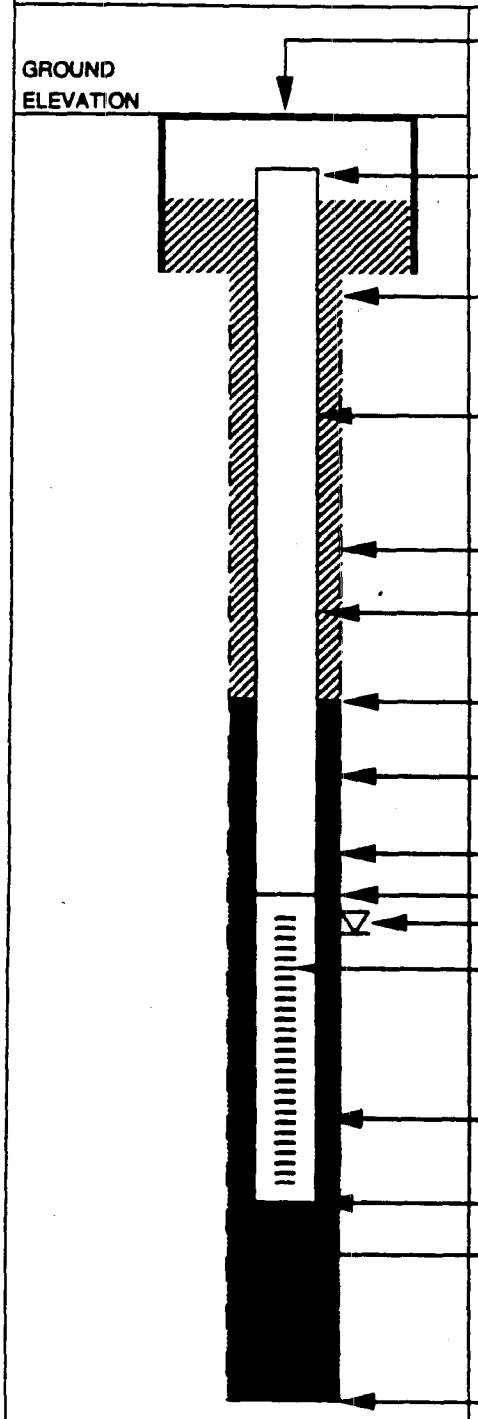
27

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Feet | Graph | Boring # MW#M-028-C Sheet 6 of 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda |
| | | | | | | | | | | | Job # 2738.1406 Site: / |
| | | 27 | | | | | | X | 92 | | |
| | | | | | | | | | 3 | | TD @ 92.5 on 10/28/94 |
| | | | | | | | | | 4 | | Drilled out hole to 90' and installed screen: |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | - Screen 80-90' (3" PVC) |
| | | | | | | | | | | | - Riser Pipe 0-80' (3" PVC) |
| | | | | | | | | | 7 | | - Centralizers @ 80', 90 and every 30' to surface. |
| | | | | | | | | | 8 | | - Sand Pack 75-80' |
| | | | | | | | | | | | - Bentonite Seal 72-75 |
| | | | | | | | | | 9 | | - Cement Grout Seal - 0-72' |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. M-028-C

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda | LOCATION Site 1 | DRILLER Elliott Van De Poppe |
| PROJECT NO. 2738.1406 | BORING M-028-C | DRILLING METHOD Mud Rotary |
| ELEVATION — | DATE [redacted] | DEVELOPMENT METHOD Surge, Bail, Pump |
| FIELD GEOLOGIST [redacted] Mike McDonald | | |




ELEVATION OF GROUND SURFACE: —

ELEVATION OF TOP OF WELL CASING: —

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: Steel Conductor

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8.25"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 72' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 75' bgs

ELEVATION / DEPTH TOP OF SCREEN: 80' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 x 10 ft.

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

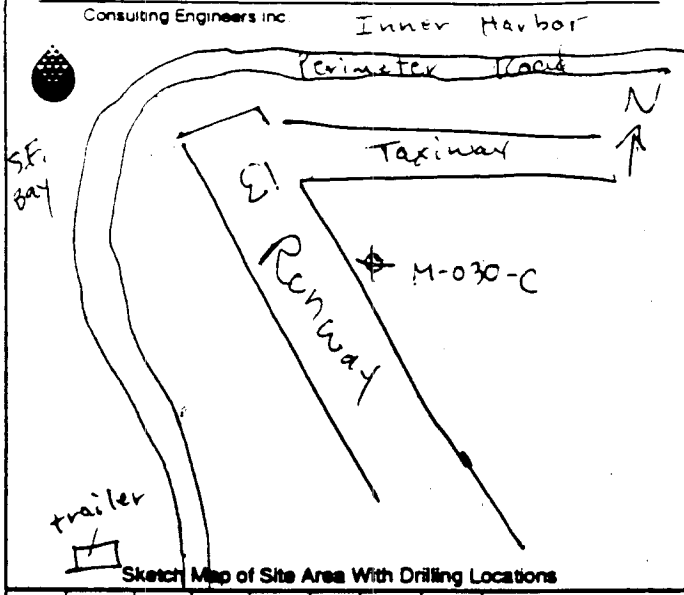
ELEVATION / DEPTH BOTTOM OF SCREEN: 90' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 90' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Native

ELEVATION / DEPTH OF HOLE: ~~90~~ bgs 92.5

James M. Montgomery
Consulting Engineers Inc.



Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-030-C Sheet 1 of 5 |
| Project: | NAS Alameda |
| Job # | 2735.1406 Site: 1 |
| Logged By: | JEV Proj. Eng: SAH Edited By: |
| Drilling Contractor: | TONTO |
| Drill Rig Type/Method: | HSA / Mud Rotary |
| Drillers Name: | Randy Gustafson |
| Borehole Diam./Drill Bit Type | 12" / HSA / Mud — Total Depth 89.5' — Ref. Elev |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 1038 Date: 10/14/94 |
| Completion Time: | 1245 Date: 10/25/94 |
| Backfille Time: | 1030 Date: 10/26/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 89.5' | | | |
| Casing Depth (ft.) | 87' | | | |
| Water Depth (ft.) | | | | |
| Time | 1245 | | | |
| Date | 10/25/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | Conductor Casing | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4, 12, 17 | | | | | | | 1042 | ML | sandy, gravelly SILT (ML), brown (10Y, 5/3), dense, dry, f-gr, med K. |
| | | 5, 11, 13 | | | CASING | PVC | GROUT | | 1046 | SM | silty SAND (SM), dk yellowish br (10Y, 4/6), very dense, dry, f-gr, med K. |
| | | 2, 3, 3 | | | | BLANK | | | 1049 | SC | clayey, silty SAND (SC), yellowish br (10Y, 5/4), dense, sl mst, f-gr, med K |
| | | 4, 7, 9 | | | CONDUCTOR | 40 | CEMENT | | 1052 | SP | SAND (SP), yellowish br (10Y, 5/4), dense, sl mst, f-gr, high K. |
| | | 4, 6, 10 | | | | SCH | | | 1056 | | As Above |
| | | 4, 6, 8 | | | STEEL | 3" DIAM., | PORTLAND | | 1059 | | As Above |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | Conductor Casing | Casing | Annulus | Depth Sample Rec | Feet | Graph | Boring # MW# M-030-C Sheet 2 of 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda |
| | | | | | | | | | | | Job # 2738.1406 Site: 1 |
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | | | | | | | | 15 | | |
| | | 4 | | NR | | | | No Recovery | | | No Recovery |
| | | 7 | | NR | | | | | | | |
| | | 27 | | NR | | | | | 16 | | |
| | | 12 | | | | | | 1235 | | | clayey GRAVEL (GC), gray (7.5Y, N5), |
| | | 13 | | | | | | | 17 | GC | dense, wet, med to crse-gr, med K. |
| | | 29 | | | | | | | | | |
| | | 14 | | | | | | 1238 | 18 | | 18'-19' = As Above; At 19' = CLAY (CL), |
| | | 13 | | | | | | | | | very dk gray (7.5Y, N3), plastic, wet, |
| | | 9 | | | | | | | 19 | CL | low K. |
| | | 11 | | | | | | 1244 | | GC | clayey GRAVEL (GC), gray (7.5Y, N5), |
| | | 26 | | | | | | | 20 | | dense, wet, med to crs-gr, med K. |
| | | 10 | | | | | | | | | |
| | | 9 | | | | | | 1250 | 21 | CL | CLAY (CL), very dk gry (7.5Y, N3), |
| | | 2 | | | | | | | | | plastic, soft, low K. |
| | | 3 | | | | | | | 22 | | |
| | | 2 | | | | | | 1256 | | | As Above w/ abundant shell fragments. |
| | | 2 | | | | | | | 23 | | |
| | | 2 | | | | | | | | | Bottom of Conductor Casing = 24' bgs. |
| | | | | | | | | | 24 | | Continue drilling @ 0830 on 10/25/94 |
| | | | | | | | | | 25 | | |
| | | 10 | | | | | | 0905 (10/25/94) | | | No Recovery (Grout chunks) |
| | | 10 | | NR | | | | | | | |
| | | 10 | | | | | | | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | | | | | | | | 30 | | |
| | | 17 | | | | | | 0915 | | | No Recovery |
| | | 38 | | NR | | | | | | | |
| | | 39 | | | | | | | 31 | | |
| | | | | | | | | | 32 | | |

STEEL CONDUCTOR CASING

3" DIAM., SCH 40 BLANK PVC

PORTLAND CEMENT GROUT

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | Casing | Annulus | Sample Rec | Analyses | Depth Feet | Boring # MW#M-030-C Sheet 3 of 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Project: NAS Alameda |
| | | | | | | | | | | Job # 2738.1406 Site: 1 |
| | | | | | | | | | 32 | |
| | | | | | | | | | 33 | |
| | | | | | | | | | 34 | |
| | | | | | | | | | 35 | |
| | | 40 | | | | | | 0930 | | SAND (SP), dk gry (10Y, 4/1), dense, mst, f-gr, med K, minor shell fragments. Moist Sand |
| | | 29 | | | | | | | | |
| | | 20 | | | | | | | 36 | |
| | | | | | | | | | 37 | |
| | | | | | | | | | 38 | |
| | | | | | | | | | 39 | |
| | | | | | | | | | 40 | |
| | | 38 | | | | | | 0945 | | As Above (SP), except dk yellowish brwn, (10Y, 4/6) and no shell frgmnts. |
| | | 37 | | | | | | | | |
| | | 38 | | | | | | | 41 | |
| | | | | | | | | | 42 | |
| | | | | | | | | | 43 | |
| | | | | | | | | | 44 | |
| | | | | | | | | | 45 | |
| | | 31 | | | | | | 0955 | | As Above (SP) |
| | | 50 | | | | | | | | |
| | | | | | | | | | 46 | |
| | | | | | | | | | 47 | |
| | | | | | | | | | 48 | |
| | | | | | | | | | 49 | |
| | | | | | | | | | 50 | |
| | | 50/5 | | | | | | 1005 | | As Above (SP) |
| | | | | | | | | | 51 | |
| | | | | | | | | | 52 | |

3" DIAM., SCH 40 BLANK PVC

PORTLAND CEMENT GROUT

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample Rec. | Analyses | Depth Feet | | Boring # MW#M-030-C Sheet 4 of 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS Alameda |
| | | | | | | | | | | | | Job # 2738.1406 Site: 1 |
| | | | | | | | | | | 52 | SP | |
| | | | | | | | | | | 53 | | |
| | | | | | | | | | | 54 | | |
| | | 60 | ↓ | ↓ | | | | | | 55 1015 | | As Above (SP) |
| | | | | | | | | | | 56 | | |
| | | | | | | | | | | 57 | | |
| | | | | | | | | | | 58 | | |
| | | | | | | | | | | 59 | | |
| | | 55 53 | ↓ | ↓ | | 3" DIAM, SCH 40 BLANK PVC | PORTLAND CEMENT GROUT | | | 60 1030 | SM | silty SAND (SM), lt. yellowish br (10Y, 6/4), very dense, moist, f-gr, med K, very minor sand. |
| | | | | | | | | | | 61 | | |
| | | | | | | | | | | 62 | | |
| | | | | | | | | | | 63 | | |
| | | | | | | | | | | 64 | | |
| | | 50/3 | ↓ | ↓ | | | | | | 65 1040 | SP | SAND (SP), dk yellowish br (10Y, 4/4), very dense, mst, f to med-gr, med K. |
| | | | | | | | | | | 66 | | |
| | | | | | | | | | | 67 | | |
| | | | | | | | | | | 68 | | |
| | | | | | | | | | | 69 | | |
| | | 50/4 | ↓ | ↓ | | | Bent | | | 70 1055 | | As Above (SP) |
| | | | | | | | | | | 71 | | |
| | | | | | | | | | | 72 | | |

Boring # MW#M-030-C Sheet 5 of 5

Project: NAS Alameda

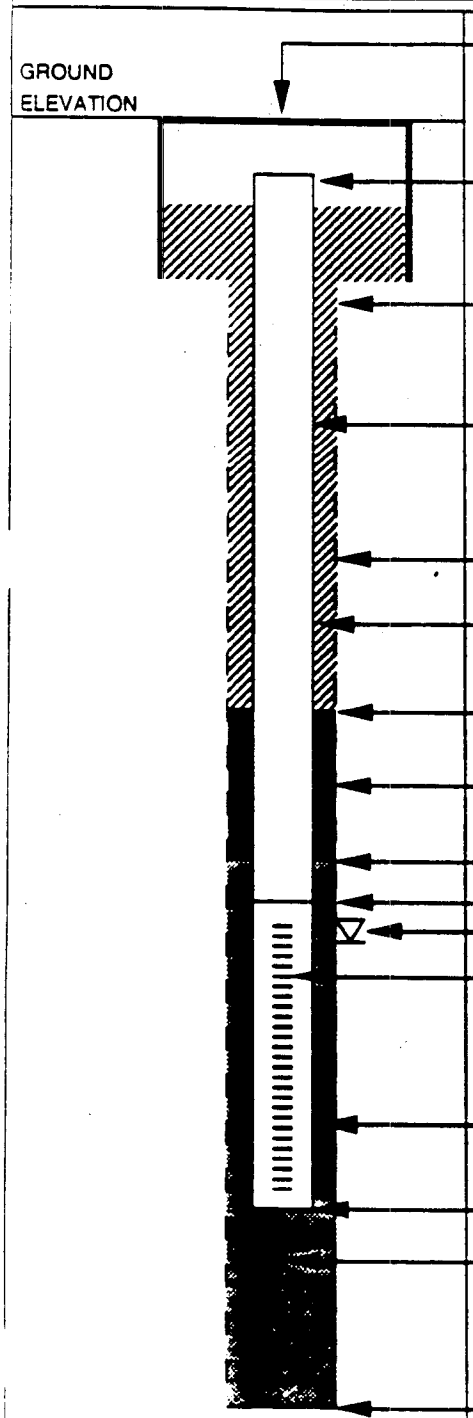
Job # 2733.1406 Site: 1

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Recvd (in) | Casing | Annulus | Sample No. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 3" DIAM. SCH 40 PVC PLAINS | BENT. | | | 72 | SP | |
| | | | | | | | | | 73 | | |
| | | | | | | | | | 74 | | |
| | | 50/5 | ↓ | ↓ | | | | 1110 | 75 | SM | silty SAND (SM), dk olive gry (5Y, 3/2), very dense, wet, f-gr, med K |
| | | | | | | | | | 76 | | |
| | | | | | SCREEN | | | | 77 | | |
| | | | | | PVC | | | | 78 | | |
| | | | | | 0.010 SLOT SCH 40 | | | | 79 | | |
| | | 50/3 | ↓ | ↓ | | | | 1120 | 80 | | As Above (SM) |
| | | | | | | | | | 81 | | |
| | | | | | | | | | 82 | | |
| | | | | | 3" DIAM. | MONTEREY 8/12 SAND | | | 83 | | |
| | | 50/3 | ↓ | | | | | | 84 | | As Above (SM), except very dark gray (2.5Y, N3) w/ trace of clay |
| | | | | | | | | | 85 | | As Above (SM) w/ increasing clay |
| | | 55 | ↓ | ↓ | | | | 1215 | | SC | clayey SAND (SC), dk gray (5Y, 4/1), wet, dense, low K. |
| | | 28 | | | | | | | 86 | | |
| | | 36 | | | | | | | | CL | silty CLAY (CL), dk olive gry (5Y, 3/2), moist, hard, low K. |
| | | 54 | | | | | | | 87 | | |
| | | 70 | ↓ | ↓ | | | | | | | As Above (CL) |
| | | 42 | | | | | | | 88 | | |
| | | 72 | | | | | | 1245 | | | |
| | | 73 | | | | | | | 89 | | |
| | | 76 | ↓ | ↓ | | | | | | | Bottom of Borehole = 87.5' |
| | | | | | | | | | 90 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. M-030-C

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda | LOCATION Site 1 | DRILLER Randy Gustafson |
| PROJECT NO. 2738.1406 | BORING M-030-C | DRILLING METHOD HSA / Mud Rotary |
| ELEVATION | DATE 10/26/94 | DEVELOPMENT METHOD Surge, Bail, Pump. |
| FIELD GEOLOGIST John Valett | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: Steel Conductor

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 70.5' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 73.5' bgs

ELEVATION / DEPTH TOP OF SCREEN: 76.5' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 X 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

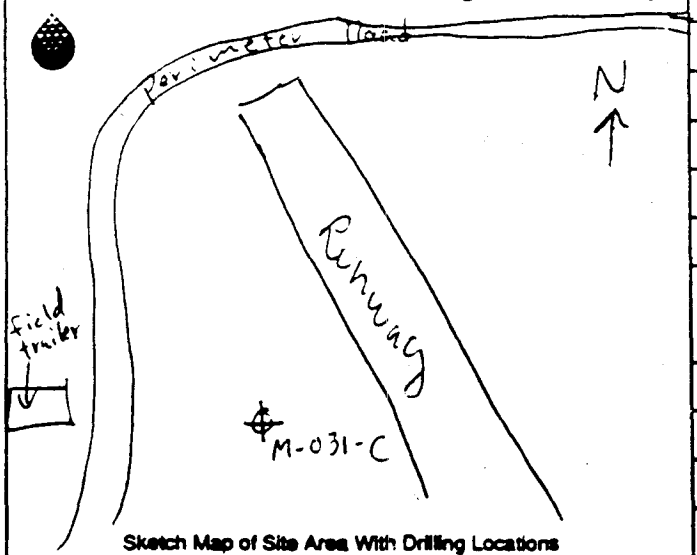
ELEVATION / DEPTH BOTTOM OF SCREEN: 86.5' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 87.5' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Monterey 2/12 Sand

ELEVATION / DEPTH OF HOLE: 89.5' bgs

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-031-C Sheet 1 of 5 |
| Project: | NAS Alameda / CTO 280 |
| Job # | 7738.1406 Site: 1 |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Tonto |
| Drill Rig Type/Method: | HSA/Mud Rotary |
| Drillers Name: | Randy Gustafson |
| Borehole Diam./Drill Bit Type | 12"/HSA Total Depth 32.5' Ref. Elev |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 0800 Date: 10/13/94 |
| Completion Time: | 0930 Date: 10/20/94 |
| Backfille Time: | 1600 Date: 10/20/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 8' | | | |
| Casing Depth (ft.) | 8' | | | |
| Water Depth (ft.) | ≈8' bgs | | | |
| Time | 0820 | | | |
| Date | 10/13/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | Conductor Casing | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | ↓ | ↓ | ↑ | ↑ | ↑ | | 0800 | SP | SAND (SP), br (10YR, 5/3), loose, dry, f-g, med K. |
| | | 15 | | | | | | | 1 | | |
| | | 17 | ↓ | ↓ | | | | | 0805 | | |
| | | 15 | ↓ | ↓ | | | | | 2 | | As Above w/ dk brown/blk (10YR, 2/1) zone ≈ 2½'-3' C w/ pebbles). |
| | | 34 | | | | | | | | | |
| | | 37 | ↓ | ↓ | | | | | 0809 3 | | |
| | | 9 | ↓ | ↓ | | | | | | | As above to 4' |
| | | 11 | | | | | | | 4 | | @ 4' = As above except inst and gray/br (10YR, 4/1) |
| | | 13 | ↓ | ↓ | | | | | 0817 | | |
| | | 6 | ↓ | ↓ | CONDUCTOR | | | | 5 | SP/SW | SAND (SP/SW), dk gray (10YR, 4/1), dense, moist, f-gr, high K. |
| | | 10 | | | | RVC | CEMENT GROUT | | | | |
| | | 15 | ↓ | ↓ | | | | | | | |
| | | 3 | ↓ | ↓ | | | | | 0817 6 | SP | As Above (SP) w/ minor shell fragments. |
| | | 7 | | | | | | | 7 | | |
| | | 7 | ↓ | ↓ | | | | | | | |
| | | 5 | ↓ | ↓ | STEEL | SCH 80 | | | 0820 8 | SP | As Above (SP) except very moist |
| | | 7 | | | | | | | | | |
| | | 9 | ↓ | ↓ | | | | | | | |
| | | 6 | ↓ | ↓ | | 3" DIAM. BLANK | PORTLAND | | 0823 9 | SP | As Above (SP) |
| | | 8 | | | | | | | | | |
| | | 8 | ↓ | ↓ | | | | | 10 | | |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | Conductor Casing | Casing | Annulus | Depth: Sample Rec | Depth: Feet | Graph | Boring # MW# M-031-C Sheet 2 of 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda / CTO 280 |
| | | | | | | | | | | | Job # 2738.1406 Site: 1 |
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | 5 | | | | | | 0830 | 15 | (SP) | As Above except wet and grayish br (10Y, 3/2) |
| | | 6 | | | | | | | | | |
| | | 7 | | | | | | | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | 5 | | | | | | 0842 | 19 | (SP) | As above except bottom 3" = sandy CLAY (SC/CL). |
| | | 10 | | | | | | | | | |
| | | 10 | | | | | | | 20 | | |
| | | 3 | | | | | | 0850 | | (SP) | 20.5' – 21' = As Above (SP) |
| | | 3 | | | | | | | 21 | (CL) | 21'–22' = CLAY (CL) w/ very minor sand, very dk gray (2.5Y, N3), plastic, moist, v f-gr, low K. |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | 0858 | 22 | (CL) | As Above (CL) |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | | 23 | | |
| | | 3 | | | | | | | | (CL) | As Above (Bottom of Conductor Casing = 24' bgs) 10/13 [illegible] |
| | | 4 | | | | | | | 24 | | |
| | | 3 | | | | | | | | | continue drilling (Mud Rotary) on 10/19/94 |
| | | | | | | | | | 25 | | |
| | | | | | | | | | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | 2 | | | | | | 10/19/94 1500 | 29 | CL | As Above (CLAY), but soft w/ abundant shell fragments. |
| | | 2 | | | | | | | | | |
| | | 2 | | | | | | | 30 | | |
| | | | | | | | | | 31 | | |
| | | | | | | | | | 32 | | |

STEEL CONDUCTOR

3" DIAM. SCH 40 BLANK PVC

PORTLAND CEMENT GROUT

→ B M

Boring # MW# M-031-C Sheet 3 of 5

Project: NAS Alameda / CTC-0280

Job # 2738.1406 Site: 1

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 32 | CL | |
| | | | | | | | | | 33 | | |
| | | 5 | | | | | | 1510 | 34 | CL | As Above (clay) w/ very minor sand ~~content~~ and silt |
| | | 2 | | | | | | | | | |
| | | 2 | ↓ | ↓ | | | | | 35 | | |
| | | | | | | | | | 36 | | |
| | | | | | | | | | 37 | | |
| | | | | | | | GROUT | | 38 | | |
| | | 8 | | | | | | 1520 | 39 | SC | CLAYEY SAND (SC), dk gray (5Y, 4/1), dense, wet, f-gr, med K. |
| | | 16 | | | | PVC | | | | | |
| | | 20 | ↓ | ↓ | | | | | 40 | | |
| | | | | | | | | | 41 | | |
| | | | | | | 40 BLANK | CEMENT | | 42 | | |
| | | | | | | | | | 43 | | |
| | | | | | | SCH | PORTLAND | | 44 | | |
| | | 24 | | | | | | 1530 | | SC | As Above, except dk grayish br (10Y, 4/2) to brown (10Y, 5/3), and less shell fragments. |
| | | 40 | | | | | | | 45 | | |
| | | 46 | ↓ | ↓ | | | | | | | |
| | | | | | | | | | 46 | | |
| | | | | | | 3" DIAM | | | 47 | | |
| | | | | | | | | | 48 | | |
| | | | | | | | | | 49 | | |
| | | 30 | | | | | | 1545 | | SP | SAND (SP), dk yellowish brown (10Y, 4/6) to lt olive br (2.5Y, 4/4), dense, moist, f-gr, med K, minor clay & silt. |
| | | 50 | | | | | | | | | |
| | | 50 | ↓ | ↓ | | | | | 50 | | |
| | | | | | | | | | 51 | | |
| | | | | | | | | | 52 | | |

Boring # MW# M-C31-C Sheet 4 of 5

Project: NAS Alameda / CTC-C280

Job # 2738.1406 Site: 1

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 52 | | |
| | | | | | | | | | 53 | | |
| | | 23 | ↓ | ↓ | | | | | 54 | | |
| | | 64 | ↓ | ↓ | | | | 1600 | | SP | As Above, except no clay and very dense. |
| | | | | | | | | | 55 | | |
| | | | | | | | | | 56 | | |
| | | | | | | | | | 57 | | |
| | | | | | | | | | 58 | | |
| | | 38 | ↓ | ↓ | | PVC | GROUT | | 59 | | |
| | | 55 | ↓ | ↓ | | | | 1625 | | | As Above, except more yellowish brown and fine to medium grained. |
| | | | | | | | | | 60 | | |
| | | | | | | 3" DIAM. SCH 40 BLANK | CEMENT | | 61 | | |
| | | | | | | | | | 62 | | |
| | | | | | | | | | 63 | | |
| | | 60 | ↓ | ↓ | | | | | 64 | | |
| | | | | | | | | 1640 | | | As Above, except all fine-grained. |
| | | | | | | | | | 65 | | |
| | | | | | | | POINT SAND | | 66 | | |
| | | | | | | | | | 67 | | |
| | | | | | | | | | 68 | | |
| Switch to | 1.5" sampler | 55 | ↓ | | | | | | 69 | | |
| | | 50 | ↓ | | | | | 1650 | | | As Above ~~except all fine grained~~ |
| | | | | | | | | | 70 | | |
| | | | | | | | | | 71 | | |
| | | | | | | | | | 72 | | |

Bent

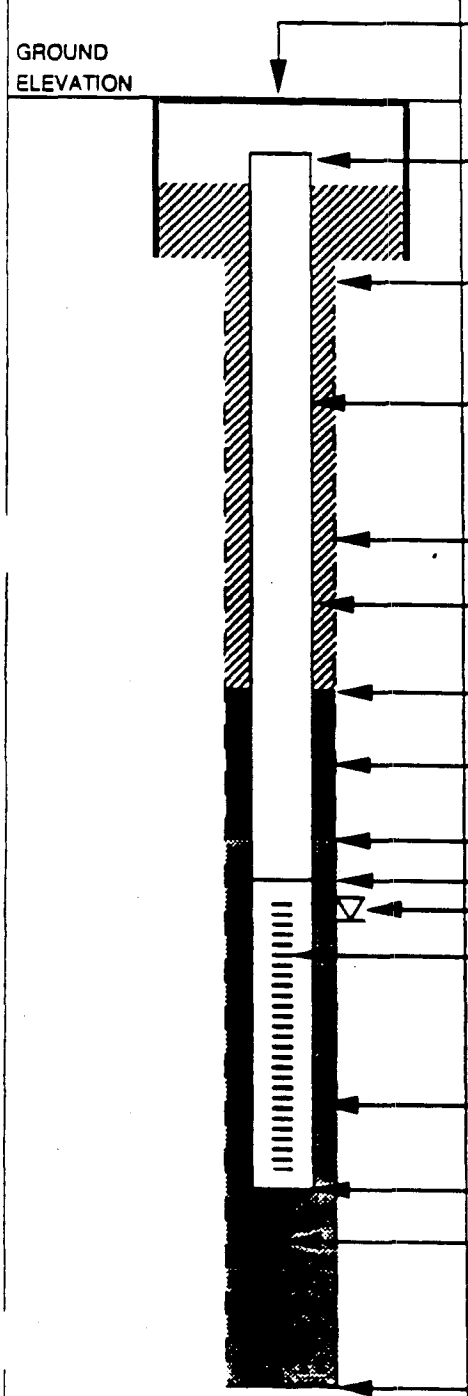
| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | | Casing | Annulus | Depth Sample Rec | Feet | Graph | Boring # MW#M-C31-C Sheet 5 of 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda / CTO-0280 |
| | | | | | | | | | | | Job # 2738.1406 Site: 1 |
| | | | | | | | | | 72 | SP | |
| | | | | | | | Bentonite | | 73 | | |
| | | 54 | | | | 3" DIAM. SCH 40 PVC BLANK | | 1710 | 74 | | As Above |
| | | 50 | | | | | | | 75 | | |
| | | | | | | | | | 76 | | |
| | | | | | | | | | 77 | | |
| | | | | | | | | | 78 | | |
| | | 50 | | | | | | 1725 | 79 | | As Above |
| | | 50 | | | | | | | 80 | | |
| | | | | | | 3" DIAM. SCH 40 0.010 SLOTTED PVC | MONTEREY 3/12 SAND | | 81 | | |
| | | | | | | | | | 82 | | |
| | | | | | | | | | 83 | | |
| | | 33 | | | | | | 1745 | 84 | CL | CLAY (CL), dk olive gray (5Y, 3/2), very stiff, ~~mo~~ sl mst, low K. |
| | | 18 | | | | | | | 85 | | |
| | | 25 | | | | | | 0810 | | | From 85.5-86.0' = As Above (clay) |
| | | 30 | | | | | | | 86 | | |
| | | 50/3" | | | | | | (10/20/94) | | SP | At 86.0' = SAND (SP) w/ minor clay, dk gray (2.5Y, N4), very dense, frgr, med K. |
| | | [illegible] | | NR | | | | NR | 87 | | |
| | 56 | [illegible] | | | | | | 0840 | | | At 87.0' = As Above (sand) |
| | 36 | [illegible] | | | | CAP | | | 88 | CL | At 87.5' = CLAY (~~[illegible]~~) (CL), dk olive gray (5Y, 3/2), very stiff, mst, low K. |
| | 40 | | | NR | | sand | | | | | |
| | 12 | | | | | | | 0930 | 89 | | As Above w/ very minor silt. |
| | 13 | | | | | | | | | | |
| | 16 | | | | | | | | 90 | | 88.5' = Bottom of Borehole |
| | 22 | | | | | | | | | | 88' = Bottom of Well |
| | 28 | | | | | | | | 91 | | 87.5' = Bottom of Screen |
| | 26 | | | | | | | | | | |
| | Push | | | | | | | | 92 | | |
| | Push | | | | | | | | 92.5 | | → Bottom of Sample |
| | | 92.5 | | | | | | | | | |

88. bott bor 88 of

BORING NO. M-031-C

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda/CTO 289 | LOCATION Site 1 | DRILLER ELLIOTT VAN DE POPPE |
| PROJECT NO. 2738.1406 | BORING M-031-C | DRILLING METHOD HSA/MUD ROTARY |
| ELEVATION | DATE 10-20-94 | DEVELOPMENT METHOD Surge, Bail, Pump. |
| FIELD GEOLOGIST JOHN VALETT | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: Steel Conductor Casing

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 7.5"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 71.5' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 74.5' bgs

ELEVATION / DEPTH TOP OF SCREEN: 77.5' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 inches x 10 feet.

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

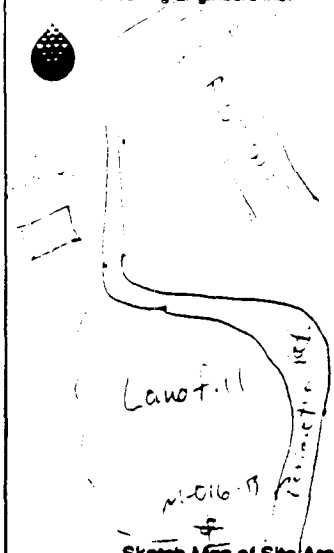
ELEVATION / DEPTH BOTTOM OF SCREEN: 87.5' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 88' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Monterey 2/12 Sand

ELEVATION / DEPTH OF HOLE: ~~88' bgs~~ 92.5 W.W.

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# [illegible]16-B Sheet 1 of 4 |
| Project: | NAS [illegible] 280 |
| Job # | 2738.1406 Site: [illegible] |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | [illegible] |
| Drill Rig Type/Method: | HSA / Mud Rotary |
| Drillers Name: | Randy Gustafson |
| Borehole Diam./Drill Bit Type | 12" / HSA / Mud — Total Depth: 56' — Ref. Elev: |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 1300 Date: 10/13/94 |
| Completion Time: | 1140 Date: 10/21/94 |
| Backfille Time: | 1515 Date: 10/21/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 56' | | | |
| Casing Depth (ft.) | 56' | | | |
| Water Depth (ft.) | [illegible] | | | |
| Time | 1140 | | | |
| Date | 10/21/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | Conductor Casing | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | | | | | | | 1305 | | SAND (SP), brown (10 Y, 5/3), dense, dry, f-gr, high K |
| | | 26 | | | | | | | | | |
| | | 16 | | | | | | | 1308 | | |
| | | 5 | | | | | | | | | As Above w/ minor cobbles + trash |
| | | 7 | | | | | | | | | |
| | | 11 | | | | | | | | | |
| | | 10 | | | | | | | 1312 | | As Above ~~[illegible]~~ |
| | | 14 | | | | | | | | | SAND (SP), gray (2.5 Y, N5), dense, sl mst, f-gr, high K |
| | | 17 | | | | | | | | | |
| | | 4 | | | | | | | 1317 | | As Above w/ cobbles + pebbles |
| | | 6 | | | | | | | | | |
| | | 8 | | | | | | | | | |
| | | 4 | | | | | | | 1321 | | As Above w/ minor trash (plastic) |
| | | 4 | | | | | | | | | |
| | | 5 | | | | | | | | | |
| | | 5 | | | | | | | 1325 | | As Above |
| | | 6 | | | | | | | | | |
| | | 6 | | | | | | | | | |
| | | 5 | | | | | | | 1328 | | As Above |
| | | 5 | | | | | | | | | |
| | | 5 | | | | | | | | | |

Conductor Casing: STEEL CONDUCTOR
Casing Type & Size: 3" DIAM. SCH 40 BLANK PVC
Annulus Filler: PORTLAND CEMENT GROUT

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Boring # MW# [illegible] Sheet [illegible] of 4

Project: [illegible]

Job # 2738.146 Site: [illegible]

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | Conductor Casing | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | 2 | | | | | | 1932 | 5 | SP | As Above, except saturated. |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | | 6 | SC | clayey SAND (SC), gray (2.5Y, N5), dense, saturated, f-gr, med K |
| | | | | | | | GROUT | | 7 | | |
| | | | | | | PVC | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | BLANK | CEMENT | 1940 | 20 | SP | SAND (SP), gray (2.5Y, N5), dense, saturated, f-gr, high K. |
| | | 2 | | | | | | | | | |
| | | 3 | | | | | | | 21 | | |
| | | 4 | | | CONDUCTOR | 40' SCH | | | | | |
| | | | | | | | | | 22 | | |
| | | | | | | | PART LAND | | 23 | | |
| | | | | | STEEL | 3" DIAM. | | | 24 | SP | As above w/ minor clay content @ ≈25' bgs. |
| | | 2 | | | | | | 1955 | | | |
| | | 3 | | | | | | | 25 | | |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | 1950 | 26 | CL | CLAY (CL), gray brown (2.5Y, 5/2), plastic, wet, f-gr, low K. |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | | 27 | | |
| | | 3 | | | | | | | | | As Above |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | | | | | | | | | | Bottom of Conductor Casing = 30' |
| | | | | | | | | | 30 | | |
| | | 5 | | | | | | 0955 10/21/99 | | | sandy CLAY (CL), dk gray (10Y, 4/1), v mod stiff, wet, med K. |
| | | 5 | | | | | | | 31 | | |
| | | 7 | | | | | | | | | |
| | | 14 | | | | | | | 32 | | |

Boring # MW# H-016-B Sheet 3 of 4

Project: NAS Alameda

Job # 2738.1466 Site: 2

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | Casing | Annulus | Sample Rec | Depth Feet | Graph | Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 16 | | | | | | 32 | SC | ~~SS~~ clayey SAND (SC), dk gry (10Y, 4/1), dense, mst, med K. |
| | | 23 | | | | | | 33 | | |
| | | | | | | | | 34 | | |
| | | 17 | | | | | | 35 | SM | silty SAND (SM), dk gray (5Y, 4/1), dense, mst, med K, minor clay |
| | | 30 | | | | | 1015 | | | |
| | | 33 | | | | | | 36 | | |
| | | 20 | | | | | | 37 | | |
| | | 24 | | | | | | | | |
| | | 26 | | | | | | 38 | | |
| | | 22 | | | | | | | | |
| | | 24 | | | | | | 39 | | |
| | | 5 | | | | | | 40 | CL | ~~clayey, silt, sand (CL)~~ JV sandy CLAY (CL) w/ minor silt, dk gry (5Y, 4/1), med stiff, mst, med K. |
| | | 12 | | | | | 1030 | | | |
| | | 10 | | | | | | 41 | | |
| | | 13 | | NR | | | | | | |
| | | 11 | | | | | | 42 | | |
| | | 9 | | | | | | 43 | | |
| | | | | | | | | 44 | | |
| | | 19 | | | | | | 45 | | AS Above |
| | | 29 | | | | | 1100 | | SP | At 45.5' = JV SAND (SP), yellowish brown (10Y, 5/6), dense to very dense, mst, f-gr, med K, very minor clay |
| | | 24 | | | | | | 46 | | |
| | | 33 | | | | | | | | |
| | | 50/6 | | | | | | 47 | | |
| | | | | | | | | 48 | | |
| | | | | | | | | 49 | | |
| | | 45 | | | | | | 50 | | As Above |
| | | 50 | | | | | 1120 | | | |
| | | 50 | | | | | | 51 | | |
| | | 38 | | | | | | 52 | | |

Casing: 3" DIAM SCH 40 BLANK PVC

Annulus: PORTLAND CEMENT; BENTONITE; MONTEREY 3/2 SAND

3" DIAM SCH 40, 0.010 SLOT PVC

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | | Casing | Annulus | Depth: Sample Rec | Depth: Feet | Graph | Boring # MW# M-C16-B Sheet 4 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda |
| | | | | | | | | | | | Job # 2738.1406 Site: 2 |
| | | 45 | ↓ | ↓ | | 3" Diam SCH 40 0.010 Slot PVC | MONTEREY 8/12 SAND | | 52 | SP | |
| | | 50 | | | | | | | 53 | | |
| | | | | | | | | | 54 | | |
| | | 50/4 | ↓ | ↓ | | cap | | 114 | 55 | | As Above (55.5' = Bottom of screen) |
| | | | | | | | | | 56 | | 56' = Bottom of Borehole + well. |
| | | | | | | | | | 57 | | TD = 56' |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

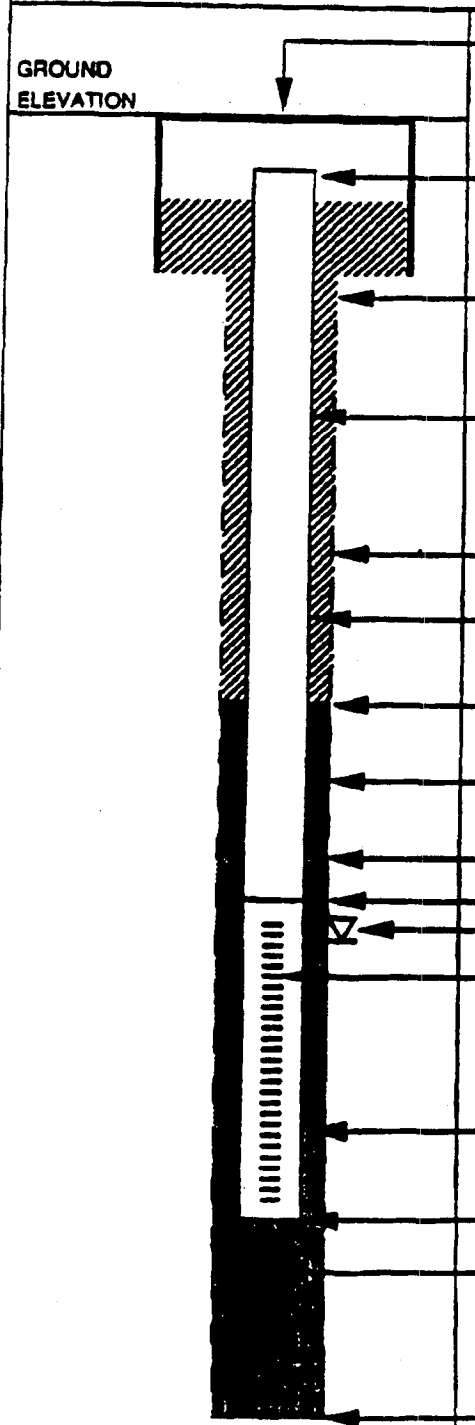
BORING NO. M-016-B

# MONITORING WELL SHEET

PROJECT NAS Alameda
PROJECT NO. 2738.1406
ELEVATION
FIELD GEOLOGIST John Valett

LOCATION Site 2
BORING M-016-B
DATE 10/21/94

DRILLER Randy Gustafson
DRILLING METHOD HSA/Mud Rotary
DEVELOPMENT METHOD Surge, Bail, Pump.




ELEVATION OF GROUND SURFACE:

ELEVATION OF TOP OF WELL CASING:

I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: Steel Conductor

RISER PIPE I.D.: 3"
TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 7.5"

TYPE OF BACKFILL: Portland Cement Grout w/ 5% Bentonite Powder

ELEVATION / DEPTH OF SEAL: 38.5' bgs

TYPE OF SEAL: Bentonite chip

DEPTH TOP OF SAND PACK: 42' bgs

ELEVATION / DEPTH TOP OF SCREEN: 45.5' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH 0.010 X 10 feet
I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 sand

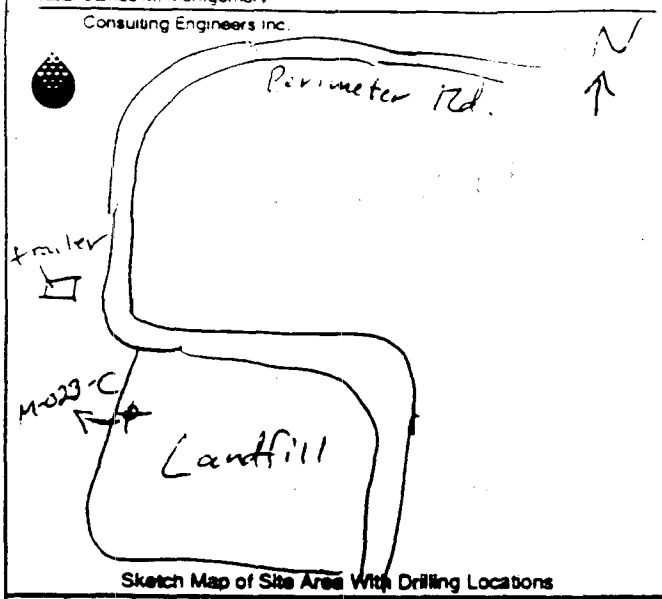
ELEVATION / DEPTH BOTTOM OF SCREEN: 55.5' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 56' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Natural Formation Sand (Merritt)

ELEVATION / DEPTH OF HOLE: 56' bgs

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-023-C Sheet 1 of 7 |
| Project: | NAS Alameda / CTO 280 |
| Job # | 2738.1406 Site: 2 |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | TONTO |
| Drill Rig Type/Method: | HSA/Mud Rotary |
| Drillers Name: | Sandy ~~Gustafson~~ |
| Borehole Diam./Drill Bit Type | 12" / HSA/Mud — Total Depth 115' |
| | Ref. Elev. |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 1540 Date: 10/13/94 |
| Completion Time: | 1900 Date: 10/27/94 |
| Backfille Time: | 1430 Date: 10/28/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 115' | | | |
| Casing Depth (ft.) | 110' | | | |
| Water Depth (ft.) | | | | |
| Time | 1900 | | | |
| Date | 10/27/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | Conductor Casing | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 17 | | | | | | | 1544 | GW | sandy GRAVEL (GW), dk br (10Y, 3/3) dense, dry, f-med gr, med K |
| | | 27 | | | | | | | 1 | | |
| | | 46 | | | | | | | | | |
| | | 11 | | | | | | | 1548 2 | | As Above, except black (10Y, 2/1) @ 2.5' |
| | | 28 | | | | | | | | | |
| | | 29 | | | | | | | 3 | | |
| | | 11 | | | | | | | 1552 | | As above w/ minor wood pieces. |
| | | 13 | | | | | | | 4 | | |
| | | 15 | | | | | | | | | |
| | | 4 | | | | | | | 1557 5 | SW | gravelly SAND (SW), brown (10Y, 5/3), dense, dry, med-gr, med K. @ 5.5' = black and moist. 6-7' = sandy GRAVEL (GW), br (10Y 5/3) dense dry, med gr, med K. At 7' = SAND (SP), gray (2.5Y, N5), dense, moist. As Above w/ mild $H_2S$ odor. |
| | | 5 | | | | | | | | | |
| | | 4 | | | | | | | 6 | | |
| | | 7 | | | | | | | 1600 | | |
| | | 9 | | | | | | | 7 | | |
| | | 11 | | | | | | | | | |
| | | 2 | | | | | | | 1604 8 | | |
| | | 4 | | | | | | | | | |
| | | 7 | | | | | | | | | |
| | | 7 | | | | | | | 1608 9 | | As Above |
| | | 8 | | | | | | | | | |
| | | 12 | | | | | | | 10 | | |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

Conductor Casing: STEEL
Casing Type & Size: 3" Diam., SCH 40 BLANK PVC
Annulus Filler: CEMENT GROUT, PORTLAND

Boring # MW# M-023-C Sheet 2 of 7

Project: NAS Alameda / CTO 280

Job # 2738.1406 Site: 2

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | Conductor Casing | Casing | Annulus | Sample Rec. | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | 50 | ↓ | | | | | No recovery | 15 | | No Recovery |
| | | | | | | | | | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | | |
| | | 7 | ↓ | ↓ | CONDUCTOR CASING | SCH 40 BLANK PVC | GROUT | | 20 | CL | CLAY (CL), very dk gray (10Y, 3/1), plastic, moist, low K. |
| | | 7 | | | | | | 1630 | | | |
| | | 9 | ↓ | ↓ | | | | | 21 | | |
| | | | | | | | | | 22 | | |
| | | | | | | | | | 23 | | |
| | | 12 | ↓ | ↓ | STEEL | 3" Diam., | PORTLAND CEMENT | | 24 | GW | Sandy GRAVEL (GW), brownish yellow (10Y, 6/6), dense, moist, high K. |
| | | 12 | | | | | | 1640 | | | |
| | | 15 | ↓ | ↓ | | | | | 25 | | |
| | | 5 | ↓ | ↓ | | | | 1645 | 26 | GC | clayey GRAVEL (GC), v.dk gry (10Y, 3/1), dense, saturated, med K. |
| | | 6 | | | | | | | | | |
| | | 19 | ↓ | ↓ | | | | | 27 | | |
| | | 11 | ↓ | | | | | No Recovery | | | No Recovery - Sampler Broke. |
| | | 15 | | | | | | | 28 | | |
| | | 31 | ↓ | | | | | | | | |
| | | 12 | ↓ | ↓ | | | | 1720 | 29 | | Same as 25.5-27 (GC) |
| | | 13 | | | | | | | | | |
| | | 15 | ↓ | ↓ | | | | | 30 | | |
| | | 7 | ↓ | ↓ | | | | 1730 | | (SP) | SAND (SP), dk gray (7.5Y, N4), dense, moist to wet, f-gr, high K |
| | | 8 | | | | | | | 31 | | |
| | | 12 | ↓ | ↓ | | | Slough | ½' | 32 | | |

Boring # MW# M-023-C Sheet 3 of 7

Project: NAS Alameda / CTO 280

Job # 2738.1406 Site: 2

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | Conductor Casing | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4 3 | ↓ | ↓ | Steel Conductor | | | | 32 | | |
| | | 6 3 | ↓ | ↓ | | | | 1740 | 33 | CL | silty CLAY (CL), gray brown (10YR 5/2), plastic, moist, low K. (minor shell fragments) w/ green fringe |
| | | 6 4 | ↓ | ↓ | | | | 1750 | 34 | | As above |
| | | | | | | | | | 35 | | Conductor @ 35' |
| | | | | | | | | | | | Continue drilling @ 1340 on 10/27/94 |
| | | | | | | | | | 36 | | |
| | | | | | | | | | 37 | | |
| | | | | | | PVC | | | 38 | | |
| | | | | | | | | | 39 | | |
| | | 6 6 3 | ↓ | ↑ NR ↓ | | BLANK | GROUT | NR | 40 | | No Recovery |
| | | | | | | | | | 41 | | |
| | | | | | | 40 | CEMENT | | 42 | | |
| | | 2 2 3 | ↓ | ↓ | | SCH | | 1515 | 43 | | silty CLAY (CL), very dk gry (2.5Y N), soft, wet, low K |
| | | | | | | 3" Dia, | PORTLAND | | 44 | | |
| | | | | | | | | | 45 | | |
| | | | | | | | | | 46 | | |
| | | | | | | | | | 47 | | |
| | | | | | | | | | 48 | | |
| | | | | | | | | | 49 | | |
| | | 6 6 9 | ↓ | ↓ | | | | 1525 | 50 | | As Above (CL) |
| | | | | | | | | | 51 | | |
| | | | | | | | | | 52 | | |

Boring # MW# M-023-C Sheet 4 of 7

Project: NAS Alameda - CTO 280

Job # 2738.1406 Site: 2

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analysis | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 52 | CL | |
| | | | | | | | | | | 53 | | |
| | | | | | | | | | | 54 | | |
| | | 9 | ↓ | ↓ | | | | | | 55 | | As Above (CL) |
| | | 10 | | | | | | | 1535 | | | |
| | | 9 | ↓ | | | | | | | 56 | | |
| | | | | | | | | | | 57 | | |
| | | | | | | | | | | 58 | | |
| | | | | | | | | | | 59 | | |
| | | 13 | ↓ | ↓ | | 7" Dia, Sch 40 PVC | BENTONITE CEMENT GROUT | | | 60 | | As Above (CL) |
| | | 15 | | | | | | | 1545 | | | |
| | | 14 | ↓ | ↓ | | | | | | 61 | | |
| | | | | | | | | | | 62 | | |
| | | | | | | | | | | 63 | | |
| | | | | | | | | | | 64 | | |
| | | 8 | ↓ | ↓ | | | | | | 65 | | As Above (CL) |
| | | 16 | | | | | | | 1610 | | | |
| | | 11 | ↓ | ↓ | | | | | | 66 | | At 66' = sandy CLAY (CL), very dark gray (2.5Y, N3), med stiff, wet, low K |
| | | | | | | | | | | 67 | | |
| | | | | | | | | | | 68 | | |
| | | | | | | | | | | 69 | | |
| | | 14 | ↓ | ↓ | | | | | | 70 | | As Above (CL) w/ trace of silt |
| | | 10 | | | | | | | 1630 | | | |
| | | 11 | ↓ | ↓ | | | | | | 71 | | |
| | | | | | | | | | | 72 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Depth Sample Res. | Analyses | Feet | | Boring # MW# M-023-C Sheet 5 of 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS Alameda - CTO 280 |
| | | | | | | | | | | | | Job # 2738.1406 Site: 2 |
| | | | | | | | | | | 72 | | |
| | | | | | | | | | | 73 | | |
| | | | | | | | | | | 74 | | |
| | | | | | | | | | | 75 | | |
| | | 8 9 9 | ↓ | ↓ | | 3" Diam., Sch 40, 5' PVC BLANK | PORTLAND CEMENT GROUT | | | 1655 | SC | clayey SAND (SC), very dk gry (2.5Y, N3), med stiff, mst, low K. |
| | | | | | | | | | | 76 | | |
| | | | | | | | | | | 77 | | |
| | | | | | | | | | | 78 | | |
| | | | | | | | | | | 79 | | |
| | | | | | | | | | | 80 | SP | No Recovery |
| | | 30 33 22 | ↓ | | | | | | | NR | | |
| | | | | | | | | | | 81 | | |
| | | | | | | | | | | 82 | | |
| | | | | | | | | | | 83 | | |
| | | | | | | | | | | 84 | | |
| | | | | | | | | | | 85 | SP | |
| | | 46 32 50 | ↓ | ↓ | | | | | | 1735 | SP | SAND (SP), very dk gray (2.5Y, N3), dense, mst to wet, f-gr, med K. |
| | | | | | | | | | | 86 | | |
| | | | | | | | | | | 87 | | |
| | | | | | | | | | | 88 | | |
| | | | | | | | | | | 89 | | |
| | | | | | | | | | | 90 | | |
| | | 56 54 | ↓ | ↓ | | | | | | 1800 | | As Above (SP) |
| | | | | | | | | | | 91 | | |
| | | | | | | | | | | 92 | | |

Boring # MW# M-023-C Sheet 6 of 7

Project: NAS Alameda / CTO 280

Job # 2738.1406 Site: 2

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | Casing | Annulus | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 3" Dia, SCH 40 BLANK PVC | CEMENT GROUT | | | 92 | SP | |
| | | | | | | | | | 93 | | |
| | | | | | | | | | 94 | | |
| | | 55 48 46 | ↓ | ↓ | | BENTONITE | | | 95 | | As Above (SP) |
| | | | | | | | | | 96 | | |
| | | | | | | | | | 97 | | |
| | | | | | | | | | 98 | | |
| | | | | | | | | | 99 | | |
| | | 62 | ↓ | ↓ | | | | | 100 | | As Above (SP) |
| | | | | | | | | | 101 | | |
| | | | | | | | | | 102 | | |
| | | | | | 3" Dia, SCH 40, 0.010 SLOTTED PVC | MONTEREY 3/2 SAND | | | 103 | | |
| | | | | | | | | | 104 | | |
| | | 52 58 | ↓ | ↓ | | | | | 105 | | As Above (SP) |
| | | | | | | | | | 106 | | |
| | | | | | | | | | 107 | | |
| | | | | | | | | | 108 | | |
| | | | | | | | | | 109 | | |
| | | 2 2 4 9 | ↓ | ↓ | SLUFF | SLUFF | | | 110 | | sandy CLAY (CL) w/ minor silt, dk greenish gray (5G 4/1), med stiff, med K, minor roots & shells. |
| | | | | | | | | | 111 | | |
| | | | | | | | | | 112 | | |

Boring # MW#M-023-C Sheet 7 of 7

Project: NAS Alameda / CTO 280

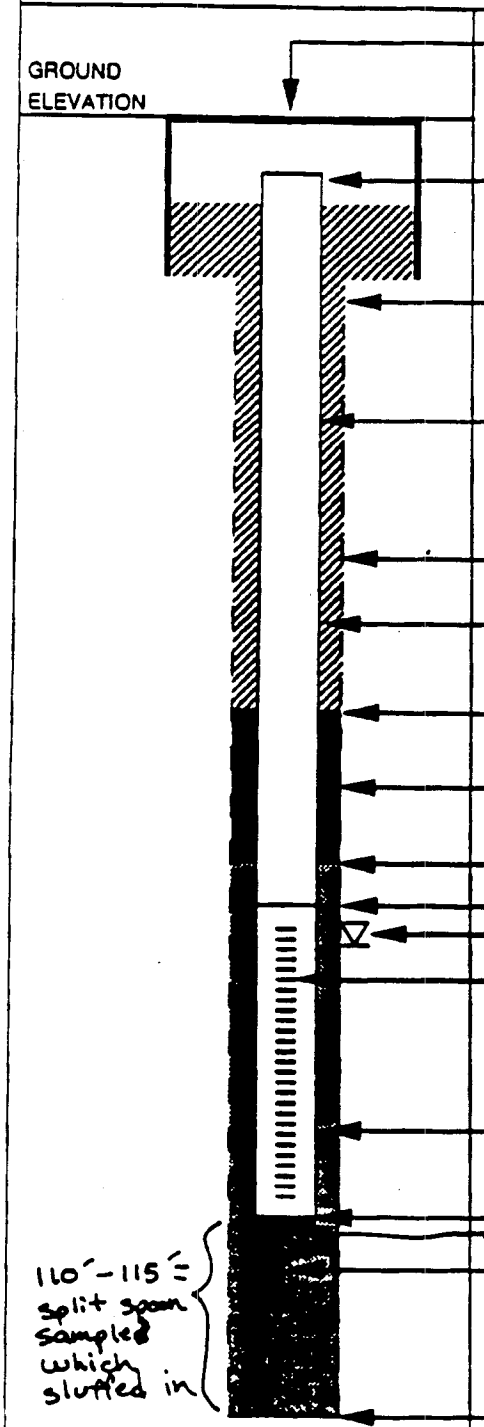
Job # 2738.1406 Site: 2

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 | | | | | | | 112 | | silty CLAY (CL), dk greenish gray (5GY, 4/1), med stiff, low K |
| | | 14 | | | | | | | | | |
| | | 14 | | | | SLUFF | SLUFF | | 113 | | |
| | | 15 | | | | | | | | | |
| | | 17 | | | | | | | 114 | | |
| | | 23 | | | | | | | 115 | | Bottom of Borehole = 115' bgs |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. M-023-C

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda/CTO 280 | LOCATION Site 2 | DRILLER Randy Gustafson (Tonto) |
| PROJECT NO. 2738.1406 | BORING M-023-C | DRILLING METHOD ~~HSA~~/Mud Rotary |
| ELEVATION | DATE 10/28/94 | DEVELOPMENT METHOD Surge, Bail, Pump. |
| FIELD GEOLOGIST John Valett | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: Steel Conductor

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 94' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 97' bgs

ELEVATION / DEPTH TOP OF SCREEN: 99.5' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 x 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 109.5' bgs

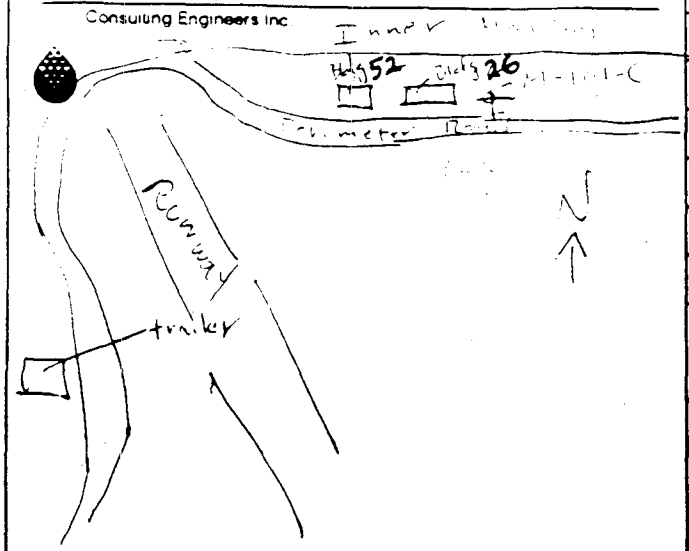
Depth, bottom of End plug 110' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 110' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Natural Clay (Yerba Buena)

ELEVATION / DEPTH OF HOLE: 115' bgs

James M. Montgomery
Consulting Engineers Inc




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# M-101-C Sheet ' of 4 |
| Project: | NAS Alameda - C70-0280 |
| Job # | 2738.1406 Site: Runway |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Tonto |
| Drill Rig Type/Method: | HSA/Mud |
| Drillers Name: | Randy Gustafson |
| Borehole Diam./Drill Bit Type | 12"/HSA — Total Depth 70.5' — Ref. Elev. |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 0850 Date: 10/17/94 |
| Completion Time: | 1630 Date: 10/26/94 |
| Backfill Time: | 1120 Date: 10/27/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 70.5' | | | |
| Casing Depth (ft.) | 59' | | | |
| Water Depth (ft.) | | | | |
| Time | 1630 | | | |
| Date | 10/26/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | Conductor Casing | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 13 | | | | | | 0902 Analytical | | SP | SAND (SP), brown (10Y, 5/3), dense, sl mst, f-gr, high K |
| | | 24 | | | | | | | 1 | | |
| | | 15 | | | | | | | | | |
| | | 11 | | | | | | 0906 | 2 | | As Above |
| | | 12 | | | | | | | | | |
| | | 14 | | | | | | | | | |
| | | 9 | | | | | | 0925 Analytical | 3 | | As Above except gray (10Y, 5/1) w/ green tinge, |
| | | 17 | | | | | | | 4 | | |
| | | 23 | | | | | | 0935 Analytical | | | As Above except some brown (10Y, 5/3), slight solvent smell |
| | | 6 | | | | | | | 5 | | |
| | | 11 | | | | | | | | | |
| | | 12 | | | | | | | 6 | | |
| | | 3 | | | | | | 0938 | | SC | CLAYEY SAND (SC), gray (10Y, 5/1), ~~Indistinct~~ dense, moist, med K. |
| | | 2 | | | | | | | 7 | | |
| | | 2 | | | | | | | | | |
| | | 3 | | | | | | 0942 | 8 | | As Above |
| | | 3 | | | | | | | | | |
| | | 3 | | | | | | | | SP | At 8.5' SAND (SP), gray (10Y, 5/1), dense, sl mst, med K, mi sh |
| | | 2 | | | | | | 0946 | 9 | SC | CLAYEY SAND (SC), gray (10Y, 5/1), ~~Indistinct~~ dense, moist, med K |
| | | 2 | | | | | | | | | |
| | | 3 | | | | | | | 10 | | Abundant shells. |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

Conductor Casing: STEEL
Casing Type & Size: Sch 40, 3" DIAM. BLANK PVC
Annulus Filler: PORTLAND CEMENT

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | Conductor Casing | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# [illegible] Sheet 2 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: 2738.1406 - CTO-0280 |
| | | | | | | | | | | | Job # Alameda NAS Site: Runway |
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | 2 | | | | | | 0950 | 15 | SP | SAND (SP), gray (10Y, 5/1), dense, |
| | | 3 | | | | | | | | | moist, f-gr, high K, minor clay stringers |
| | | 4 | | | | | | | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | | |
| | | 5 | | | | | | 1000 | 20 | | 20'-21' = As above |
| | | 15 | | | | | | | | | |
| | | 22 | | | | | | | 21 | SC | 21' = clayey SAND (SC), gray (10Y, 5/1), dense, |
| | | | | | | | | | 22 | | moist, med K. |
| | | | | | | | | | 23 | | |
| | | | | | | | | | 24 | | |
| | | 4 | | | | | | 1015 | 25 | CL | → sandy CLAY, ~~clayey SAND~~ (CL), gray (10Y, 5/1), |
| | | 4 | | | | | | | | | ~~dense~~ soft, moist, med K. |
| | | 4 | | | | | | | 26 | | |
| | | 4 | | | | | | 1018 | | SC | clayey SAND (SC), gray (10Y, 5/1), |
| | | 5 | | | | | | | 27 | | dense, moist, f-gr, med K, minor shells. |
| | | 5 | | | | | | | | | |
| | | 4 | | | | | | 1022 | 28 | | As Above |
| | | 5 | | | | | | | | | |
| | | 4 | | | | | | | 29 | | |
| | | 3 | | | | | | 1027 | | | As Above |
| | | 4 | | | | | | | 30 | | |
| | | 5 | | | | | | | | | |
| | | 2 | | | | | | | 31 | CL/SC | sandy CLAY (CL/SC), gray (10Y, 5/1), |
| | | 3 | | | | | | | | | ~~dense~~ soft to med stiff, moist, low K. |
| | | | | | | | | | 32 | | |

STEEL CONDUCTOR CASING

SCH 40, 3" DIAM. BLANK PVC

PORTLAND CEMENT GROUT

Boring # MW# M-101-C Sheet 3 of 4

Project: NAS Alameda – CTC-0280

Job # 2738.1406 Site: Runway

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | Conductor Casing | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3 | | | | | | | 32 | CL | CLAY (CL), dk gray (10Y, 4/1), med stiff, moist, |
| | | 6 | | | | | | 1040 | | | As Above w/ minor shells. |
| | | 7 | | | | | | | 33 | | |
| | | 9 | | | | | | | | | |
| | | 5 | | | | | | 1046 | 34 | SP | SAND (SP), w/ minor clay, |
| | | 7 | | | | | | | | | dk gray (10Y, 4/1), dense, wet, med k |
| | | 10 | | | | | | | 35 | | |
| | | 3 | | | CASING & CONDUCTOR | | | 1054 | | CL | CLAY (CL), w/ minor sand/s |
| | | 3 | | | | | | | 36 | | dk gray (10Y, 4/1), med stiff, wet, low |
| | | 6 | | | | | | | | | |
| | | 4 | | | | | | 1162 | 37 | | As Above |
| | | 4 | | | | | | | | | |
| | | 7 | | | | | | | 38 | | |
| | | 3 | | | | | | 1166 | | | As Above |
| | | 2 | | | | | | | 39 | | |
| | | 2 | | | | | | | | | bottom of conductor casing @ 40 |
| | | | | | | | | | 40 | | (Continue drilling @ 1300 on 10/26/9 |
| | | | | | | | | | 41 | | |
| | | | | | | | | | 42 | | |
| | | | | | | | | | 43 | | |
| | | | | | | | | | 44 | | |
| | | | | | | | | | 45 | | |
| | | 15 | | | | | | 1425 | | | silty CLAY (CL), very dk gray (2.5Y, N3), |
| | | 26 | | | | | | | 46 | | stiff, low K |
| | | 47 | | | | | | | | SP | At 46' = SAND (SP), dk gry (2.5Y, N4), m |
| | | | | | | | | | 47 | | dense, med K. |
| | | | | | | | | | 48 | | |
| | | | | | | | | | 49 | | |
| | | | | | | | | | 50 | | |
| | | 32 | | | | | | 1440 | | | As Above (SP) |
| | | 10 | | | | | | | 51 | CL | At 50.5 = CLAY (CL), very dk/lc gray |
| | | 12 | | | | | | | | | (2.5Y, N3), mst, stiff, low K. |
| | | | | | | | | | 52 | | |

STEEL CASING & CONDUCTOR

BLANK PVC

3" DIAM.

SCH 40,

SLOTTED PVC

GROUT

CEMENT

PORTLAND

SAND

#2

MONTEREY

Boring # MW#M-10L-C Sheet 4 of 4

Project: NAS Alameda CTO-0280

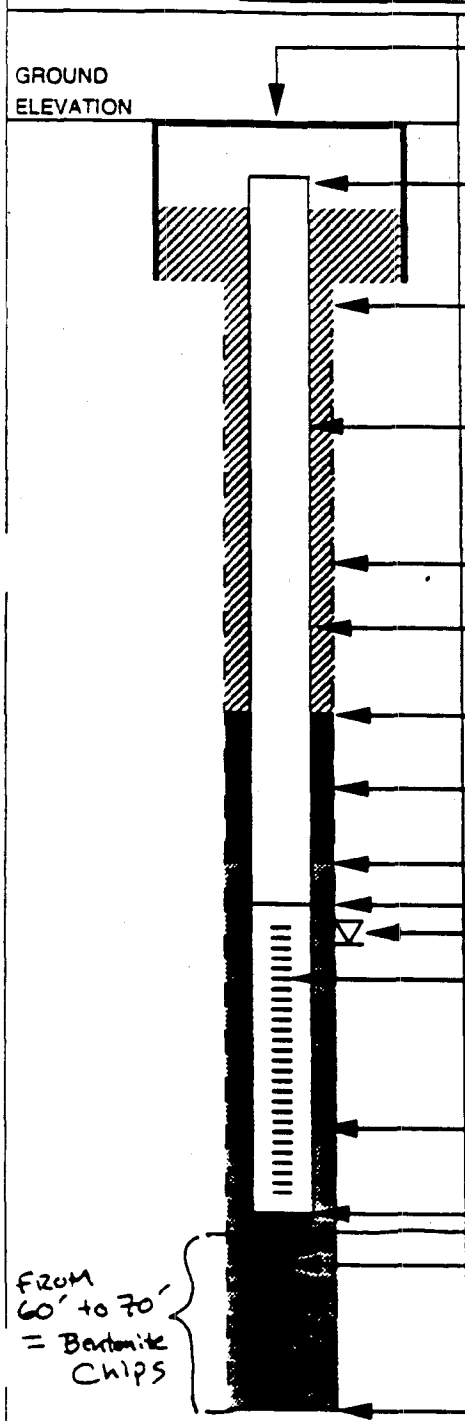
Job # 2738.1406 Site: /

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analysis | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | SCREED PVC | SAND | | | 52 | | |
| | | | | | | | | | | 53 | | |
| | | | | | | | | | | 54 | | |
| | | 13 | | | | | | | | 55 | | As Above (CL) |
| | | 14 | | | | 0.010 | 7/12 | | 1450 | | | |
| | | 19 | | | | SCH 40, | MONTEREY | | | 56 | SM | At 56' = silty SAND (SM), dk gry, (2.5Y, N4), mst, dense, med K. |
| | | | | | | | | | | 57 | | |
| | | | | | | | | | | 58 | | (No drilling change). |
| | | | | | | CAP | | | | 59 | | |
| | | | | | | | | | | 60 | CL | CLAY (CL), dk gray (5Y, 4/1), soft, mst, low K. |
| | | 2 | | | | | | | 1500 | | | |
| | | 2 | | | | | | | | 61 | | |
| | | 3 | | | | | | | | 62 | | (Driller "feels" clay) |
| | | | | | | CHIPS | CHIPS | | | 63 | | |
| | | | | | | | | | | 64 | | |
| | | | | | | | | | | 65 | | |
| | | 5 | | | | BENTONITE | BENTONITE | | 1530 | | | As Above (CL) |
| | | 5 | | | | | | | | 66 | | |
| | | 5 | | | | | | | 1600 | | | |
| | | 3 | | | | | | | | 67 | | As Above (CL), dark olive gray (5Y, 3/2), soft, mst, low K, w/ abundant root vesicles, mild $H_2S$ odor |
| | | 2 | | | | | | | | | | |
| | | 3 | | | | | | | | 68 | | |
| | | 7 | | | | | | | | | | |
| | | 8 | | | | | | | | | | |
| | | 4 | | | | | | | | 69 | | |
| | | 9 | | | | | | | | | | |
| | | 14 | | | | | | | | 70 | | Bottom of Borehole. |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

BORING NO. M-101-C

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda | LOCATION Runway Area | DRILLER Randy Gustafson |
| PROJECT NO. 2738.1406 | BORING M-101-C | DRILLING (Tonto) |
| ELEVATION — | DATE 10/27/94 | METHOD ~~HSA~~/ Mud Rotary |
| FIELD GEOLOGIST John Valett | | DEVELOPMENT METHOD Surge, Bail, Pump. |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: Steel Conductor

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 43' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 45' bgs

ELEVATION / DEPTH TOP OF SCREEN: 48.5' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 x 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 3/12 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 58.5

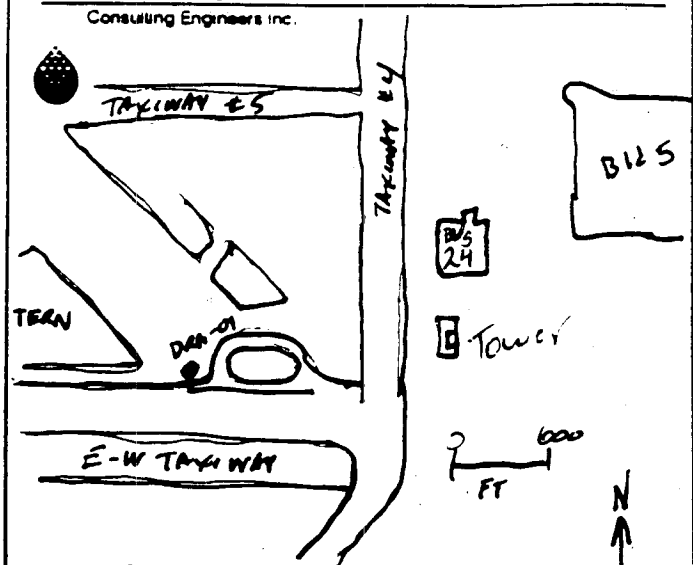
Bottom of End Cap 59'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 60'

TYPE OF BACKFILL BELOW OBSERVATION WELL: Monterey 3/12 Sand = 59'-60'
Bent. Chips = 60'-70'

ELEVATION / DEPTH OF HOLE: 70'

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# DRA-01 Sheet 1 of 3 |
| Project: | NAS Alameda CTO 230 |
| Job # | 2738.1406 Site: Runway Area |
| Logged By: | DEK/JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Tuno Drilling Services Inc |
| Drill Rig Type/Method: | HSA Mobile B61 |
| Drillers Name: | Randy Gustafson |
| Borehole Diam./Drill Bit Type | 12" Wgn Flights — Total Depth: 46' |
| | Ref Elev |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 10 45 Date: 11-14-94 |
| Completion Time: | 1000 Date: 11-16-94 |
| Backfill Time: | 1130 Date: 11-16-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 46' | | | |
| Casing Depth (ft.) | 45.5' | | | |
| Water Depth (ft.) | | | | |
| Time | 1030 | | | |
| Date | 11-13-94 | | | |

| HNu PID/OVA (ppm) | Sampler Type 4" & Depth Chalk 2/1ft Sample | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Asphalt Pavement over Sand & gravel base |
| | | | | | | 3" Dia, Sch 40 Blank PVC Casing | Bentonite Grout Cement | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | Water level from hand auger cleanout of borehole |
| | | 9 | ↓ | ↓ | | | | X | 5 | SP | Sand (SP) lt. yellowish brown, med dense saturated, 75% med sand, 20% fine sand 5% clay/silt. [qtz/feldspar grains] |
| | | 18 | | | | | | X | 6 | | |
| | | 19 | | | | | | X | | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | 18 | ↓ | ↓ | | | | | Asphalt | SP | SP As above - grading to fine sand (75%) med sand (20%) + 5% silt/clay |
| | | 20 | | | | | | | 11 | | 2" chunk of ~~asphalt~~ asphalt at 10.5' |
| | | 20 | | | | | | | | | |
| | | | | | | | | | 12 | | |

Boring # MW# DRA-01 Sheet 2 of 3

Project: NAS Alameda CTO 280

Job # 2738.1406 Site: Runway Area

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| ϕ | | 3 | | | | | | X | 15 | SP | SP As above |
| | | 4 | | | | | | X | | | |
| | | 5 | | | | | | X | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | Carbon Steel | | | 19 | | |
| | | | | | | | | | 20 | | |
| ϕ | | 5 | | | | | | X | | | SP As above; => sand, lt yellowish |
| | | 9 | | | | | | X | 21 | | brown, loose to med dense, saturated |
| | | 11 | | | | PVC | | X | | | fine sand 75%, med sand 20% |
| | | | | | | | | | 22 | | ± 5% clay/silt. v. ery thin < 1" |
| | | | | | | Black | Grout | | | | layer of gvl (pebbles to ⅛" diam) |
| | | | | | | | | | 23 | | at 21 ft |
| | | | | | | | | | 24 | | |
| | | | | | | Sch 40 | Cemented | | | | |
| | | | | | | | | | 25 | SP | As above |
| ϕ | | 1 | | | | | | X | | SW | (SW), well graded sand, dark grayish |
| | | 2 | | | | | | X | 26 | | black, saturated, v. loose, slight odor |
| | | 1 | | | | | | X | | shells | fine sand (60%), v. fine sand (20%) |
| | | | | | | 3" Dia | | | | SC | med sand (5%) silt/clay (10-15%) |
| | | | | | | | Portland | | 27 | | trace small sea shells (intact) |
| | | | | | | | | | | | to 1/16" diam at ~~25 ft~~ 25½' |
| | | | | | | | | | 28 | | |
| ϕ | | 3 | | | | | | X | SC | SC | shell fragments ~1" size, sandy clay |
| | | 3 | | | | | | X | 29 | SC | (SC), clayey sand, dk grayish black, |
| | | 2 | | | | | | X | shells | | saturated, v. loose/soft, fine sand |
| | | | | | | | | | 30 | | 40%, silt/clay 50%, 10% shells |
| ϕ | | 3 | | | | | | X | SC | SC | |
| | | 1 | | | | | | X | 31 | ML-CL | ML-CL silty clay - clayey silt |
| | | 2 | | | | | | X | | | dk grayish blk. moist, soft |
| | | | | | | | | | 32 | | homogeneous fine gr (silt/clay) |

Boring # MW# DRA-01 Sheet 3 of 3

Project: NAS Alameda

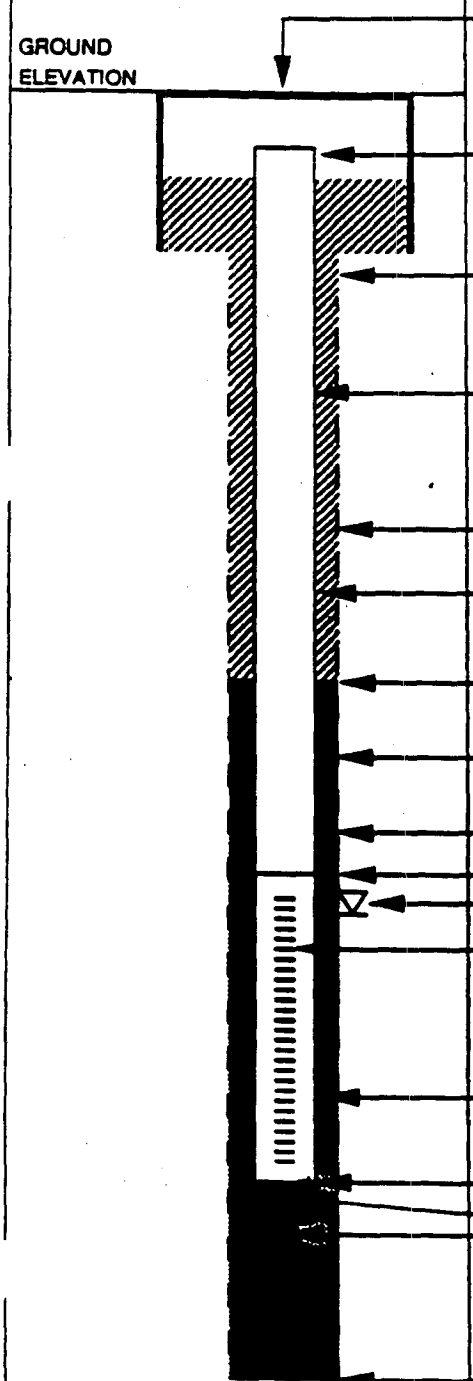
Job # 2738.1406 Site: Runway

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 32 | |
| | | | | | | | | | | 33 | |
| | | | | | | | | | | 34 | |
| | | 4 | | | | Blank PVC | Bent | | | 35 | silty CLAY (CL), dk olive br (2.5Y, 3/3), soft, moist, low K, orange-br root vesicles, mild $H_2S$ odor. |
| | | 3 | | | | | | | | | |
| | | 4 | | | | | | | | 36 | |
| | | | | | | Screen | | | | 37 | |
| | | | | | | PVC | | | | 38 | |
| | | | | | | | | | | 39 | |
| | | 7 | | | | Sch 40, 3" Dia, 0.010 slotted | Sand | | | 40 | SAND (SP), dk gray (7.5Y, N4), med dense, moist, f-gr, med K. |
| | | 8 | | | | | | | | 41 | |
| | | 12 | | | | | | | | | |
| | | | | | | | 2/12 | | | 42 | |
| | | | | | | | | | | 43 | |
| | | | | | | | Monterey | | | 44 | |
| | OV | | | | | | | | | | |
| | | 37 | | | | Sch 40 | | | | 45 | As Above (SP) |
| | | 50 | | | | | | | | 46 | 46' = Bottom of Borehole. |
| | | | | | | | | | | 7 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 0 | |
| | | | | | | | | | | 1 | |

BORING NO. DRA-01

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda | LOCATION RUNWAY | DRILLER RANDY GUSTAFSON (TONTO) |
| PROJECT NO. 2738.1406 | BORING DRA-01 | DRILLING METHOD MUD ROTARY |
| ELEVATION — | DATE 11/16/94 | DEVELOPMENT METHOD Surge, Bail, Pump. |
| FIELD GEOLOGIST JOHN VALETT | | |




ELEVATION OF GROUND SURFACE: —

ELEVATION OF TOP OF WELL CASING: —

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: Steel Conductor

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 30.5' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 33' bgs

ELEVATION / DEPTH TOP OF SCREEN: 35' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 x 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 45' bgs

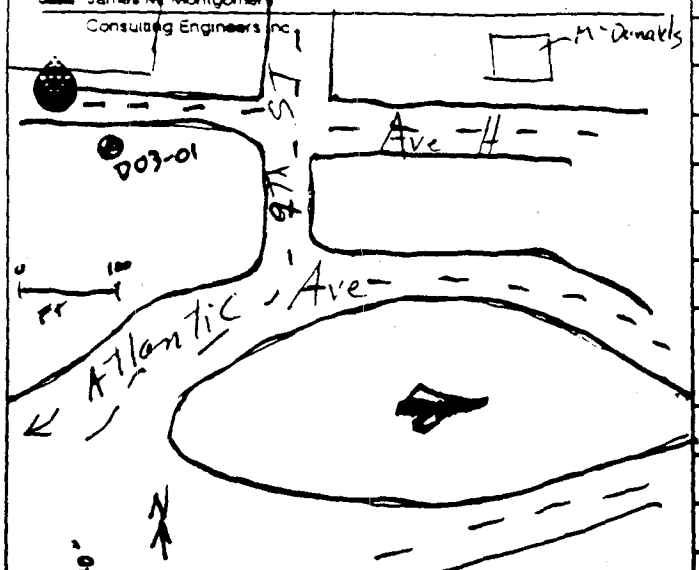
Bottom of End Plug 45.5' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 46' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Monterey 2/12 Sand

ELEVATION / DEPTH OF HOLE: 46' bgs

James M. Montgomery Consulting Engineers, Inc.




Sketch Map of Site Area With Drilling Locations

| | | | |
|---|---|---|---|
| Boring # | MW# D03-01 | Sheet 1 of 4 | |
| Project: NAS ALAMEDA CTO 280 | | | |
| Job # 2738.1406 | Site: 03 | | |
| Logged By: DEK | Proj. Eng: SMH | Edited By: | |
| Drilling Contractor: TONTO DRILLING SERVICES | | | |
| Drill Rig Type/Method: Mobile B80 MUD ROTARY | | | |
| Drillers Name: RANDY GUSTOFSEN | | | |
| Borehole Diam./Drill Bit Type: 7¼ 4-cone | Total Depth: 61' | Ref. Elev. | |
| Hammer Wt: 140 lb | Drop: 30" | | |
| Start Time: 1600 | Date: 11-14-94 | | |
| Completion Time: 0900 | Date: 11-15-94 | | |
| Backfille Time: 1110 | Date: 11-15-94 | | |

| | 1st Water | 2nd | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 4 | 16½ | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1600 | 1700 | | |
| Date | 11-13-94 | 11-13-94 | | |

| PIDOVA HNu PPM | Sampler Type (Auger Lg" & Depth Splits Sample) | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | HAND AUGER | | | 3" DIA, SCH 40 PVC BLANK | CEMENT GROUT / PELLETS AND | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | SM | GM gvl-snd-silt mixture, grayish olive loose, moist: gvl (10%) - to ¼" angular pebbles; med snd (50%): fine snd (15%) silt (25%) |
| | | | | | | | | | 4 | CL | CL silty clay, grayish olive green, saturated, soft, low plasticity, strong hydrocarbon odor |
| 50 | | | | | | | | | 5 | | |
| | | 8 | | | | | | X | | | |
| 50 | | 14 | | | | | | X | 6 | SW-SC | SW-SC clayey sand - well graded snd grayish olive green, med dense, saturated fine sand (60%), v. fine snd (20%) silt (20%) v. strong hydrocarbon odor |
| | | 19 | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | Approx | CL | |
| | | | | | | | | | 9 | | |
| | | 1 | | | | | | | 10 | CL | CL silty clay, grayish olive, v. soft saturated to v. moist. Note: no hydrocarbon odor |
| | | 1 | | | | | | | | | |
| | | 1 | | | | | | | 11 | SC / CL | SC clayey sand layer (1" thick) f. snd (60%) silt/clay (40%) |
| | | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec. | Depth: Analyses | Depth: Feet | | Boring # MW# D03-01 Sheet 2 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS Alameda LTD 280 |
| | | | | | | | | | | | | Job # 2738.1406 Site: 03 |
| | | | | | | | | | | 12 | | |
| | | | | | | | | | | 13 | CL | Approx |
| | | | | | | | | | | 14 | | |
| | | 9 | ↓ | ↓ | | | | X | | 15 | SM | silty sand, mod yellowish brown |
| | | 21 | | | | | | X | | | | moist, med dense, f. snd (40%) |
| | | 24 | ↓ | ↓ | | | | X | | 16 | | v. fine snd (20%), silt (40%) |
| | | | | | | | | | | | | saturated at 16½ ft |
| | | | | | | | | | | 17 | | |
| | | | | | | | | | | 18 | | |
| | | | | | | | | | | 19 | | |
| | | 13 | ↓ | ↓ | | 3" DIA, SCH 40 Blank PVC | PORTLAND CEMENT GROUT | | | 20 | SM | SM silty sand Aa |
| | | 15 | | | | | | | | | | |
| | | 17 | ↓ | ↓ | | | | | | 21 | | |
| | | | | | | | | | | 22 | | |
| | | | | | | | | | | 23 | | |
| | | | | | | | | | | 24 | | |
| | | 28 | ↓ | ↓ | | | | | | 25 | SP | SAND (SP), dk gllw br (10Y, 4/6), |
| | | 50 | | | | | | | | | | dense, sl mst, med lc |
| | | | | | | | | | | 26 | | |
| | | | | | | | | | | 27 | | |
| | | | | | | | | | | 28 | | |
| | | | | | | | | | | 29 | | |
| | | 37 | ↓ | ↓ | | | | | | 30 | | As Above (SP) |
| | | 50 | | | | | | | | | | |
| | | | | | | | | | | 31 | | |
| | | | | | | | | | | 32 | | |

Boring # MW# D03-91 Sheet 3 of 4

Project: NAS Alameda CTO-0280

Job # 2738.1406 Site: 3

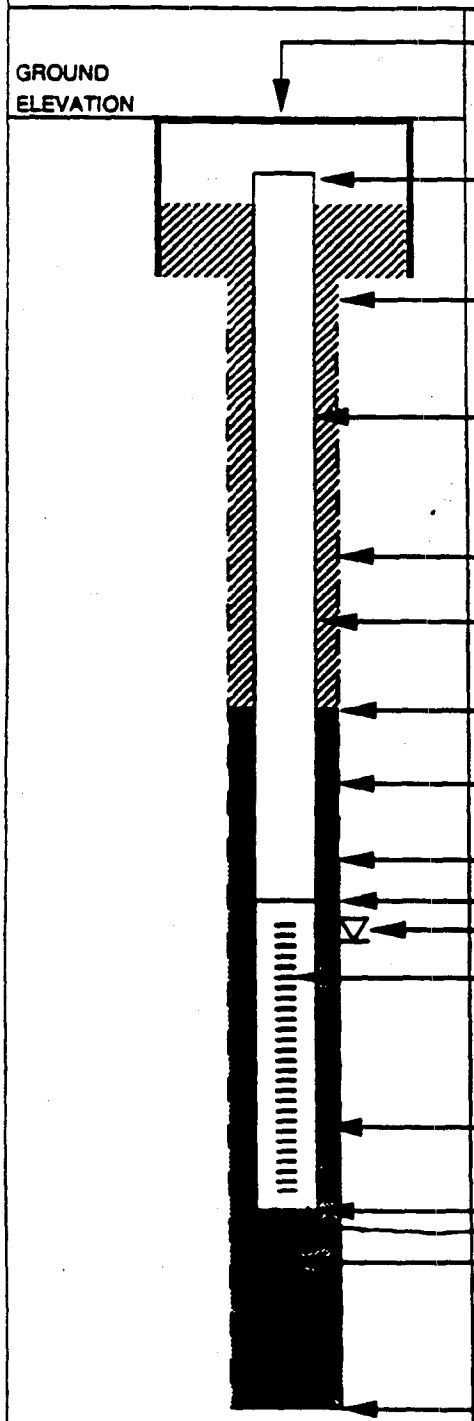
| PID/OVA | Sample Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 32 | 52 |
| | | | | | | | | | | 33 | |
| | | | | | | | GROUT | | | 34 | |
| | | 50 | ↓ | ↓ | | | CEMENT | | | 35 | SAND (SP), yllw br (10YR 5/6) dense, mst, fgr, mod K |
| | | | | | | | | | | 36 | |
| | | | | | | | | | | 37 | |
| | | | | | | | SAND | | | 38 | |
| | | | | | | PVC | | | | 39 | |
| | | 26 | ↓ | ↓ | | | PACK | | | 40 | As Above (SP) |
| | | 50 | ↓ | ↓ | | | | | | 41 | |
| | | | | | | Blank | | | | 42 | |
| | | | | | | | | | | 43 | |
| | | | | | | Sch 40 | BENTONITE | | | 44 | |
| | | 50 | ↓ | ↓ | | 3" Dia, | | | | 45 | As Above (SP) |
| | | | | | | | | | | 46 | |
| | | | | | | | | | | 47 | |
| | | | | | | | | | | 48 | |
| | | | | | | Screen | SAND | | | 49 | |
| | | 42 | ↓ | ↓ | | | | | | 50 | As Above (SP), except dk grayish br (10YR 4/2) |
| | | 50 | ↓ | ↓ | | | | | | 51 | |
| | | | | | | | | | | 52 | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | | Boring # MW# D03-01 Sheet 4 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS Alameda CTC-0280 |
| | | | | | | | | | | | | Job # 2738.1406 Site: 3 |
| | | | | | | | | | | 52 | SP | |
| | | | | | | | | | | 53 | | |
| | | | | | | | | | | 54 | | |
| | | 50 | ↓ | ↓ | | 3" Dia., Sch 40, 0.01 Slotted PVC | MONTEREY 2/12 SAND | | | 55 | | SAND (SP), dk br (10Y, 4/3), dense, mst, f-gr, med k. |
| | | | | | | | | | | 56 | | |
| | | | | | | | | | | 57 | | |
| | | | | | | | | | | 58 | | |
| | | | | | | | | | | 59 | | |
| | | 45 | ↓ | | | CAP SAND | ↓ | | | 60 | | As Above (SP) |
| | | 50 | ↓ | | | | | | | | | Bottom = 61' bgs |
| | | | | | | | | | | 61 | | |
| | | | | | | | | | | 2 | | |
| | | | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

BORING NO. D-03-01

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT NAS Alameda | LOCATION Site 3 | DRILLER Randy Gustafson | |
| PROJECT NO. 2738.1406 | BORING D-03-01 | DRILLING METHOD Tonto Drilling Mud Rotary | |
| ELEVATION — | DATE 11-15-94 | DEVELOPMENT METHOD Surge, Bail, Pump | |
| FIELD GEOLOGIST JOHN VALETT | | | |




ELEVATION OF GROUND SURFACE: —

ELEVATION OF TOP OF WELL CASING: —

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: N/A

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8.25"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 43' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 46.5' bgs

ELEVATION / DEPTH TOP OF SCREEN: 49.5' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 x 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 59.5' bgs

Depth, Bottom of End Cap 60' bgs

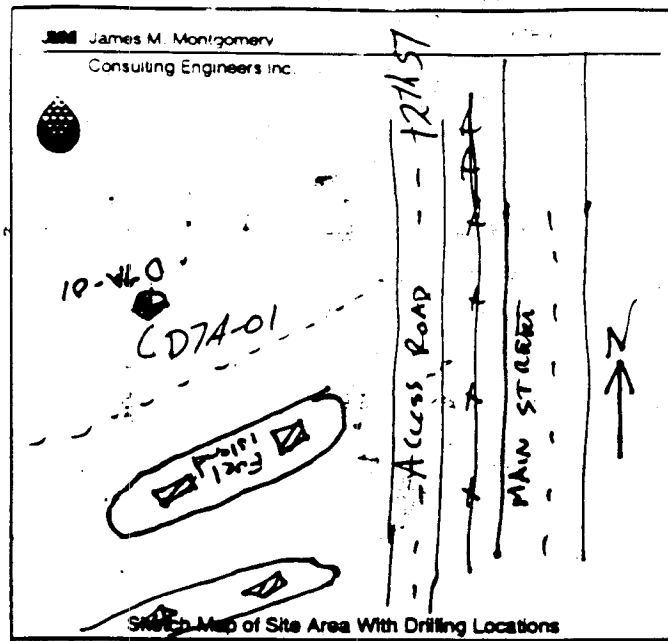
ELEVATION / DEPTH BOTTOM OF SAND PACK: 60.5' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Monterey 2/12 Sand

ELEVATION / DEPTH OF HOLE: ~~60.5' bgs~~ 61 WPC

D7A-01

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# D7A-01 Sheet 1 of 4 |
| Project: | NAS Alameda, CTO 280 |
| Job # | 2778.1404 Site: 7A |
| Logged By: | DEK Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Tonto Drilling Services |
| Drill Rig Type/Method: | Mobile B80 Mud Rotary |
| Drillers Name: | Randy Gustolson |
| Borehole Diam./Drill Bit Type | 7¼ 4-Cone bit |
| Total Depth | 69.0 |
| Ref. Elev | |
| Hammer Wt: | 140lb Drop: 30" |
| Start Time: | 0900 Date: 11.10.94 |
| Completion Time: | 1145 Date: 11.10.94 |
| Backfille Time: | 1455 Date: 11.10.94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 8.2 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 0945 | | | |
| Date | 11.10.94 | | | |

| PID/OVA HNU ppm | Sampler Type & Depth CALIF SPLIT SPOON | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 4" 6" asphalt ; strong fuel odor |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| 1.5 | | 2 | | | | Sch 40 PVC Blank | Neat Cement Grout | X | | CL/ML | CL clay grayish olive, soft, moist, trace black mottling |
| | | 2 | | | | | | X | | | |
| | | 2 | | | | | | X | 6 | | ML, clayey silt, grayish olive, soft moist to slightly saturated 10-15% v. fine sand |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| 1.5 | | 1 | | | | | | X | | | ML As above saturated |
| | | 1 | | | | | | X | | | |
| | | 2 | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

Boring # MW# D7A-01 Sheet 2 of 4

Project: NAS ALAMEDA CD 280

Job # 2775.1406 Site: 7A

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | Casing | Annulus | Sample No. | Analysis | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| 1.5 | | 1 | ↓ | ↓ | | | X | | 15 | ML | Clayey silt (ML) grayish olive, soft, saturated, trace plant matter brown, (slightly decomposed) trace v. fine/fine sand 10-15%, Strong $H_2S$ odor |
| | | 2 | | | | | X | | | | |
| | | 1 | | | | | X | | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | | |
| 1.5 | | 1 | ↓ | ↓ | Soil Pro BLANK | Neat Cement Grout | X | | 20 | ML | ML As above; no plant matter |
| | | 1 | | | | | X | | | | |
| | | 1 | | | | | X | | 21 | | |
| | | | | | | | | | 22 | | |
| | | | | | | | | | 23 | | |
| | | | | | | | | | 24 | | |
| 1.5 | | 1 | ↓ | ↓ | | | X | | 25 | | ML As above; slight trace of sea shells (v. small/thin) |
| | | 1 | | | | | X | | | | |
| | | 1 | | | | | X | | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | 1 | ↓ | ↓ | | | X | | 30 | | ML as above, no shells no plant matter |
| | | 2 | | | | | X | | | | |
| | | 1 | | | | | X | | 31 | | |
| | | | | | | | | | 32 | | |

Boring # MW#D7A-01 Sheet 3 of 4

Project: NAS Alameda CTO 280

Job # 2738.140L Site: 7A

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 32 | | |
| | | | | | | | | | | 33 | | |
| | | | | | | | | | | 34 | | |
| | | | | | | | | | | 35 | ML | |
| Φ | | 1 | | | | | | X | | | | ML As above, clayey silt, olive |
| | | 1 | | | | | | X | | | SC/ML | gray, saturated, soft, 10-15% fine |
| | | 2 | | | | | | X | | 36 | | sand. V. slight trace of fine sea shells |
| | | | | | | | | | | 37 | | SC - sand - clayey - silt, thin (2") |
| | | | | | | | | | | | | lens of sandy clayey silt, fine to |
| | | | | | | | | | | 38 | | med sand (20-25%) possibly burrow |
| | | | | | | | | | | | | infilling, or root infilling |
| | | | | | | BLANK | | | | 39 | | |
| | | | | | | | | | | | | |
| | | | | | | PVC | | | | 40 | | |
| Φ | | 2 | | | | | | X | | | | ML As above; v. thin sand partings |
| | | 1 | | | | | | X | | | | (layers ≈ 1/2" thick) some vertical |
| | | 2 | | | | 40 | | X | | 41 | | sand also (possibly burrows) |
| | | | | | | | | | | 42 | | |
| | | | | | | SCREENED | | | | | | |
| | | | | | | | | | | 43 | | |
| | | | | | | | GRAVEL | | | | | |
| | | | | | | | | | | 44 | | |
| | | | | | | | | | | | | |
| | | | | | | | CEMENT | | | 45 | | |
| Φ | | 5 | | | | | | X | | | ML | ML As above, slight trace |
| | | 3 | | | | | | | | | | plant matter & sea shells |
| | | 2 | | | | | | | | 46 | | |
| | | | | | | | NEAT | | | | | |
| | | | | | | | | | | 47 | | |
| | | | | | | | | | | 48 | | |
| | | | | | | | | | | 49 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | 50 | ML | |
| Φ | | 4 | | | | | | X | | | | ML As above to 50.5' |
| | | 3 | | | | | | X | | 51 | ML-Pt | ML/Pt, clayey silt with peat |
| | | 1 | | | | | | X | | | | olive brown ML matrix, brown |
| | | | | | | | | | | 52 | ML-Pt | wood debris, peat, moist to |

slightly saturated

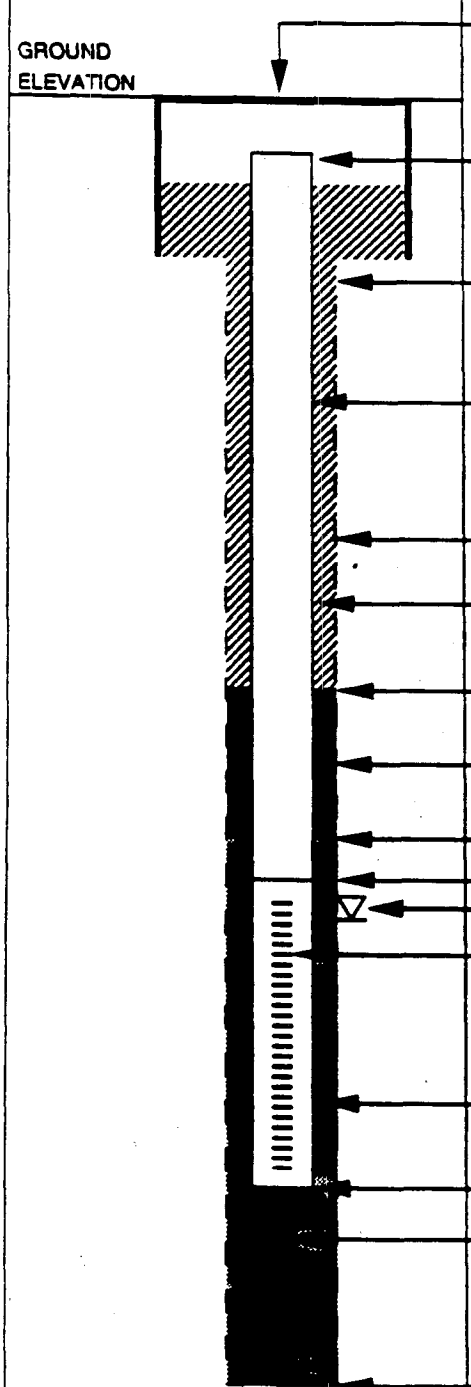
| PID/OVA HNU PPM | Sampler Type CALIF SPLIT SPOON | Blow Counts | Advance (in.) | Rcvd (in.) | Casing | Annulus | Depth Sample Rec | Analyses | Feet | | Boring # MW# D7A-01 Sheet 4 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS ALAMEDA CTO 280 |
| | | | | | | | | | | | Job # 2738.1406 Site: 7A |
| | | | | | | | | | 52 | | |
| | | | | | | | | | 53 | | |
| | | | | | | | | | 54 | | |
| | | | | | | | | | 55 | | ? |
| Φ | | 13 | | | Sch 40 PVC Blank | BENTONITE | X | | | pt | Peat, black, moist, soft, trace |
| | | 15 | | | | | X | | | pt | (5%) fine sand, very little organic |
| | | 26 | | | | | X | | 56 | SM | odor. |
| | | | | | | | | | 57 | | SM, silty sand grayish olive, dense, slightly |
| | | | | | | | | | | | saturated, trace of plant matter |
| | | | | | | | | | 58 | | 40% fine sand ~~60% silt~~. DEK |
| | | | | | | | | | | | 20% v. fine sand, 10% med sand |
| | | | | | | SAND. Monterey 2/12 | | | 59 | | 30% silt |
| | | | | | | | | | 60 | | |
| Φ | | 12 | | | | | X | | | SM-SP | SM-SP silty sand - sand, grayish |
| | | 28 | | | | | X | | 61 | | olive, moist to slightly saturated |
| | | 22 | | | 0.01" Sch 40 PVC Screen Slotted | | | | | | 40% fine sand, 20% v. fine sand |
| | | | | | | | | | 62 | | 10% - 20% med sand, 20-30% |
| | | | | | | | | | | | silt, thin (1") organic bed (lens |
| | | | | | | | | | 63 | | at 60.5 ft, moderately abundant |
| | | | | | | | | | | | plant matter through out core |
| | | | | | | | | | 64 | | |
| | | | | | | | | | 65 | | |
| | DEK | ~~26~~ | | | | | | | | | |
| | | 50 | | | | | | | 66 | | |
| | | | | | | | | | 67 | SM-SP | |
| | | | | | | | | | 68 | | |
| Φ | | 22 | | | | | | | | | SM-SP As above to 68½ ft |
| | | 50 | | | | | | | 69 | CL | CL clay, grayish olive to |
| | | | | | | | | | | SC | greenish gray, hard, moist |
| | | | | | | | | | 70 | | no plant matter, no shells. |
| | | | | | | | | | | | homogeneous clay mod plasticity |
| | | | | | | | | | 71 | | SC, clayey sand, olive - greenish |
| | | | | | | | | | 72 | | gray, moist, 60% fine sand |

20% v. fine sand 20% clay

BORING NO. D7A-01

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT Alameda-CTO-280 | LOCATION Site 7A | DRILLER Tonto Env. Drill | |
| PROJECT NO. 2738.1406 | BORING D7A-01 | DRILLING METHOD Mud Rotary | |
| ELEVATION | DATE 11-10-94 | DEVELOPMENT METHOD Surge, bail, Pump | |
| FIELD GEOLOGIST Daniel Kramer | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 52.4'

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 55.5

ELEVATION / DEPTH TOP OF SCREEN: 58

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 factory slot

I.D. OF SCREEN 3"

TYPE OF SAND PACK: #2/12 Monterey Sand

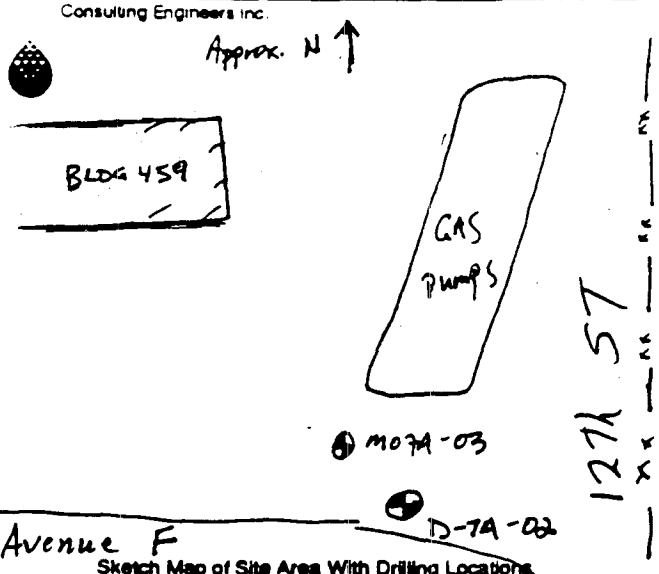
ELEVATION / DEPTH BOTTOM OF SCREEN: 68

ELEVATION / DEPTH BOTTOM OF SAND PACK: 68.5

TYPE OF BACKFILL BELOW OBSERVATION WELL: Native

ELEVATION / DEPTH OF HOLE: 69'

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# D7A-02 Sheet 1 of 4 |
| Project: | NAS Alameda CTO-280 |
| Job # | 2738.1406 Site: Site 7A |
| Logged By: | MEM Proj. Eng: SMH Edited By: |
| Drilling Contractor: | TONTO |
| Drill Rig Type/Method: | MUD ROTARY / MBE 853 |
| Drillers Name: | Matt Rugh |
| Borehole Diam./Drill Bit Type | 8" Total Depth 60.2' Ref. Elev |
| Hammer Wt: | 140# Drop: 30" |
| Start Time: | 0935 Date: 11/4/94 |
| Completion Time: | — Date: 11-9-94 |
| Backfille Time: | — Date: 11-9-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 60.2' | | | |
| Casing Depth (ft.) | 60' | | | |
| Water Depth (ft.) | | | | |
| Time | — | | | |
| Date | 11-9-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NA | | | | 8" Dia, Sch 40 Blank PVC Casing | Portland Cement Grout | | 1 | | SAND (SP), gray-brown (2.5Y, 5/2), loose, dry, high est K. (Hand augered), tr. gravel. Surface is Asphalt over Sand/gravel base. |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | NA | | | | | | | 4 | | PEAT (PT), very dark gray (2.5YR 3/0) (Hand auger sample) |
| | 3 | [redacted] | | | | | | | 5 | | CLAY (CL), very dark gray (2.5YR, 3/[redacted]), moist, low est K. (Hand augered) |
| | | 5 | | | | | | | | | |
| | | 6 | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| | | 1 | | | | | | | | CL | CLAY (CL), gray (5Y, 5/1) moist, 5-10% roots & organic material, low est K. Strong $H_2S$ odor. |
| | | 1 | | | | | | | 11 | | |
| | | 1 | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Feet | Graph | Boring # MW# D27A-W Sheet 2 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: Nits Alameda CTO-0280 |
| | | | | | | | | | | | Job # 2738.1406 Site: 7A |
| | | | | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | WOR | | | | | | | 15 | CL | CLAY (CL), dark greenish gray (5GY 4/1), very soft, trace shells & organic matter, tr. silt. Low est K. Strong $H_2S$ odor. |
| | | | | | | | | | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | | |
| | | 1 | | | | 3" Dia, Sch 40 Blank PVC Casing | Portland Cement Grout | | 20 | | CLAY (CL), dark greenish gray (5GY 4/1) very soft, trace silt. Strong $H_2S$ odor. Low est K. |
| | | 1 | | | | | | | 21 | | |
| | | 1 | | | | | | | 22 | | |
| | | | | | | | | | 23 | | |
| | | | | | | | | | 24 | | |
| | | 1 | | | | | | | 25 | | Silty CLAY (CL), dark greenish gray (5GY 4/1) very soft, 10% med sand. trace shells. Low est K. |
| | | 2 | | | | | | | 26 | | |
| | | 3 | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | 2 | | | | | | | 30 | | Sandy CLAY (CL), dark greenish gray (5GY 4/1), soft. Trace shells. Low est K |
| | | 2 | | | | | | | 31 | | |
| | | 3 | | | | | | | 32 | | |

-8-94

-9-94

Boring # MW# D07A-07 Sheet 3 of 4

Project: NAS Alameda

Job # 2738.1406 Site: 7A

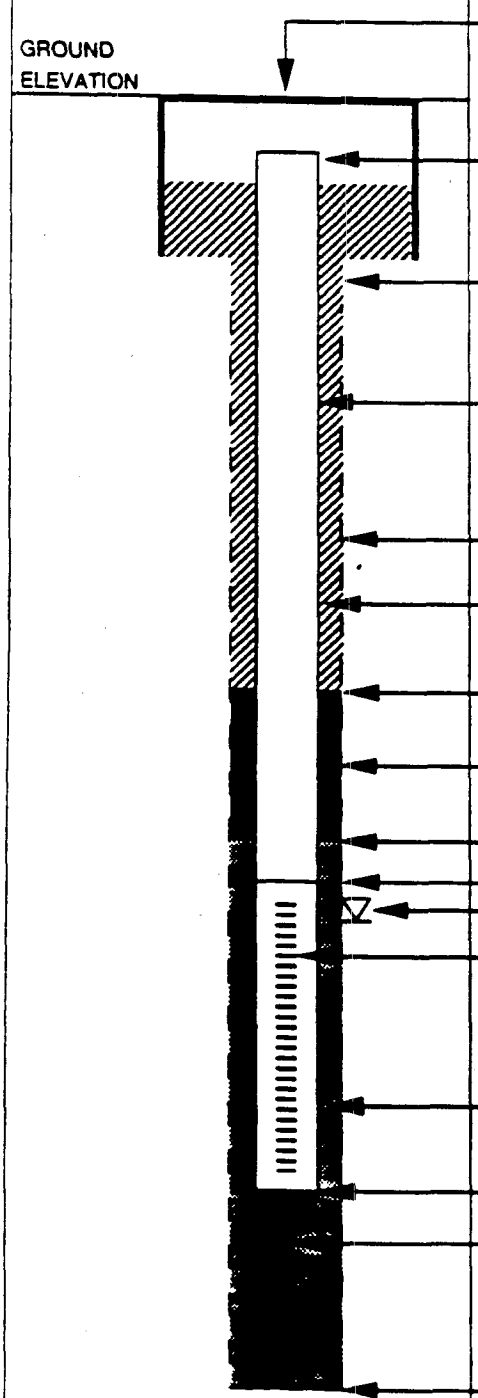
| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 32 | | |
| | | | | | | | | | 33 | | |
| | | | | | | | | | 34 | CL | |
| | | | | | | | | | 35 | | Silty CLAY (CL), dark greenish gray (5GY 4/1). 1cm sand lenses every ≈6", Lowest K |
| | | 1 | | | | | | | | | |
| | | 2 | | | | | | | 36 | | |
| | | 3 | | | | | Grout | | | | |
| | | | | | | | | | 37 | | |
| | | | | | | | | | 38 | | |
| | | | | | | | Cement | | | | |
| | | | | | | | | | 39 | | |
| | | 50/6" | | | | | | | 40 | | Sand (SP), fine to medium, dark greenish gray (5GY 4/1), trace silt. Highest K. |
| | | | | | | | | | 41 | | |
| | | | | | | Casing | Portland | | 42 | | |
| | | | | | | | | | 43 | | |
| | | | | | | | | | | SP | |
| | | | | | | PVC | | | 44 | | |
| | | 50/5" | | | | Bent/C | | | 45 | | Sand (SP) AS ABOVE |
| | | | | | | | Bentonite | | 46 | | |
| | | | | | | | | | 47 | | |
| | | | | | | 3" DIA, Sch 40 | | | 48 | | |
| | | | | | | | | | 49 | | |
| | | 25 | | | | Screen | Sand | | 50 | | Sand (SP), fine to medium, greenish gray (5GY 5/1) 5-10% consolidated silt. Highest K. 50-50.5' |
| | | 50 | | | | | | | 51 | | Sand (SP), fine to coarse, dark olive gray (5Y 3/2) trace silt. Highest K (50.5-51') |
| | | | | | | | | | 52 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Feet | Graph | Boring # MW# D07A-02 Sheet 4 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda |
| | | | | | | | | | | | Job # 2738 1406 Site: 7A |
| | | | | | | | | | 52 | | |
| | | | | | | | | | 53 | | |
| | | | | | | | | | 54 | | |
| | | | | | | | | | 55 | SP | |
| | | 50/5" | ↓ | ↓ | | 3" DIA, SCH 40, 0.010 Slotted PVC Screen | Sand | | | | Sand (SP), fine to coarse, dark olive gray (5Y 3/2) trace silt, high est K. |
| | | | | | | | 3/16 | | 56 | | |
| | | | | | | | Monterey | | 57 | | |
| | | | | | | | | | 58 | | |
| | | | | | | | | | 59 | | |
| | | 50/3" | | | | | | | 60 | | |
| | | 50/3" | ↓ | ↓ | | SAND | | | | | AS ABOVE |
| | | | | | | | | | 61 | | Bottom of Boring @ 60.3' bgs. |
| | | | | | | | | | 62 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. D7A-02

# MONITORING WELL SHEET

| | | | |
|---|---|---|---|
| PROJECT NAS Alameda -280 | LOCATION Site 7A | DRILLER Tonto | |
| PROJECT NO. 2738.1406 | BORING D7A-02 | DRILLING METHOD Mud Rotary | |
| ELEVATION | DATE 11-9-94 | DEVELOPMENT METHOD Surge, bail, Pump | |
| FIELD GEOLOGIST Mike McDonald | | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: SCH-40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 45.3

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 48.3

ELEVATION / DEPTH TOP OF SCREEN: 50

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.01 factory slot

I.D. OF SCREEN 3"

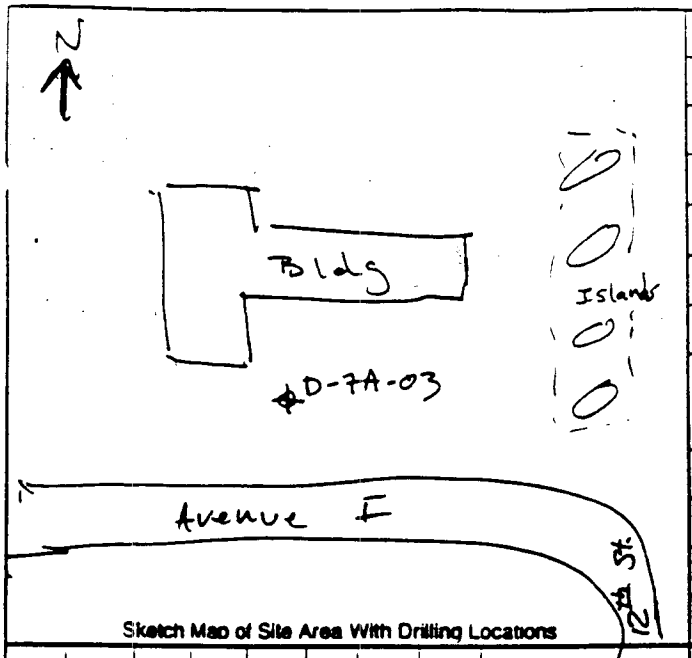
TYPE OF SAND PACK: #2/12 Monterey Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 60'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 60.3

TYPE OF BACKFILL BELOW OBSERVATION WELL: #2/12 monterey Sand

ELEVATION / DEPTH OF HOLE: 60.3




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#D-7A-03 Sheet 1 of 4 |
| Project: | NAS Alameda - CTO-0280 |
| Job # | 2738.1406 Site: 7A |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | TONTO Env. Drilling |
| Drill Rig Type/Method: | Mud Rotary |
| Drillers Name: | Matt Rugh |
| Borehole Diam./Drill Bit Type | 8" Total Depth: 61.5' Ref. Elev. |
| Hammer Wt: | 140 lb. Drop: 30" |
| Start Time: | 1000 Date: 11-7-94 |
| Completion Time: | 1230 Date: 11-7-94 |
| Backfill Time: | 1630 Date: 11-7-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 61' | | | |
| Casing Depth (ft.) | 60.5' | | | |
| Water Depth (ft.) | | | | |
| Time | 1230 | | | |
| Date | 11-7-94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance (in.) | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Rec. Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 3" Dia. Sch 40 Blank PVC | Portland Cement Grout | | 1 | | SAND (SP), gray br (2.5Y, 5/2), loose moist, f-gr, low K (from auger cuttings) |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | 3 / 5 / 8 | ↓ | ↓ | | | | | 5 | CL | CLAY (CL), very dk gray (2.5Y, N3), med stiff, moist, low K. |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | 3 / 2 / 2 | ↓ | ↓ | | | | | 10 | | As Above w/ grass and roots. |
| | | | | | | | | | 11 | | |
| | | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# D-7A-03 Sheet 2 of 4 / Project: NAS Alameda CTO-0280 / Job # 2738.1406 Site: 7A |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 12 | CL | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | | | | | | | | 15 | | CLAY (CL), very dk gray (2.5Y, N3), |
| | | | | | | | | | 16 | | very soft, moist, weak, musty |
| | | | | | | | | | | | organic odor, trace of grass + roots. |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | | |
| | | | | | | | | | 20 | | As Above (CL) except no grass or! |
| | | | | | | | | | 21 | | |
| | | | | | | | | | 22 | | |
| | | | | | | | | | 23 | | |
| | | | | | | | | | 24 | | |
| | | | | | | | | | 25 | | As Above (CL) |
| | | | | | | | | | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | | | | | | | | 30 | | As Above (CL) |
| | | | | | | | | | 31 | | |
| | | | | | | | | | 32 | | |

3" Dia., Sch 40 Blank PVC

Portland Cement Grout

Boring # MW#D-7A-03 Sheet 3 of 4

Project: NAS Alameda - CTO-0280

Job # 2738.1406 Site: 7A

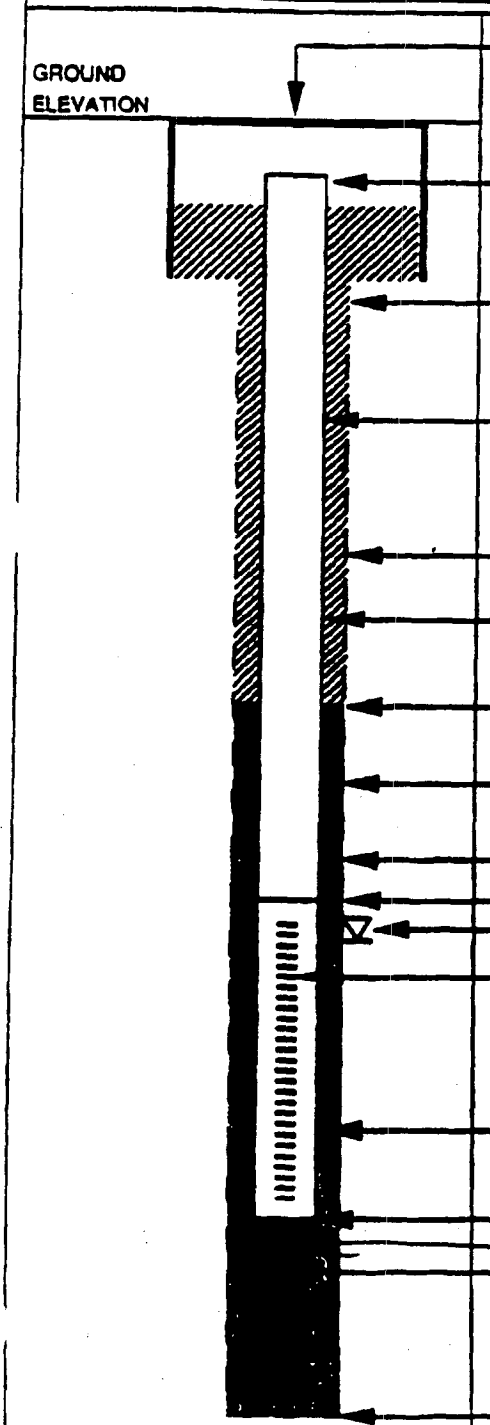
| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 32 | CL | |
| | | | | | | | | | 33 | | |
| | | | | | | | | | 34 | | |
| | | | | | | | | | 35 | | CLAY (CL) w/ minor clayey sand lenses w/ trace of shells, very dk gray (2.5Y, N3), very soft, moist, weak, low |
| | | 1 | | | | | | | 36 | | |
| | | 1 | | | | | | | 37 | | |
| | | | | | | | | | 38 | | |
| | | | | | | | | | 39 | | |
| | | 2 | | | | PVC | Cement Grout | | 40 | | As Above (CL) |
| | | 7 | | | | | | | | | |
| | | 22 | | | | | Portland | | 41 | SC | At 41' = clayey, silty SAND (SC), dk gray (2.5Y, N4), med dense, moist, fine-gr, moderate, med K. |
| | | | | | | Blank | | | 42 | | |
| | | | | | | | | | 43 | | |
| | | | | | | Sch 40 | | | 44 | | |
| | | | | | | | Bentonite | | 45 | SM | silty SAND (SM), dk gray (2.5Y, N4), med dense, wet, fine-gr, moderate, med K. |
| | | 13 | | | | 3" Diam. | | | 46 | | At 46.5' = As above except yellowish brown (10Y, 5/6) w/ trace of clay. |
| | | 30 | | | | | | | | | |
| | | 30 | | | | | | | 47 | | |
| | | | | | | | | | 48 | | |
| | | | | | | | 2/12 Sand | | 49 | | |
| | | 2 | | | | Screen | Monterey | | 50 | SC | clayey SAND (SC), yellowish br (10Y, 5/6) loose/soft, moist, f-gr, mod, med K |
| | | 21 | | | | | | | | SP | |
| | | 50 | | | | | | | 51 | | → At 50.5' = SAND (SP), dk yellowish br (10Y, 4/6), dense, mst, f-gr, mod, med K. |
| | | | | | | | | | 52 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (In.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW#D-7A-03 Sheet 4 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda CTO-0280 |
| | | | | | | | | | | | Job # 2738.1406 Site: 7A |
| | | | | | | | | | 52 | SP | |
| | | | | | | | | | 53 | | |
| | | | | | | | | | 54 | | |
| | | 22 | | | | 3" Dia, Sch 40, 0.010 Slotted PVC | SAND | | 55 | | SAND (SP), dk gray (2.5Y, N4), med dense to very dense, moist, f-gr, mod, med K. |
| | | 40 | | | | | | | | | |
| | | 50/4 | | | | | | | 56 | | |
| | | | | | | | 2/12 | | 57 | | |
| | | | | | | | MONTEREY | | 58 | | |
| | | | | | | | | | 59 | | |
| | | 17 | | | | 3" Dia | | | 60 | SM | silty SAND (SM) w/ minor clay, grayish br (2.5Y, 5/2), med dense, moist, f-gr, moderate, med to low K |
| | | 21 | | | | | | | | | |
| | | 29 | | | | | | | 61 | | |
| | | | | | | | | | 62 | | → Bottom of Borehole. |
| | | | | | | | | | 3 | | TD = 61.5' |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. D-7A-03

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda | LOCATION Site 7A | DRILLER Matt Rugh, Toto |
| PROJECT NO. 2738.1406 | BORING D-7A-03 | DRILLING METHOD Mud Rotary |
| ELEVATION — | DATE 11-7-94 | DEVELOPMENT METHOD Surge, Bail, Pump. |
| FIELD GEOLOGIST John Valett | | |




ELEVATION OF GROUND SURFACE: ____

ELEVATION OF TOP OF WELL CASING: ____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: N/A

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 43' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 46.5' bgs

ELEVATION / DEPTH TOP OF SCREEN: 50' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 x 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 60' bgs

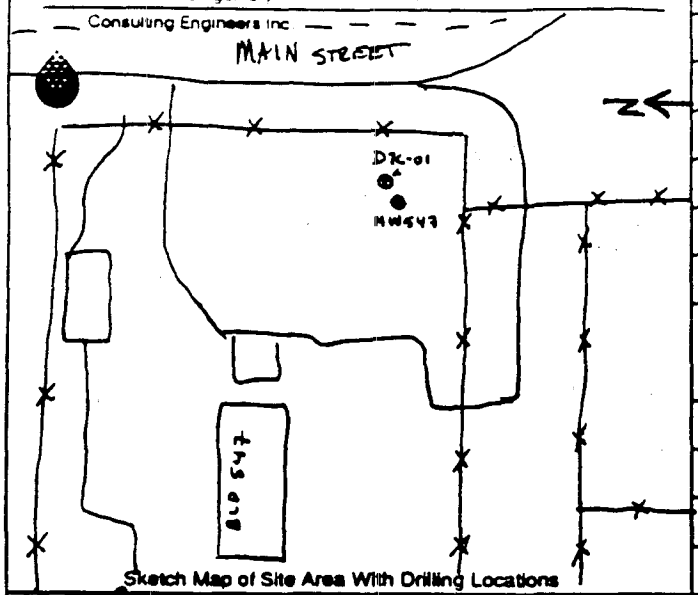
Depth, Bottom of Cap 60.5' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 61.5' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Monterey 2/12 Sand.

ELEVATION / DEPTH OF HOLE: 61.5' bgs

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | | | |
|---|---|---|---|
| Boring # | MW# D7C-01 | Sheet 1 | of 4 |
| Project: NAS ALAMEDA CTO 200 | | | |
| Job # 2738.1406 | Site: 7C | | |
| Logged By: DEK | Proj. Eng: SMH | Edited By: | |
| Drilling Contractor: Tonto Drilling Co | | | |
| Drill Rig Type/Method: MOBILE B80 Mud Rotary | | | |
| Drillers Name: Randy Gustafson | | | |
| Borehole Diam./Drill Bit Type: 7 3/4", 4-cone | Total Depth: 60.5 borings | Ref. Elev: | |
| Hammer Wt: 140 lb | Drop: 30" | | |
| Start Time: 0650/0745 | Date: 11.4.94 | | |
| Completion Time: 1030 | Date: 11.4.94 | | |
| Backfille Time: 1400 | Date: 11.4.94 | | |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 5.5 | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 0820 | | | |
| Date | 11.4.94 | | | |

| PID/OVA HNU ppm | Sampler Type Cal & Depth 18" split spoon | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Soil Surface |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | SCH 40 PVC BLANK | NEAT CEMENT GROUT | | 4 | | SM, lt orange brown, loose, moist, |
| | | | | | | | | | 5 | SM | fine sand 20%, med sand 20%, silt/clay = 60% |
| ϕ | | 1 | | | | | | X | | SP | |
| | | 11 | | | | | | X | ▼ 6 | | Sand (SP) dk grey, med dense, saturated |
| | | 13 | | | | | | | | SP | fine sand 30%, v. fine sand 45%, |
| | | | | | | | | | 7 | | med sand 25%. |
| | | | | | | | | | | | Clay layer CL, 2" thick, black |
| | | | | | | | | | 8 | | to dk grey, soft, saturated |
| | | | | | | | | | | | trace v. fine sand 15% |
| | | | | | | | | | 9 | | [Approx contact] |
| | | | | | | | | | 10 | SM | |
| ϕ | | 6 | | | | | | X | | | Silty sand, SM, orange brown |
| | | 5 | | | | | | X | | | loose, saturated, 20% med sand |
| | | 5 | | | | | | X | 11 | | 40% fine v. fine sand, 40% silt |
| | | | | | | | | | 12 | | orange red mottling throughout |

D7C-01

Boring # MW# DK-01 Sheet 2 of 4

Project: VAS ~~ALAMEDA~~ CTO 280

Job # 2738.1[illegible] Site: 7C

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 12 | | |
| | | | | | | | | | | 13 | | |
| | | | | | | | | | | 14 | | |
| | | | | | | | | | | 15 | | |
| ϕ | | 24 | ↓ | ↓ | | | | X | | | SM | Silty Sand SM, orange brown dense, saturated, to slightly saturated, fine sand 50% med sand 20%, silt 30% inclusions (lenses) of light tan silty sand Aa, dk red mottling throughout |
| | | 24 | | | | | | X | | | | |
| | | 38 | | | | | | X | | 16 | | |
| | | | | | | | | | | 17 | | |
| | | | | | | | | | | 18 | | |
| | | | | | | | | | | 19 | | gradational contact |
| | | | | | | | | | | 20 | | |
| ϕ | | 21 | ↓ | ↓ | | | | X | | | | SP, ~~orange~~ tanish brown, dense, saturated, fine sand 60% v. fine sand 20%, med sand 10% silt/clay 10%; v.sl. trace of mottling |
| | | 31 | | | | | | X | | | | |
| | | 46 | | | | | | X | | 21 | | |
| | | | | | | | | | | 22 | | |
| | | | | | | | | | | 23 | | |
| | | | | | | | | | | 24 | | |
| | | | | | | | | | | 25 | | |
| ϕ | | 50/6" | ↓ | ↓ | | | | X | | | SP | SP Aa. Note thin gravel (1" thick) at 25-25.1 ft angular pebbles to 1/8" size |
| | | | | | | | | | | 26 | | |
| | | | | | | | | | | 27 | | |
| | | | | | | | | | | 28 | | |
| | | | | | | | | | | 29 | | |
| | | | | | | | | | | 30 | | |
| ϕ | | 24 | ↓ | ↓ | | | | X | | | | SP Aa |
| | | 39 | | | | | | X | | | | |
| | | 50 | | | | | | X | | 31 | | |
| | | | | | | | | | | 32 | | |

Bch 40 PVC BLANK

NEAT CEMENT GROUT

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Analyses | Depth: Feet | | Boring # MW# D7C-01 Sheet 3 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS ALAMEDA LTD 280 |
| | | | | | | | | | | | | Job # 2738.1406 Site: 7C |
| | | | | | | | | | | 32 | | |
| | | | | | | | | | | 33 | | |
| | | | | | | | | | | 34 | | |
| | | | | | | | | | | 35 | SM-SP | SM - silty sand, orange brown to v. fine sand (SP) dense, saturated, 50% fine sand 30% v. fine sand, 5% med sand 5-25% silt dk orange brown mottling throughout |
| ϕ | | 20 28 32 | | | | | | | | 36 | | |
| | | | | | | | | | | 37 | | |
| | | | | | | | | | | 38 | | |
| | | | | | | | | | | 39 | | |
| ϕ | | 34 50/6" | | | | | | | | 40 | | Silty sand, SM lt brown v. dense, moist to saturated fine sand 30%, med sand 10% v. fine sand 20% 40% silt, dk red mottling. |
| | | | | | | | | | | 41 | | |
| | | | | | | | | | | 42 | | |
| | | | | | | | | | | 43 | | |
| | | | | | | | | | | 44 | | |
| ϕ | | 50/6" | | | | | | | | 45 | SP | SP Sand lt brown, v. dense saturated, fine sand 50%, v. fine sand 35% 15 5% silt, 5% med sand trace dk red/orange mottling. |
| | | | | | | | | | | 46 | | |
| | | | | | | | | | | 47 | | |
| | | | | | | | | | | 48 | | |
| | | | | | | | | | | 49 | | |
| | | 50/5" | | | | | | | | 50 | | SP Aa slightly coarser grained 15 to 20% v. fine sand 80% fine sand, 20% med sand to 5% fines |
| | | | | | | | | | | 51 | | |
| | | | | | | | | | | 52 | | |

Casing: 0.01 SLOTTED PVC; SCH 40 PVC BLANK; 2/12 Monterey Sand; 3/8" Bentonite Pellet; Neat Cement Grout

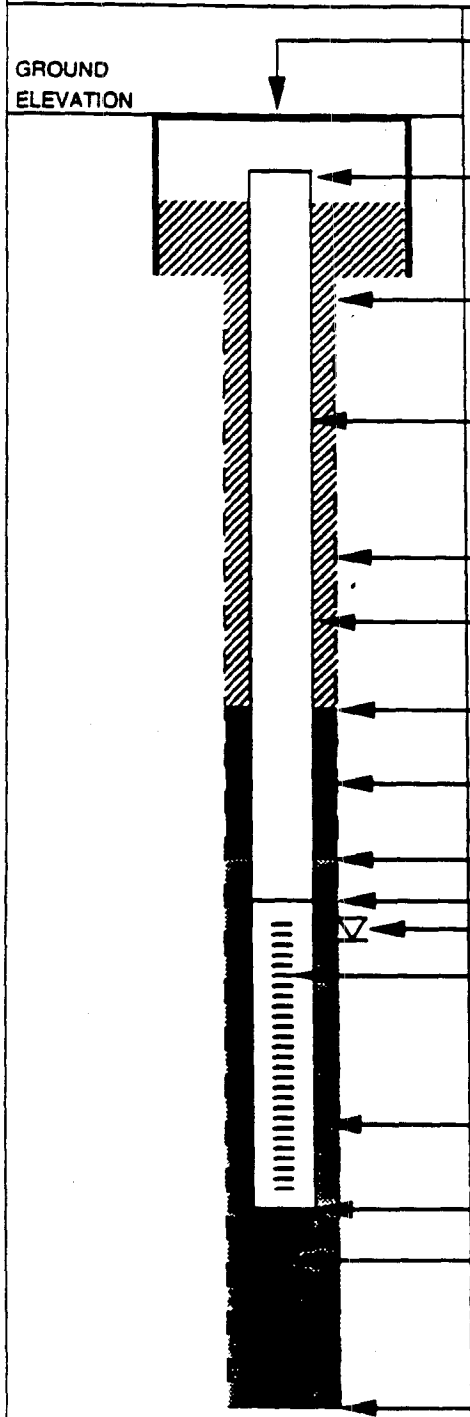
| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Analyses | Depth: Feet | | Boring # MW# D7C-01 Sheet 4 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS ALAMEDA CTO 280 |
| | | | | | | | | | | | | Job # 2737.1406 Site: 7C |
| | | | | | | | | | | 52 | | |
| | | | | | | | | | | 53 | | |
| | | | | | | | | | | 54 | | |
| ϕ | | 50/5" | ↓ | ↓ | | 0.01 slotted PVC screen | Monterey 2/12 sand | | | 55 | | SP Aa ~~slightly fine grained~~ Same %'s as 50 ft |
| | | | | | | | | | | 56 | | |
| | | | | | | | | | | 57 | | |
| | | | | | | | | | | 58 | | |
| | | | | | | | | | | 59 | | |
| | | 50/6" | ↓ | | | | 2/12 sand | | | 60 | TD | SP Aa |
| | | | | | | | | | | 61 | | |
| | | | | | | | | | | 62 | | TD = 60.5' Well set @ 59' Solid Casing from 0-49' 0.01 slotted Casing from 49-59' |
| | | | | | | | | | | 63 | | |
| | | | | | | | | | | 64 | | |
| | | | | | | | | | | 65 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

BORING NO. D7C-01

# MONITORING WELL SHEET

PROJECT NASAlameda C70-0280 LOCATION Site 7C
PROJECT NO. 2738.1406 BORING D7C-01
ELEVATION _____ DATE 11-4-94
FIELD GEOLOGIST Daniel Kramer

DRILLER Tonto Env. Drilling
DRILLING METHOD Mud rotary
DEVELOPMENT METHOD Surge, bail, Pump.




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A
TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 3"
TYPE OF RISER PIPE: SCh 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 42.6

TYPE OF SEAL: Bentonite 3/8 pellets

DEPTH TOP OF SAND PACK: 46

ELEVATION / DEPTH TOP OF SCREEN: 49

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: SCh 40 PVC
SLOT SIZE x LENGTH 0.01 factory slot
I.D. OF SCREEN 3"

TYPE OF SAND PACK: #2/12 Monterey Sand

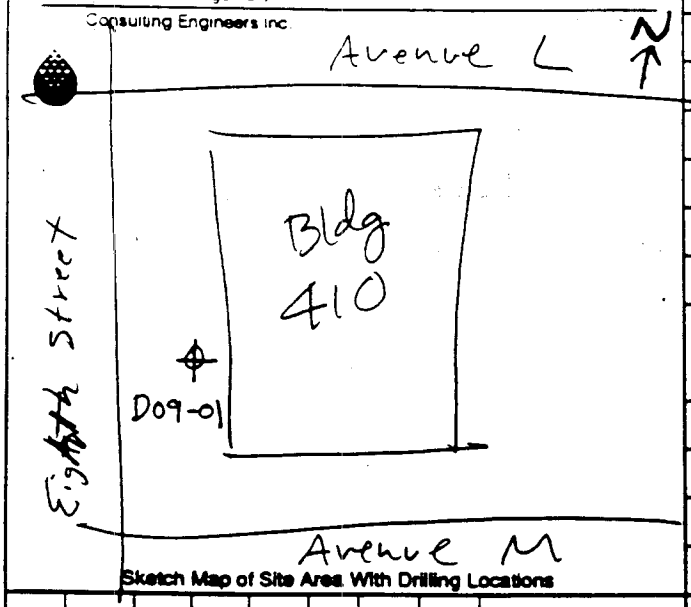
ELEVATION / DEPTH BOTTOM OF SCREEN: 59

ELEVATION / DEPTH BOTTOM OF SAND PACK: 60.5

TYPE OF BACKFILL BELOW OBSERVATION WELL: #2/12 Monterey Sand.

ELEVATION / DEPTH OF HOLE: 60.5

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | | | | | |
|---|---|---|---|---|---|
| Boring # | MW# D09-01 | Sheet | 1 | of | 4 |
| Project: Alameda NAS / CTO 280 | | | | | |
| Job # 2738.1406 | Site: 9 | | | | |
| Logged By: JEV | Proj. Eng: SMH | Edited By: | | | |
| Drilling Contractor: Tonto | | | | | |
| Drill Rig Type/Method: Mud Rotary | | | | | |
| Drillers Name: Matt Rugh | | | | | |
| Borehole Diam./Drill Bit Type: 8" | Total Depth: 61' | Ref. Elev. | | | |
| Hammer Wt: 140 lb. | Drop: 30" | | | | |
| Start Time: 1015 | Date: 11/3/94 | | | | |
| Completion Time: 1300 | Date: 11/3/94 | | | | |
| Backfill Time: 1605 | Date: 11/3/94 | | | | |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 61' | | | |
| Casing Depth (ft.) | 60.5' | | | |
| Water Depth (ft.) | | | | |
| Time | 1300 | | | |
| Date | 11/3/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 3" Asphalt over 10" Concrete over Sand + gravel base |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | PVC | GROUT | | 3 | | |
| | | | | | | BLANK | CEMENT | | 4 | | |
| | | 5 | | | | 3" DIAM | PORTLAND | | 5 | | SAND (SP), lt olive br (2.5Y, 5/4), med dense, dry, fine-gr, weak, mod IC |
| | | 17 | | | | | | | 6 | | |
| | | 41 | ↓ | ↓ | | | | | | | |
| | | | | | | | | | 7 | | |
| | | | | | | SCH 40, | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | 16 | | | | | | | 10 | | As Above, except moist |
| | | 17 | | | | | | | | | |
| | | 20 | ↓ | ↓ | | | | | 11 | | Abundant shell fragments @ 11' |
| | | | | | | | | | 12 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# D09-01 Sheet 2 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: Alameda NAS / CTO 280 |
| | | | | | | | | | | | Job # 2738.1406 Site: 9 |
| | | | | | | | | | 12 | SP | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | 2 | | | | | | | 15 | | SAND (SP), very dark gray (2.5Y, N3), |
| | | 3 | | | | | | | | | loose, moist, fine-gr, weak, med K. |
| | | 3 | | | | | | | 16 | | At 16' = As Above, except lt olive br |
| | | | | | | | | | | | (2.5Y, 5/4), |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | | | | | | | | 19 | | |
| | | 6 | | | | | | | 20 | | SAND (SP), yellowish br (10Y, 5/8), |
| | | 8 | | | | | | | | | dense, wet, fine-gr, mod, med K. |
| | | 19 | | | | | | | 21 | | At 21' = olive br + abundant |
| | | | | | | | | | 22 | | |
| | | | | | | | | | 23 | | |
| | | | | | | | | | 24 | | |
| | | 14 | | | | | | | 25 | | SAND (SP), yellowish br (10Y, 5/8), |
| | | 27 | | | | | | | | | dense, moist, fine-gr, mod, med K. |
| | | 40 | | | | | | | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | 14 | | | | | | | 30 | | As Above |
| | | 32 | | | | | | | | | |
| | | 42 | | | | | | | 31 | | |
| | | | | | | | | | 32 | | |

Casing: SCH 40, 3" DIAM., BLANK PVC

Annulus: PORTLAND CEMENT GROUT

Boring # MW# D09-01 Sheet 3 of 4

Project: Alameda NAS / CTO 280

Job # 2738.1406 Site: 9

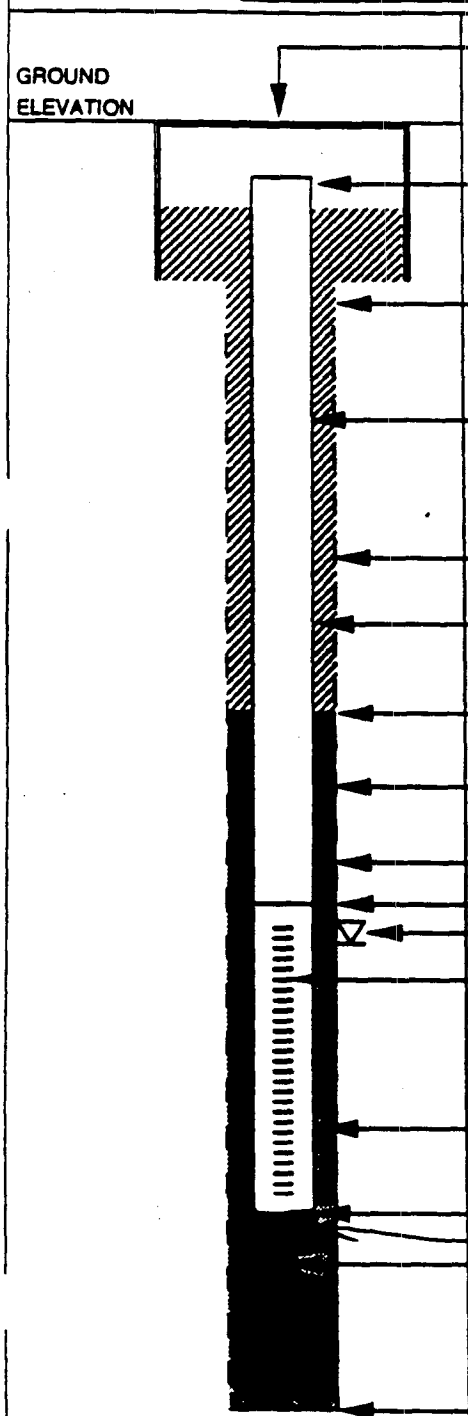
| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 32 | SP | |
| | | | | | | | | | 33 | | |
| | | | | | | | | | 34 | | |
| | | 26 | | | | | GROUT | | 35 | | SAND (SP), yellowish br (10YR 5/6), dense, moist, fine-gr, mod, med K. |
| | | 35 | | | | | | | 36 | | |
| | | 42 | | | | | | | 37 | | |
| | | | | | | PVC | CEMENT | | 38 | | |
| | | | | | | | | | 39 | | |
| | | 50 | | | | BLANK | PORTLAND | | 40 | | As Above |
| | | 40 | | | | | | | 41 | | |
| | | 40 | | | | | | | 42 | | |
| | | | | | | 2" DIAM, | | | 43 | | |
| | | | | | | | BENTONITE | | 44 | | |
| | | 15 | | | | SCH 40, | | | 45 | | As Above |
| | | 19 | | | | | | | 46 | | |
| | | 17 | | | | | | | 47 | | |
| | | | | | | | MONTEREY #2 SAND | | 48 | | |
| | | | | | | | | | 49 | | |
| | | 27 | | | | SCREEN | | | 50 | | As Above. |
| | | 42 | | | | | | | 51 | | |
| | | 48 | | | | | | | 52 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# D09-01 Sheet 4 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: Alameda NAS / CTO 280 |
| | | | | | | | | | | | Job # 2738.1406 Site: 9 |
| | | | | | | 3" DIAM., SCH 40, 0.010 SLOTTED PVC | SAND | | 52 | | |
| | | | | | | | | | 53 | | |
| | | | | | | | | | 54 | | |
| | | 28 | | | | | | | 55 | | SAND (SP), grayish br (10Y, 5/2), |
| | | 40 | | | | | | | | | dense, ~~[illegible]~~ moist, fine-gr, mod, medk |
| | | 50 | | | | | | | 56 | | |
| | | | | | | | MONTEREY 2/12 | | 57 | | |
| | | | | | | | | | 58 | | |
| | | | | | | | | | 59 | | |
| | | 38 | | | | CAP | | | 60 | | As Above |
| | | 50 | | | | SAND | | | | | Bottom of Borehole = 61' bgs |
| | | | | | | | | | 61 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. D09-01

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda/CTO 280 | LOCATION Site 9 | DRILLER Matt Rugh |
| PROJECT NO. 2738.1406 | BORING D09-01 | DRILLING METHOD Tonto Mud Rotary |
| ELEVATION | DATE 11/3/94 | DEVELOPMENT METHOD Surge, Bail, Pump. |
| FIELD GEOLOGIST John Valett | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: N/A

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 44.3' bgs

TYPE OF SEAL: Bentonite chips

DEPTH TOP OF SAND PACK: 46.6' bgs

ELEVATION / DEPTH TOP OF SCREEN: 50' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 x 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

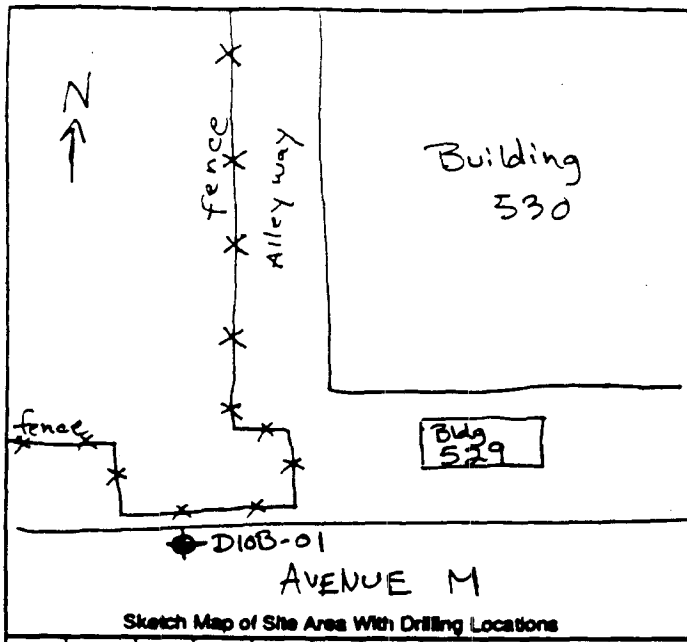
ELEVATION / DEPTH BOTTOM OF SCREEN: 60' bgs

Depth, Bottom of End Plug 60.5' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 61' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Monterey 2/12 Sand

ELEVATION / DEPTH OF HOLE: 61' bgs




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# D10B01 Sheet 1 of 4 |
| Project: | NAS Alameda CTO-0280 |
| Job # | 2738.1406 Site: 10B |
| Logged By: | Proj. Eng: [illegible] Edited By: |
| Drilling Contractor: | Tonto |
| Drill Rig Type/Method: | Mobile B80 Mud Rig |
| Drillers Name: | Randy Gustafsen |
| Borehole Diam./Drill Bit Type | 7 1/4" 4 Cone — Total Depth: 61.5 — Ref. Elev.: |
| Hammer Wt: | 140 Lb Drop: 30" |
| Start Time: | 1450 Date: 10-31-94 |
| Completion Time: | 1000 Date: 11-1-94 |
| Backfille Time: | 1340 Date: 11-1-94 |

| 1st Water | | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | | | | |
| Date | | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | 3" Diam., Sch 40, Blank PVC | PORTLAND CEMENT GROUT | | | | Asphalt Surface (≈0.5') |
| | | | | | | | | | 1 | SP | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| 0 | | 7 | | | | | | X | | SP | SAND (SP), lt br (7.5Y, 6/3), loose, dry to sl mst, f-gr, high-med K. |
| | | 7 | | | | | | X | | | |
| | | 8 | | | | | | X | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 10 | | |
| 0 | | 10 | | | | | | X | | | As Above (SP) |
| | | 11 | | | | | | X | | | |
| | | 11 | | | | | | X | 11 | | |
| | | | | | | | | | 12 | | |

Boring # MW# D103-01 Sheet 2 of 4

Project: NAS Alameda

Job # 2738.1406 Site: 10B

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 12 | SP | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | | | | | | | | 15 | SM/SC | silty, clayey SAND (SM/SC), reddish yellow (5YR, 6/8), dense, sl mst, f-gr, low K |
| | | 8 | | | | | | X | | | |
| | | 9 | | | | | | X | | | |
| | | 9 | | | | | | X | 16 | | |
| | | | | | | | | | 17 | | |
| | | | | | | PVC | GROUT | | 18 | | |
| | | | | | | | | | 19 | | |
| | | | | | | | | | 20 | SM | silty SAND (SM), yellow red (5YR, 5/6), dense, mst, f-gr, mod-low K |
| | | 12 | | | | Blank | CEMENT | X | | | |
| | | 19 | | | | | | X | | | |
| | | 22 | | | | | | X | 21 | | |
| | | | | | | Sch 40 | PORTLAND | | 22 | | |
| | | | | | | | | | 23 | | |
| | | | | | | | | | 24 | | |
| | | | | | | 3" Diam | | | 25 | SP | SAND (SP), lt br (7.5YR 6/4) to yellow br (10YR, 5/4), dense, mst, f-gr, mod-high K. |
| | | 30 | | | | | | X | | | |
| | | 32 | | | | | | X | | | |
| | | 41 | | | | | | X | 26 | | |
| | | | | | | | | | 27 | | |
| | | | | | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | | | | | | | | 30 | | As Above (SP) |
| | | 38 | | | | | | X | | | |
| | | 39 | | | | | | X | | | |
| | | 44 | | | | | | X | 31 | | |
| | | | | | | | | | 32 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# D10B-01 Sheet 3 of 4 / Project: NAS Alameda / Job # 2738.1406 Site: 10B |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 32 | SP | |
| | | | | | | | | | 33 | | |
| | | | | | | | | | 34 | | |
| | | | | | | | | | 35 | | |
| 0 | | 33 | ↓ | ↓ | | | | X | | | As Above (SP) |
| | | 39 | | | | | | X | | | |
| | | 46 | ↓ | ↓ | | | | X | 36 | | |
| | | | | | | | | | 37 | | |
| | | | | | | | | | 38 | | |
| | | | | | | | | | 39 | | |
| | | | | | | | | | 40 | SM | |
| 0 | | 27 | ↓ | ↓ | | | | X | | | silty SAND (SM), reddish yllw (5Y, 6/8), dense, mst, f-gr, med K. |
| | | 29 | | | | | | X | | | |
| | | 33 | ↓ | ↓ | | | | X | 41 | | |
| | | | | | | | | | 42 | | |
| | | | | | | | | | 43 | | |
| | | | | | | | | | 44 | | |
| | | | | | | | | | 45 | | |
| 0 | | 46 | ↓ | ↓ | | | | X | | SP | SAND (SP), brwn (7.5Y, 5/3), very dense, mst, f-gr, med-high K. |
| | | 50 | | | | | | X | | | |
| | | 50 | ↓ | ↓ | | | | X | 46 | | |
| | | | | | | | | | 47 | | |
| | | | | | | | | | 48 | | |
| | | | | | | | | | 49 | | |
| | | | | | | | | | 50 | | |
| 0 | | 26 | ↓ | ↓ | | | | X | | SM | 50'-51' = silty SAND (SM), reddish yllw (5Y, 6/8), med dense, mst, f-gr, low |
| | | 28 | | | | | | X | | | |
| | | 50 | ↓ | ↓ | | | | X | 51 | SP | 51' = SAND (SP), br (7.5Y, 5/3), very dense, mst, f-gr, med-high K |
| | | | | | | | | | 52 | | |

Casing: 5" Diam Blank PVC

Annulus: Portland Cement Grout; Bentonite; 8/12 SAND

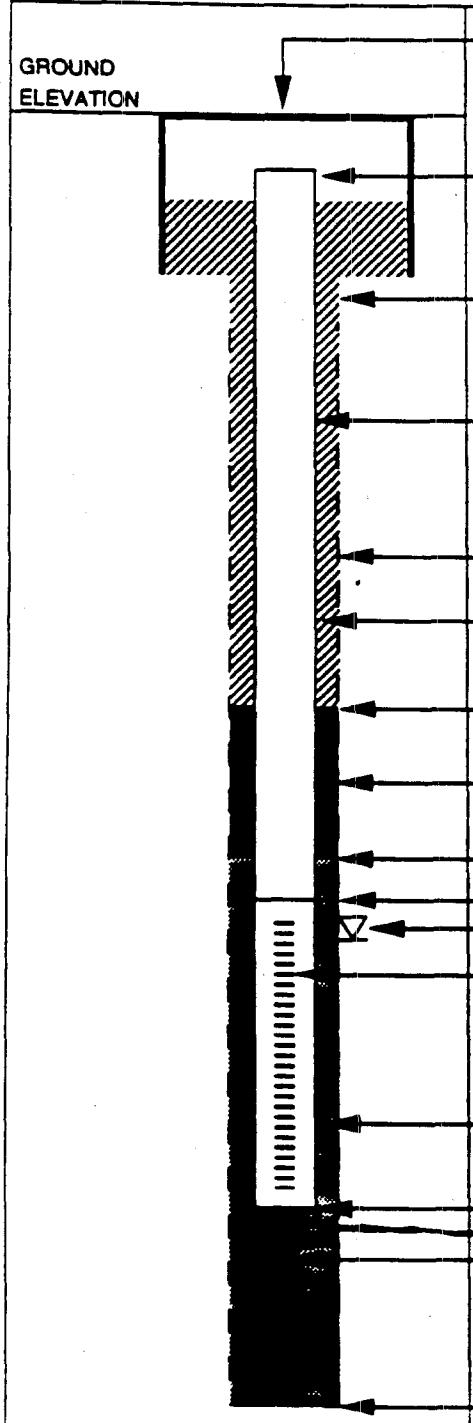
Screen

| PID/OVA | Sampler Type | Blow Counts | Advance | Rcvd (in.) | | Casing | Annulus | Sample Rec | Depth Feet | Graph | Boring # MW# D10B-01 Sheet 4 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS Alameda |
| | | | | | | | | | | | Job # 2738.1406 Site: 10B |
| | | | | | | | | | 52 | SP | |
| | | | | | | | | | 53 | | |
| | | | | | | | | | 54 | | |
| | | | | | | | | | 55 | | |
| 0 | | 27 | | | | SCH 40, 0.01 slott PVC SCREEN (3" Diam) | SAND 2/12 MONTEREY | X | | | SAND (SP), br (7.5Y, 5/3), very dense, mst, f-gr, med-high TC |
| | | 29 | | | | | | X | | | |
| | | 30 | | | | | | X | 56 | | |
| | | | | | | | | | 57 | | |
| | | | | | | | | | 58 | | |
| | | | | | | | | | 59 | | |
| | | | | | | | | | 60 | | |
| 0 | | 32 | | | | CAP | | X | | | As Above (SP) |
| | | 31 | | | | | | X | | | |
| | | 30 | | | | | | X | 61 | | 61.5' = BOB |
| | | | | | | | | | 62 | | |
| | | | | | | | | | 63 | | |
| | | | | | | | | | 64 | | |
| | | | | | | | | | 65 | | |
| | | | | | | | | | 6 | | |
| | | | | | | | | | 7 | | |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | 0 | | |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |

BORING NO. D 10 B-01

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda | LOCATION Site 10B | DRILLER Randy Gustafson |
| PROJECT NO. 2738.1406 | BORING D10B-01 | DRILLING Tonto Drilling |
| ELEVATION | DATE ~~to~~ 11-1-94 | METHOD Mud Rotary |
| FIELD GEOLOGIST JOHN VALETT | | DEVELOPMENT METHOD Surge, Bail, Pump |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: N/A

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: PORTLAND CEMENT GROUT

ELEVATION / DEPTH OF SEAL: 44'

TYPE OF SEAL: BENTONITE CHIPS

DEPTH TOP OF SAND PACK: 46.5'

ELEVATION / DEPTH TOP OF SCREEN: 50'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH 0.01 x 10'

I.D. OF SCREEN 3"

TYPE OF SAND PACK: MONTEREY 2/12 SAND

ELEVATION / DEPTH BOTTOM OF SCREEN: 60'

Bottom of End Cap 60.5'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 61.5'

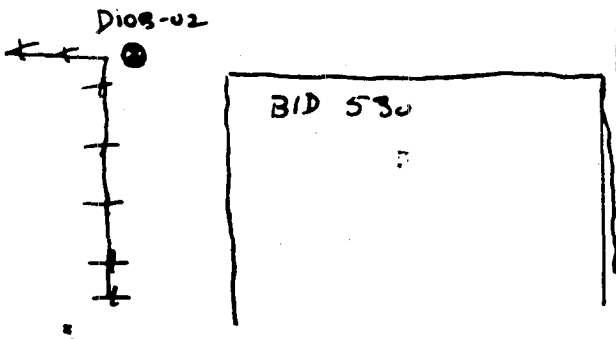
TYPE OF BACKFILL BELOW OBSERVATION WELL: MONTEREY 2/12 SAND

ELEVATION / DEPTH OF HOLE: 61.5'

D10B-02

James M. Montgomery
Consulting Engineers Inc.

Avenue L




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#D10B-02 Sheet 1 of 5 |
| Project: | NAS ALAMEDA CTO 260 |
| Job # | 2738.1406 Site: 10B |
| Logged By: | DEK Proj. Eng: SMH Edited By: |
| Drilling Contractor: | TONTO DRILLING SERVICES INC |
| Drill Rig Type/Method: | MOBILE B30 MUD ROTARY |
| Drillers Name: | RANDY GUSTOFSEN |
| Borehole Diam./Drill Bit Type | 7¼" 4-cone |
| Total Depth | 81 ft |
| Ref. Elev. | |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 0845 Date: 11-7-94 |
| Completion Time: | 1450 Date: 11-7-94 |
| Backfille Time: | 1530 Date: 11-7-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 5' | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 930 | | | |
| Date | 11-7-94 | | | |

| PID/OVA HNU ppm | Sampler Type & Depth CALIF SPLIT SPOON | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Asphalt surface covering |
| | | DRILL AHEAD | DRILL AHEAD | DRILL AHEAD | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | PVC | GROUT | | 5 | | |
| ϕ | | 6 | | | | | | X | | | SP, sand, lt. brown, loose, saturated |
| | | 9 | | | | | | X | 6 | | fine sand 70%, med sand 15% |
| | | 27 | | NR | | BLANK | CEMENT | | | SP | v. fine sand 15% |
| | | | | | | | | | 7 | | |
| | | | | | | SCH 80 | | | 8 | SP | |
| | | DRILL OUT | DRILL OUT | | | | PORTLAND | | | | approximate |
| | | | | | | 3" DIA. | | | 9 | | |
| | | | | | | | | | 10 | | |
| ϕ | | 2 | | | | | | X | | SC | Clayey sand, SC, dk grey, loose |
| | | 3 | | | | | | X | | | saturated, fine sand 30%, med sand 10% |
| | | 2 | | | | | | X | 11 | CL | med sand 20%, clay 40% |
| | | | | | | | | | | | CL clay v. dk grey, SP inclusions |
| | | | | | | | | | 12 | | (SP as above) trace shells |

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | Casing | Annulus | Sample Rec | Analyses | Depth Feet | | Boring # MW# D10B-02 Sheet 2 of 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Project: NAS ALAMEDA CTO 280 |
| | | | | | | | | | | | Job # 2738.1406 Site: 10B |
| | | DRILL | OUT | | | | | | 12 | | |
| | | | | | | | | | 13 | | |
| | | | | | | | | | 14 | | |
| | | | | | | | | | 15 | CL | CL As above |
| ϕ | | 21 | | | | | X | | | | SM silty sand, orangish brown, moist |
| | | 28 | | | | | X | | | | dense, fine sand 50% silt 30% |
| | | 27 | | | | | X | | 16 | | med sand 5%, v. fine sand 15%, red |
| | | | | | | | | | | | mottling |
| | | | | | | | | | 17 | | |
| | | | | | | | | | 18 | | |
| | | DRILL | OUT | | | | | | | | (2) |
| | | | | | | | | | 19 | | |
| | | | | | | | | | | SM | SM As above but saturated |
| ϕ | | 16 | | | 3" DIA, Sch 40 Blank PVC | PORTLAND CEMENT GROUT | X | | 20 | | SP, lt grey, v. dense, moist, 80% v. fine sand 10% cl 10% fi |
| | | 27 | | | | | X | | | | SP, sand, lt. grey, v. dense, saturated |
| | | 36 | | | | | X | | 21 | | fine sand 70% v. fine sand 20% |
| | | | | | | | | | 22 | | clay silt 5%, med sand 5% |
| | | | | | | | | | 23 | | |
| | | DRILL | OUT | | | | | | 24 | | |
| | | | | | | | | | 25 | | |
| ϕ | | 50 | | | | | X | | | | SP, sand, Aa saturated, trace |
| | | | | | | | | | 26 | | % red mottling |
| | | | | | | | | | 27 | | |
| | | DRILL OUT | DRILL OUT | DRILL OUT | | | | | 28 | | |
| | | | | | | | | | 29 | | |
| | | | | | | | | | 30 | | |
| ϕ | | 38 | | | | | X | | | | (SP) sand, lt. orangish brown, v. dense |
| | | 50/5" | | | | | X | | 31 | | saturated, fine sand 85%, 85%, |
| | | | | | | | | | | | clay/silt 5%, med sand 5%, |
| | | | | | | | | | 32 | | v. fine sand 5% |

Boring # MW# D103-02 Sheet 3 of 5

Project: NAS ALAMEDA CTO 280

Job # 2738.1406 Site: 103

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | Casing | Annulus | Sample No. | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DRILL OUT | DRILL OUT | DRILL OUT | | | | | 32 | | |
| | | | | | | | | | 33 | | |
| | | | | | | | | | 34 | | |
| φ | | 50 | ↓ | ↓ | | | X | | 35 | | SP As above |
| | | | | | | GROUT | | | 36 | | |
| | | DRILL OUT | DRILL OUT | DRILL OUT | | CEMENT | | | 37 | | |
| | | | | | | | | | 38 | | |
| | | | | | | | | | 39 | | |
| φ | | 50/3" | ↓ | ↓ | PVC | PORTLAND | X | | 40 | | SP, lt tannish brown, v. dense saturated, 75% - 95% f.-m sand 15% v. fine sand, 5% med sand, 5% fines (clay silt) |
| | | | | | | | | | 41 | | |
| | | DRILL OUT | DRILL OUT | DRILL OUT | Blank | | | | 42 | | |
| | | | | | | | | | 43 | | approximate break |
| | | | | | Sch 40 | BENTONITE | | | 44 | | |
| φ | | 50 | ↓ | ↓ | 3" Dia., | | X | | 45 | SM | SM silty sand, orangish tan, moist v. dense, dk red mottling, 50% silt 40% fine sand, 10% med sand |
| | | | | | | | | | 46 | | |
| | | DRILL OUT | DRILL OUT | DRILL OUT | | SAND | | | 47 | | |
| | | | | | | | | | 48 | | |
| | | | | | | 2/12 | | | 49 | | |
| | | | | | screen | MONTEREY | | | 50 | SM | SM As above |
| φ | | 50 | ↓ | ↓ | | | X | | 51 | SP | Sand, (SP) lt. tannish brown, v. dense saturated 75-85% fine sand 5% silt/clay, 10% v. fine sand |
| | | DRILL AHEAD | | | | | | | 52 | | |

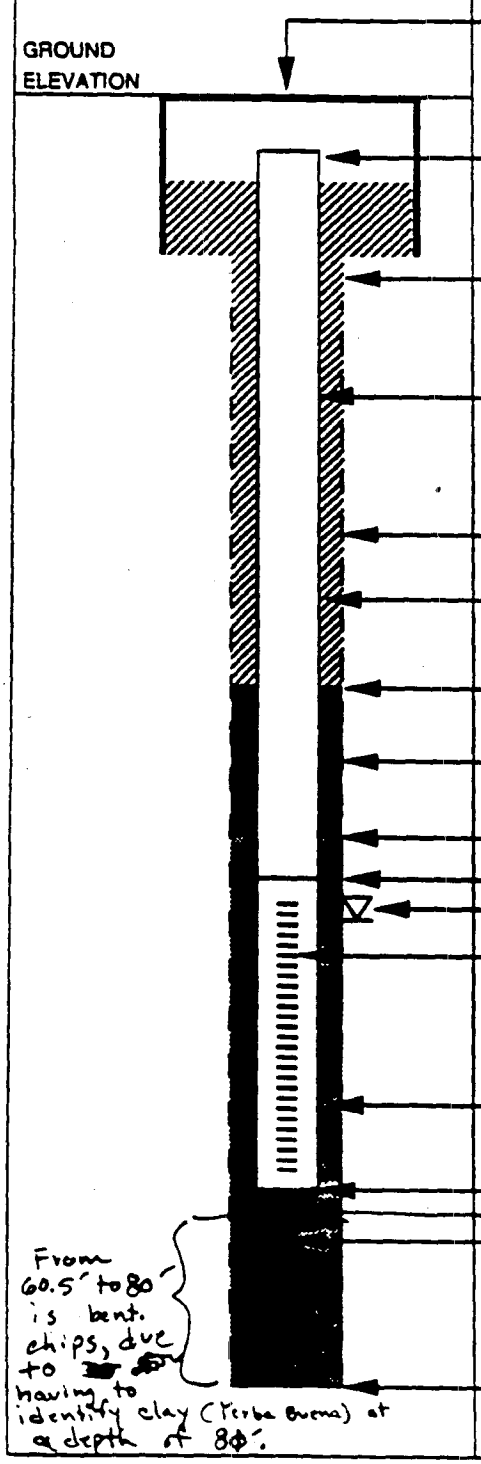
| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Analyses | Depth: Feet | | Boring # MW# D108-02 Sheet 4 of 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS ALAMEDA CTO 280 |
| | | | | | | | | | | | | Job # 2738.1406 Site: 108 |
| | | DRILL OUT | DRILL OUT | DRILL OUT | | | | | | 52 | | |
| | | | | | | | | | | 53 | | |
| | | | | | | | | | | 54 | | |
| | | | | | | | | | | 55 | | |
| Φ | | 50/5" | | | | 8" Dia, sch 40, 40cm slotted PVC | | X | | | | SP AS above |
| | | | | | | | | | | 56 | | |
| | | | | | | | | | | 57 | | |
| | | DRILL OUT | DRILL OUT | DRILL OUT | | | MONITEREI 2/12 SAND | | | 58 | | |
| | | | | | | | | | | 59 | | |
| Φ | | 54/5" | | | | cap | | X | | 60 | | SP AS above |
| | | | | | | | | | | 61 | | |
| | | | | | | | | | | 62 | | |
| | | DRILL OUT | DRILL OUT | DRILL OUT | | | | | | 63 | | |
| | | | | | | | | | | 64 | | |
| | | | | | | | | | | 65 | | |
| Φ | | 50/5" | | | | | BENTONITE CHIPS | X | | | | SP, sand (Aa) lt. tannish brown v. dense, saturated, 75% - 85% fine sand, 10% v. fine sand, 5% med sand |
| | | | | | | | | | | 66 | | |
| | | DRILL OUT | DRILL OUT | DRILL OUT | | | | | | 67 | | |
| | | | | | | | | | | 68 | | |
| | | | | | | | | | | 69 | | |
| | | | | | | | | | | 70 | | |
| Φ | | 27 50/5" | | | | | | | | | | SP Aa |
| | | | | | | | | | | 71 | | |
| | | | | | | | | | | 72 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec | Depth: Analyses | Depth: Feet | | Boring # MW# D10B-02 Sheet 5 of 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS ALAMEDA CTO 280 |
| | | | | | | | | | | | | Job # 2738.1406 Site: 10B |
| | | | | | | | | | | 72 | | |
| | | DRILL OUT | DRILL OUT | DRILL OUT | | | | | | 73 | | ? |
| | | | | | | | | | | 74 | | |
| | | | | | | | | | | 75 | | |
| Φ | | 15 | | | | | BENTONITE CHIPS | X | | | CL | Clay, dk grayish black, CL |
| | | 50 | | | | | | X | | | | moist v. stiff, |
| | | | | | | | | | | 76 | SC | SC sandy clay, dk grayish black, |
| | | | | | | | | | | 77 | | v. dense, moist, fine sand 25% |
| | | | | | | | | | | | | Med sand 5%, v fine sand 10% |
| | | | | | | | | | | 78 | | silt/clay 60% |
| | | DRILL OUT | DRILL OUT | DRILL OUT | | | | | | 79 | | |
| | | | | | | | | | | 80 | | |
| Φ | | 20 | | | | | | X | | | CL | Clay greenish gray, moist, hard |
| | | 50/6" | | | | | | X | | | | trace organic matter (dk brown). |
| | | | | | | | | | | 81 | SC/CL | sandy clay/to clay, moist, |
| | | | | | | | | | | 82 | | dense, v. fine sand 40%, silt/clay |
| | | | | | | | | | | | | 60% |
| | | | | | | | | | | 83 | | |
| | | | | | | | | | | 84 | | Total depth drilled 80 ft |
| | | | | | | | | | | | | Sample driven from 80-81' bgs |
| | | | | | | | | | | 85 | | |
| | | | | | | | | | | 86 | | |
| | | | | | | | | | | 87 | | |
| | | | | | | | | | | 88 | | |
| | | | | | | | | | | 89 | | |
| | | | | | | | | | | 90 | | |
| | | | | | | | | | | 91 | | |
| | | | | | | | | | | 92 | | |

BORING NO. D-10B-02

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda | LOCATION Site 10B | DRILLER Randy Gustafson Tonto |
| PROJECT NO. 2738.1406 | BORING D-10B-02 | DRILLING METHOD Mud Rotary |
| ELEVATION | DATE 11-8-94 | DEVELOPMENT METHOD Surge, Bail, Pump. |
| FIELD GEOLOGIST John Valett | | |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: N/A

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 44' bgs

TYPE OF SEAL: Bentonite chips

DEPTH TOP OF SAND PACK: 47' bgs

ELEVATION / DEPTH TOP OF SCREEN: 50' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 X 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 60' bgs.

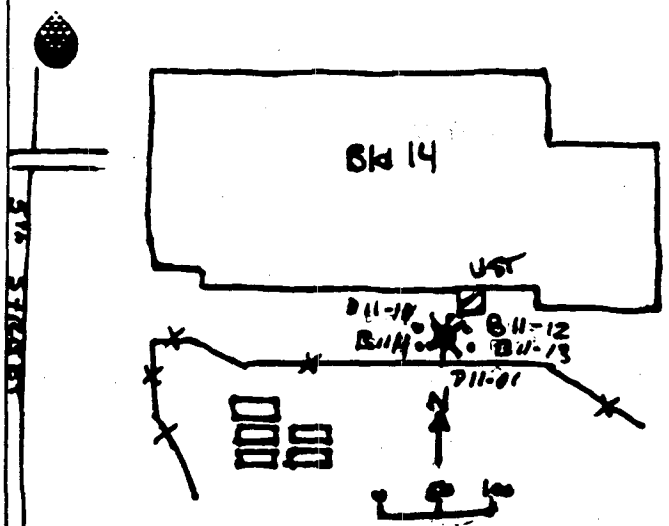
Depth, Bottom of End Plug 60.5' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 60.5' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Hole plug Bentonite Chips

ELEVATION / DEPTH OF HOLE: 80' bgs

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW# D11-01 Sheet 1 of 4 |
| Project: | NAS ALAMEDA |
| Job # | 2738. Site: 11 |
| Logged By: | D. KRAMER Proj. Eng: Edited By: |
| Drilling Contractor: | TONTO |
| Drill Rig Type/Method: | MOBILE B 80 |
| Drillers Name: | Randy Gustafsen |
| Borehole Diam./Drill Bit Type | 7 1/4" mud rotary — Total Depth: 61.5' — Ref. Elev: |
| Hammer Wt: | 140 lb Drop: 80" 10-31-94 |
| Start Time: | 1430 Date: 11·1·94 |
| Completion Time: | 1040 Date: 11·1·94 |
| Backfille Time: | 1750 Date: 11·1·94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 5' | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | | | | |
| Time | 1445 | | | |
| Date | 10·31·94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Depth: Sample Recovery | Depth: Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 0 | | Silty sand SM, tan, loose, dry fine sand 25%, v. fine sand 10% |
| | | | | | | | | | 1 | | med sand 55%, silt 10% |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | | | | 5 | | |
| 0 | | 13 | | | | | | | | | SM, silty sand orangish brown, |
| | | 14 | | | | | | | | | med dense, saturated, med |
| | | 13 | | | | | | | 6 | | sand 60%, fine sand 20% |
| | | | | | | | | | 7 | | silt 20%, trace blk staining |
| | | | | | | | | | | | no odor. |
| | | | | | | | | | 8 | | |
| | | | | | | | | | 9 | | ? |
| | | | | | | | | | ? | | |
| | | | | | | | | | 10 | | |
| ~~3~~ | | 3 | | | | | | | | | ~~MEDEK~~ CL, clay, black |
| ~~3~~ | | 3 | | | | | | | | | soft, saturated, sl. organic |
| | | 3 | | | | | | | 11 | | odor, low plasticity |
| | | | | | | | | | 12 | | |

Casing Type & Size: SCH 40 PVC Blank
Annulus Filler: Neat Cement Grout

HNU ppm

Boring # MW# D11-01 Sheet 2 of 4

Project: NAS ALAMEDA CTO-0280

Job # 2738. Site: 11

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 12 | CL | |
| | | | | | | | | | | 13 | | |
| | | | | | | | | | | 14 | | |
| | | | | | | | | | | 15 | | |
| 0 | | 15 | | | | | | | | | | clayey silty sand CL-ML-SM |
| | | 16 | | | | | | | | | | orange brown, wet, med dense |
| | | 18 | | | | | | | | 16 | | 5% clay, 30% silt, 65% |
| | | | | | | | | | | 17 | | sand (40% med / 25% fine) |
| | | | | | | | | | | 18 | | |
| | | | | | | | | | | 19 | | Note: sheen on drilling mud - from formation |
| 0 | | 32 | | | | | | | | 20 | | Clayey-silty sand CL-ML-SM |
| | | 50 | | | | | | | | 21 | | orange brown, moist, dense |
| | | | | | | | | | | | | 5% clay, 30% silt, 30% fine |
| | | | | | | | | | | 22 | | sand, 35% med sand. Brownish-red |
| | | | | | | | | | | | | ~~mott~~ mottles ($FeO_x$) |
| | | | | | | | | | | 23 | | |
| | | | | | | | | | | 24 | | |
| | | | | | | | | | | 25 | | |
| 0 | | 50 | | | | | | | | | | Clayey-silty sand CL-ML-SM |
| | | | | | | | | | | 26 | | As but saturated and no |
| | | | | | | | | | | | | oxidation coloring, dense |
| | | | | | | | | | | 27 | | |
| | | | | | | | | | | 28 | | |
| | | | | | | | | | | 29 | | |
| | | | | | | | | | | 30 | SM | |
| 0 | | 32 | | | | | | | | | | Silty sand SM, orange brown, |
| | | 50 | | | | | | | | 1 | | dense, saturated, 20% silt |
| | | | | | | | | | | | | 45% med sand 10% crs sand, 20% |
| | | | | | | | | | | 2 | | fine sand |

SCH 40 PVC Blank

NEAT CEMENT GROUT

HNU (ppm)

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | Casing | Annulus | Depth Feet | Boring # MW# D11-01 Sheet 3 of 4 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Project: NAS ALAMEDA CTO-0280 |
| | | | | | | | | Job # 2738. Site: 11 |
| | | | | | | | 32 | |
| | | | | | | | 33 | |
| | | | | | | | 34 | |
| | | | | | | | 35 | |
| ϕ | | 43 54 | | | | | | SM silty sand, orange brown, dense saturated, 20% silt, 60% med sand, 10% fine sand, 10% v. fine sand dk red mottling at bottom 2" ($FeO_2$ oxidized). Note: sheen on drilling mud |
| | | | | | | | 36 | |
| | | | | | | | 37 | |
| | | | | | | | 38 | |
| | | | | | | | 39 | |
| | | | | | | | 40 | |
| ϕ | | 25 29 50/4" | | | | | | Clayey silty sand, CL-ML-SM orange brown, dense to v. dense moist, 20% clay, 20% silt 30% fine sand, 10% v. fine sand 20% med sand. dk red mottles ($FeO_2$ oxide), small inclusions of gray colored med sand (SP) |
| | | | | | | | 41 | |
| | | | | | | | 42 | |
| | | | | | | | 43 | |
| | | | | | | | 44 | |
| | | | | | | | 45 | |
| ϕ | | 50/5" | | | | | | Silty sand (SM) to sand (SP), lt grayish tan, v. dense, moist to saturated, fine sand 30%, med sand 50%, 10% silt 10% v. fine sand. Inclusions of brownish red silty sand SM throughout |
| | | | | | | | 46 | |
| | | | | | | | 47 | |
| | | | | | | | 48 | |
| | | | | | | | 49 | |
| | | | | | | | 50 | |
| ϕ | | 50/5" | | | | | | Sand SP, lt tanish brown, v. dense saturated, med sand 70%, fine sand 20%, silt 10% |
| | | | | | | | 51 | |
| | | | | | | | 52 | |

Casing: Sch 40 PVC Blank; 0.01" Screen

Annulus: Neat Cement Grout; Bentonite 3/8 chip; 2/12 Sand

SM

SP

| PID/OVA | Sample Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth Sample Rec | Analyses | Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 52 | | |
| | | | | | | | | | | 53 | | |
| | | | | | | | | | | 54 | | |
| | | | | | | | | | | 55 | | |
| Φ | | 50/6" | ↓ | ↓ | | 0.01" slotted PVC Screen | | | | | | SP, lt tanish brown, v. dense |
| | | | | | | | | | | 56 | | saturated, med sand 70% |
| | | | | | | | | | | | | fine sand 20%, silt 10%, |
| | | | | | | | | | | 57 | | |
| | | | | | | | | | | 58 | | |
| | | | | | | | 2/12 sand | | | 59 | | |
| | | | | | | | | | | 60 | | |
| Φ | | 50/5" | ↓ | | | | 5 sand 2/12 | | | | | SP, lt tanish brown, v. dense, |
| | | | | | | | | | | 61 | | saturated. Aa |
| | | | | | | | | | | 62 | | Total depth 61.5' |
| | | | | | | | | | | 63 | | casing ~~Screen~~ = 50' blank 40 sch PVC |
| | | | | | | | | | | 64 | | Screen = 10' slotted 40 sch PVC 0.01" |
| | | | | | | | | | | | | Sand 48' to 60' |
| | | | | | | | | | | 65 | | bentonite ~~grout~~ 46-48' |
| | | | | | | | | | | | | neat cement grout 46-0' |
| | | | | | | | | | | 6 | | Screen from 50-60' bgs. |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

Boring # MW# D11-01 Sheet 4 of 4

Project: NAS ALAMEDA CTO-0280

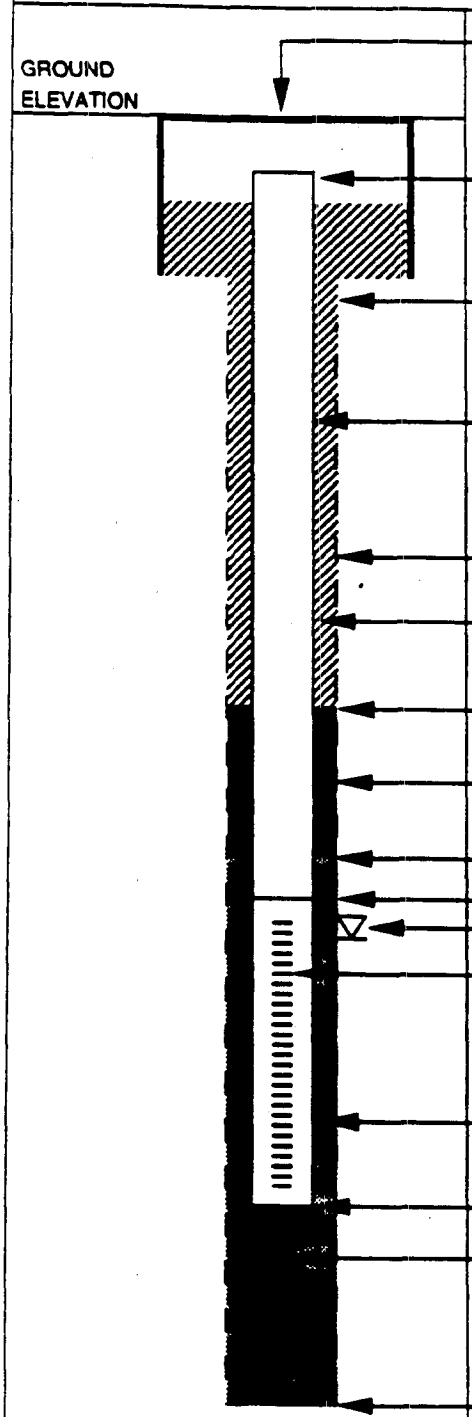
Job # 2738 Site: 11

BORING NO. D11-01

# MONITORING WELL SHEET

PROJECT NAS Alameda C70-0280 LOCATION Site 11
PROJECT NO. 2738.1406 BORING D11-01
ELEVATION _____ DATE 11-1-94
FIELD GEOLOGIST DANIEL KRAMER

DRILLER Tonto Env. Drilling
DRILLING METHOD Mudrotary
DEVELOPMENT METHOD Surge bail Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A
TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 3"
TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 41.5'

TYPE OF SEAL: Bentonite 3/8 pellets

DEPTH TOP OF SAND PACK: 45.5

ELEVATION / DEPTH TOP OF SCREEN: 50'

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: SCH 40 PVC
SLOT SIZE x LENGTH 0.01 factory slot
I.D. OF SCREEN 3"

TYPE OF SAND PACK: #2/12 Monterey Sand

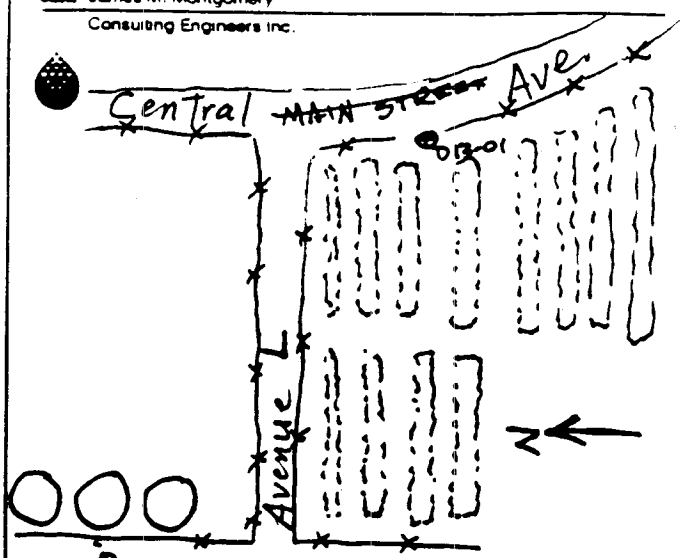
ELEVATION / DEPTH BOTTOM OF SCREEN: 60

ELEVATION / DEPTH BOTTOM OF SAND PACK: 61.5

TYPE OF BACKFILL BELOW OBSERVATION WELL: _____

ELEVATION / DEPTH OF HOLE: 61.5

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#D13-01 Sheet 1 of 6 |
| Project: | NAS ALAMEDA CTO 280 |
| Job # | 2738.1406 Site: 13 |
| Logged By: | DEK Proj. Eng: SMH Edited By: |
| Drilling Contractor: | TONTO DRILLING CO. |
| Drill Rig Type/Method: | MOBILE B80 MUD ROTARY |
| Drillers Name: | RANDY GUSTOFSEN |
| Borehole Diam./Drill Bit Type | Total Depth: 101.5 boring |
| 7¾"; 4 cone | Ref Elev |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 10:00 Date: 11-2-94 |
| Completion Time: | 1700 Date: 11-2-94 |
| Backfill Time: | 1300 Date: 11-3-94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 8.6 ft | | | |
| Casing Depth (ft.) | | | | |
| Water Depth (ft.) | 8.6 ft | | | |
| Time | 1045 | | | |
| Date | 11-2-94 | | | |

| PID/OVA HNU ppm | Sampler Type & Depth CALIF SPLIT SPOON | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Asphalt finished to grade |
| | | | | | | | | | 1 | | |
| | | | | | | | | | 2 | | |
| | | | | | | | | | 3 | | |
| | | | | | | | | | 4 | | |
| | | | | | | PVC Blank | Cement Grout | | | | |
| Φ | | 10 | | | | | | | 5 | GM | GM gravelly sandy silt orange brown |
| | | 21 | | | | | | | | SM | loose, moist; chert pebbles/angular (20%) |
| | | 32 | | | | 4" PVC | | | 6 | | medium/coarse sand (30%); 50% silt |
| | | | | | | | | | | | oxidized zone underlies gravel |
| | | | | | | Sch 40 | Neat Cement | | 7 | | |
| | | | | | | | | | | | SM sandy silty clay orange brown |
| | | | | | | | | | 8 | | v. stiff, moist, 30% med sand, 20% |
| | | | | | | | | | 9 | | fine sand, 50% silt/clay |
| Φ | | 11 | | | | | | | 10 | SM | Clayey-silty-sand (SM), orange brown |
| | | 24 | | | | | | | | | dark red mottling, dense, saturated |
| | | 23 | | | | | | | 11 | | 25% med sand 25% fine sand, 50% silt/clay |
| | | | | | | | | | 12 | | |

Boring # MW# DB-01 Sheet 2 of 6

Project: NAS ALAMEDA CTO 280

Job # 2738.1406 Site: 13

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Rec | Analysis | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 12 | SM | |
| | | | | | | | | | | 13 | | |
| | | | | | | | | | | 14 | | v. gradational change from SM to SP |
| | | | | | | | | | | 15 | SM-SP | |
| ϕ | | 33 50/6" | ↓ | ↓ | | | | | | | | Silty sand (SM) to sand (SP) brown v. dense, saturated; 30% med sand 25% fine sand; 25% v. fine sand; 10% silt |
| | | | | | | | | | | 16 | | |
| | | | | | | | | | | 17 | | |
| | | | | | | | | | | 18 | | |
| | | | | | | | | | | 19 | | |
| | | | | | | | | | | 20 | SP | SP As above |
| ϕ | | 46 50 | ↓ | ↓ | | 40 ft PVC BLANK | | | | 21 | | |
| | | | | | | | | | | 22 | | |
| | | | | | | | | | | 23 | | |
| | | | | | | | Neat Cement Grout | | | 24 | | |
| | | | | | | | | | | 25 | SP | SP (as above) sand, brown, v. dense 25% med sand; 30% fine sand, 25% v. fine sand; 10% silt/clay trace dk red mottling Sand = qtz, feldspar ~~with trace~~ |
| ϕ | | 21 25 50/3" | ↓ | ↓ | | | | | | 26 | | |
| | | | | | | | | | | 27 | | |
| | | | | | | | | | | 28 | | |
| | | | | | | | | | | 29 | | |
| | | | | | | | | | | 30 | SP | As |
| ϕ | | 50 | ↓ | ↓ | | | | | | 31 | | |
| | | | | | | | | | | 32 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth: Sample Rec / Analyses / Feet | | Boring # MW# D13-01 Sheet 3 of 6 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Project: NAS ALAMEDA CTO 280 |
| | | | | | | | | | | Job # 2738.1406 Site: 13 |
| | | | | | | | | 32 | SP | |
| | | | | | | | | 33 | | |
| | | | | | | | | 34 | | |
| Ø | | 50 | ↓ | ↓ | | | | 35 | SP | SP As above |
| | | | | | | | | 36 | | |
| | | | | | | | | 37 | | |
| | | | | | | | | 38 | | |
| | | | | | | | | 39 | | |
| Ø | | 32 | ↓ | ↓ | | | | 40 | | SP Aa fine grained (silt/clay) fraction increasing (15-20%) |
| | | 33 | | | | | | | | |
| | | 40 | ↓ | ↓ | | | | 41 | | |
| | | | | | | | Neat Cement Grout | 42 | | |
| | | | | | | | | 43 | | |
| | | | | | | | | 44 | | |
| Ø | | 50 | ↓ | ↓ | | Sch 40 PVC Blank | | 45 | SP | SP brown, v. dense, saturated 25% med sand 40% fine sand 20% v. fine sand, 15% silt/clay sand => quartz (qtz), feldspar with trace heavy minerals |
| | | | | | | | Bentonite 3/8" Pellet | 46 | | |
| | | | | | | | | 47 | | |
| | | | | | | | | 48 | | |
| | | | | | | | | 49 | | |
| Ø | | 19 | ↓ | ↓ | | 0.01" Slotted | 2/12 Sand | 50 | | SP Aa with thin (2") clay layers |
| | | 32 | | | | | | 51 | | CL lt brownish tan clay, hard moist |
| | | 50/4" | ↓ | ↓ | | | | 52 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Depth Sample Rec | Analyses | Feet | | Boring # MW# D13-01 Sheet 4 of 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS ALAMEDA CTO 200 |
| | | | | | | | | | | | | Job # 2738.1406 Site: 13 |
| | | | | | | | | | | 52 | | |
| | | | | | | | | | | 53 | | |
| | | | | | | | | | | 54 | | |
| Φ | | 50/5" | ↓ | ↓ | | 0.01" slotted PVC screen | | | | 55 | SP | SP brown sand v. dense, saturated 20% med sand, 35% fine sand 35% v. fine sand, 10% silt/clay sand => qtz, feldspar with trace of heavy minerals |
| | | | | | | | | | | 56 | | |
| | | | | | | | | | | 57 | | |
| | | | | | | | | | | 58 | | |
| | | | | | | | | | | 59 | | |
| Φ | | 32 | ↓ | ↓ | | 0.01" slotted PVC screen | SAND 9/12 | | | 60 | SP | fine grained Sand lt tanish brown, v. dense moist to slightly saturated, 50% fine sand, 30% v. fine sand 10% med sand, 10% fines; sand => qtz, feldspar w/ trace of heavy minerals. |
| | | 29 | | | | | | | | 61 | | |
| | | 35 | ↓ | ↓ | | | | | | 62 | | |
| | | | | | | | | | | 63 | | |
| | | | | | | | | | | 64 | | |
| Φ | | 50/3" | ↓ | ↓ | | | BENTONITE | | | 65 | | SP fine to med grained sand, v. dense moist to slightly saturated; 40% fine sand; 35% med sand, 15% v. fine sand 10% fines; angular gravel layer (≈ 1" thickness) composed of red shale fragments ≈ 1/8" in size Sand => qtz, feldspar w/ trace of heavy minerals |
| | | | | | | | | | | 66 | | |
| | | | | | | | | | | 67 | | |
| | | | | | | | | | | 68 | | |
| | | | | | | | | | | 69 | | |
| Φ | | 50/5" | ↓ | ↓ | | | | | | 70 ? | SP | SP (as above) fully saturated |
| | | | | | | | | | | 71 | | |
| | | | | | | | | | | 72 | | |

Boring # MW# D13-01 Sheet 5 of 6

Project: NAS ALAMEDA LTO 280

Job # 2738.1406 Site: 13

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 72 | | |
| | | | | | | | | | | 73 | | |
| | | | | | | | | | | 74 | | |
| Φ | | 50/3" | ↓ | ↓ | | | | | | 75 | | Aa SP |
| | | | | | | | | | | 76 | | |
| | | | | | | | | | | 77 | | |
| | | | | | | | | | | 78 | | |
| | | | | | | | | | | 79 | | |
| Φ | | 50/3" | ↓ | ↓ | | | | | | 80 | | Aa SP |
| | | | | | | | | | | 81 | | |
| | | | | | | | | | | 82 | | |
| | | | | | | | | | | 83 | | |
| | | | | | | | | | | 84 | | |
| Φ | | 50/3" | ↓ | ↓ | | | | | | 85 | SP / SW | SW Sand, dk grey + v. dense, saturated; 50% fine sand, 30% v. fine sand; 20% med sand, well rounded sand grains, sand => qtz, feldspar w/ rel large % heavy minerals contact observed in core |
| | | | | | | | Bentonite | | | 86 | | |
| | | | | | | | | | | 87 | | |
| | | | | | | | | | | 88 | | |
| | | | | | | | | | | 89 | | |
| Φ | | 50/5 | ↓ | ↓ | | | | | | 90 | | SW Aa with slight trace of small clay blobs |
| | | | | | | | | | | 91 | | |
| | | | | | | | | | | 92 | | |

Boring # MW# D13-01 Sheet 6 of 6

Project: NAS ALAMEDA CTO 280

Job # 2738.1406 Site: 13

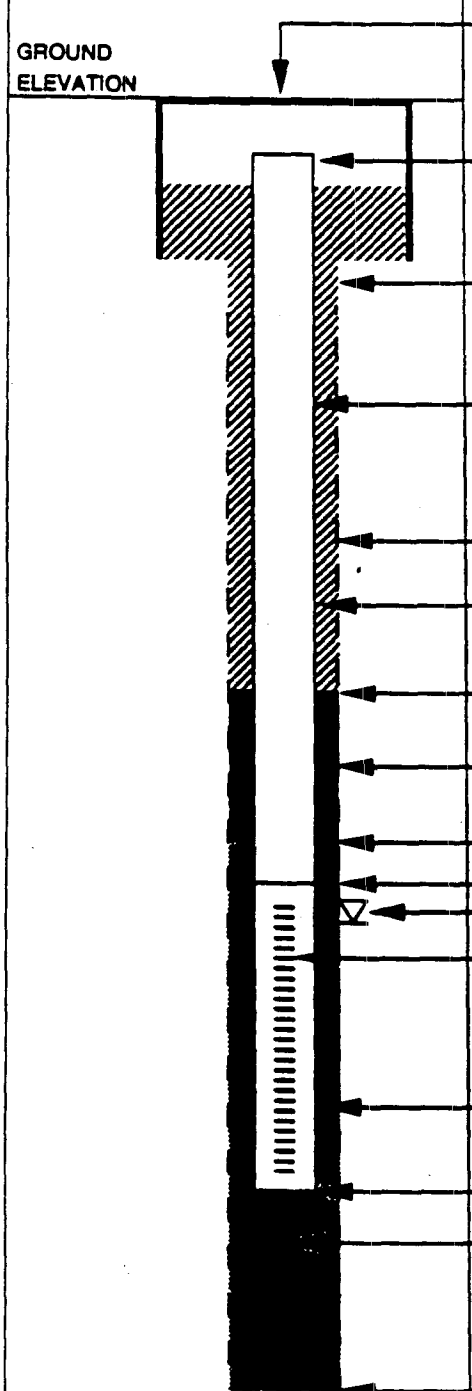
| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 92 | |
| | | | | | | | | | | 93 | |
| | | | | | | | | | | 94 | |
| ϕ | | 50/4" | ↓ | ↓ | | | | | | 95 | Aa |
| | | | | | | | | | | 96 | |
| | | | | | | | | | | 97 | Drillers remark - r's behavior |
| | | | | | | | | | | | CH |
| | | | | | | | Bentonite | | | 98 | |
| | | | | | | | | | | 99 | |
| ϕ | | 15 | | | | | | | | 100 | CH plastic clay, bluish gray |
| | | 15 | | | | | | | | | stiff / v. stiff, moist, highly |
| | | 20 | ↓ | ↓ | | | | | | 101 | plastic, inclusions and small |
| | | | | | | | | | | TD | microbeds of organic matter |
| | | | | | | | | | | 102 | dk brown in color |
| | | | | | | | | | | 103 | |
| | | | | | | | | | | 104 | |
| | | | | | | | | | | 105 | |
| | | | | | | | | | | 106 | |
| | | | | | | | | | | 107 | |
| | | | | | | | | | | 8 | |
| | | | | | | | | | | 9 | |
| | | | | | | | | | | 0 | |
| | | | | | | | | | | 1 | |
| | | | | | | | | | | 2 | |

BORING NO. D13-01

# MONITORING WELL SHEET

PROJECT NAS Alameda C10-0280 LOCATION Site 13
PROJECT NO. 2738.1406 BORING D13-01
ELEVATION _____ DATE 11-3-94
FIELD GEOLOGIST Daniel Kramer

DRILLER Tonto Env. Drilling
DRILLING METHOD Mud Rotary
DEVELOPMENT METHOD Surge Bail Pump




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A
TYPE OF SURFACE CASING: _____

RISER PIPE I.D.: 3"
TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Neat Cement

ELEVATION / DEPTH OF SEAL: 44.6'

TYPE OF SEAL: 3/8 Bentonite Pellets

DEPTH TOP OF SAND PACK: 48.6'
ELEVATION / DEPTH TOP OF SCREEN: 50'
FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH 0.01 Factory Slot
I.D. OF SCREEN 3"

TYPE OF SAND PACK: #2/12 Monterey Sand

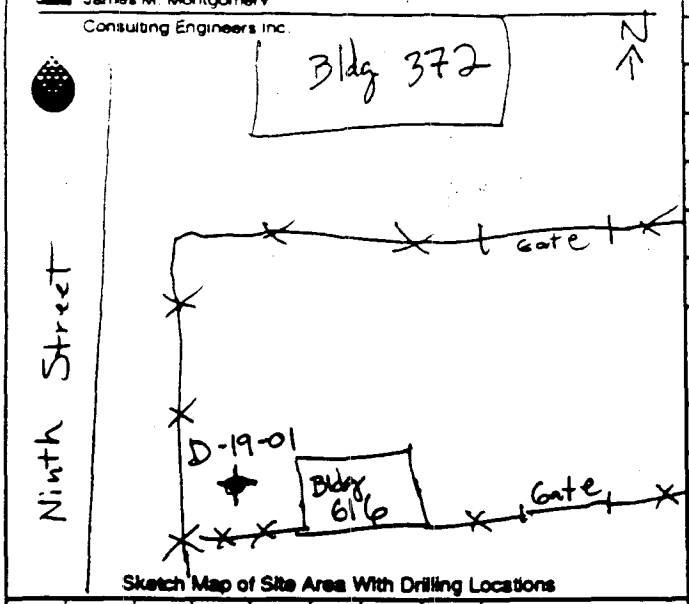
ELEVATION / DEPTH BOTTOM OF SCREEN: 60'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 63

TYPE OF BACKFILL BELOW OBSERVATION WELL: Bentonite Pellets

ELEVATION / DEPTH OF HOLE: 101.5

James M. Montgomery
Consulting Engineers Inc.




Sketch Map of Site Area With Drilling Locations

| | |
|---|---|
| Boring # | MW#D-19-01 Sheet 1 of 4 |
| Project: | NAS Alameda CTO-280 |
| Job # | 2738.1406 Site: [redacted] 19 |
| Logged By: | JEV Proj. Eng: SMH Edited By: |
| Drilling Contractor: | Tonto Drilling |
| Drill Rig Type/Method: | Mud Rotary |
| Drillers Name: | Elliott Van De Poppe |
| Borehole Diam./Drill Bit Type | Total Depth 61' |
| 8" | Ref. Elev |
| Hammer Wt: | 140 lb Drop: 30" |
| Start Time: | 0800 Date: 11/2/94 |
| Completion Time: | 1115 Date: 11/2/94 |
| Backfille Time: | 1500 Date: 11/2/94 |

| | 1st Water | | | |
|---|---|---|---|---|
| Boring Depth (ft.) | 61' | | | |
| Casing Depth (ft.) | 60.5' | | | |
| Water Depth (ft.) | | | | |
| Time | 1115 | | | |
| Date | 11/2/94 | | | |

| PID/OVA | Sampler Type & Depth | Blow Counts / 6 in. | Advance | Recovered (in.) | | Casing Type & Size | Annulus Filler | Sample Recovery | Depth Feet | Graphics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | | | | | | SP | SAND (SP), brown (10YR, 5/3), dense, dry, fine-gr, weak, high K. |
| | | 29 | | | | | | | | | |
| | | 36 | | | | | | | 1 | | Asphalt Pavement over Sand & gravel base |
| | | 34 | | | | | | | | GM | Silty GRAVEL (GM), reddish yellow (5YR, 6/6), dense, dry, med-gr, moderate, med K. |
| | | 42 | | | | | | | 2 | | |
| | | 38 | | | | | | | | | |
| | | 35 | | | | | | | 3 | | |
| | | 36 | | | | | | | | | |
| | | | | | | | GROUT | | 4 | | |
| | | | | | | PVC | | | | | |
| | | | | | | | CEMENT | | 5 | | |
| | | | | | | BLANK | | | | | |
| | | | | | | | PORTLAND | | 6 | | |
| | | | | | | | | | | | |
| | | | | | | SCH 40 | | | 7 | | |
| | | | | | | | | | | | |
| | | | | | | | | | 8 | | |
| | | | | | | 8" DIAM | | | | | |
| | | | | | | | | | 9 | | |
| | | | | | | | | | | | |
| | | | | | | | | | 10 | CL | silty CLAY (CL), gray (10YR, 5/1), stiff, mst, low K. |
| | | 19 | | | | | | | | | |
| | | 26 | | | | | | | 11 | | |
| | | 22 | | | | | | | | | |
| | | | | | | | | | 12 | | |

Boring # MW#D-19-01 Sheet 2 of 4

Project: NAS Alameda CTO - 280

Job # 2738.1406 Site: 19

| PID/OVA | Sampler Type | Blow Counts | Advance (in) | Rcvd (in) | | Casing | Annulus | Sample Run | Analyses | Depth Feet | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 12 | | |
| | | | | | | | | | | 13 | | |
| | | | | | | | | | | 14 | | |
| | | 9 | | | | | | | | 15 | SM | silty SAND (SM), yellowish brown (10YR, 5/8), med dense, moist, fine-gr, high K. |
| | | 14 | | | | | | | | | | |
| | | 19 | | | | | | | | 16 | | |
| | | | | | | | | | | 17 | | |
| | | | | | | | | | | 18 | | |
| | | | | | | | | | | 19 | | |
| | | | | | | 3" DIAM., SCH 40 PVC BLANK | PORTLAND CEMENT GROUT | | | 20 | SP | SAND (SP), yellowish brown (10YR, 5/8), med dense, moist, fine-gr, moderate, med |
| | | 15 | | | | | | | | | | |
| | | 19 | | | | | | | | 21 | | |
| | | 41 | | | | | | | | | | |
| | | | | | | | | | | 22 | | |
| | | | | | | | | | | 23 | | |
| | | | | | | | | | | 24 | | |
| | | | | | | | | | | 25 | | As Above (SP), except dk yellowish br (10YR, 4/6), |
| | | 25 | | | | | | | | | | |
| | | 36 | | | | | | | | 26 | | |
| | | 40 | | | | | | | | | | |
| | | | | | | | | | | 27 | | |
| | | | | | | | | | | 28 | | |
| | | | | | | | | | | 29 | | |
| | | | | | | | | | | 30 | | As Above |
| | | 50 | | | | | | | | | | |
| | | 55 | | | | | | | | 31 | | |
| | | 60 | | | | | | | | | | |
| | | | | | | | | | | 32 | | |

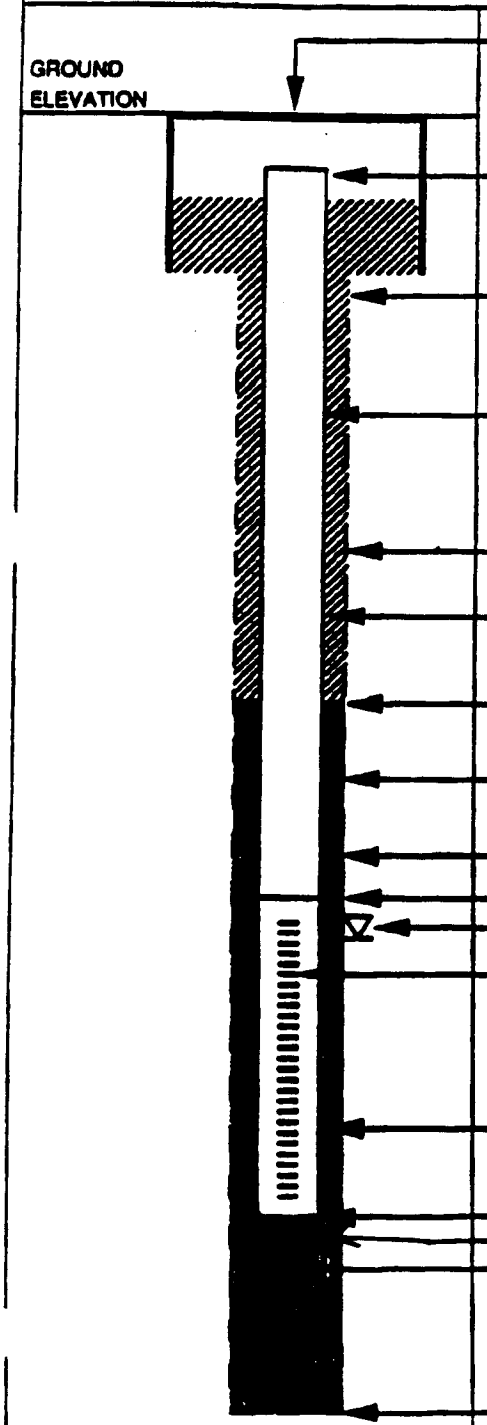
| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | | Casing | Annulus | Sample Rec | Analyses | Depth Feet | | Boring # MW# D-19-01 Sheet 3 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS Alameda / CTO 280 |
| | | | | | | | | | | | | Job # 2738.1406 Site: 19 |
| | | | | | | | | | | 32 | SP | |
| | | | | | | | | | | 33 | | |
| | | | | | | | | | | 34 | | |
| | | 23 | | | | | | | | 35 | | SAND (SP), dk yellowish brown |
| | | 34 | | | | | | | | | | (10Y, 4/6), dense, moist, fine-gr, mod, med K. |
| | | 36 | | | | | | | | 36 | | |
| | | | | | | | | | | 37 | | |
| | | | | | | | | | | 38 | | |
| | | | | | | | | | | 39 | | |
| | | 12 | | | | PVC | PORTLAND CEMENT GROUT | | | 40 | SM | silty SAND (SM) w/ minor clay, yellowish |
| | | 13 | | | | | | | | | | brown (10Y, 5/8), med dense, moist, fine-gr, |
| | | 15 | | | | | | | | 41 | | moderate, med K. |
| | | | | | | | | | | 42 | | |
| | | | | | | | | | | 43 | | |
| | | | | | | | | | | 44 | | |
| | | 35 | | | | 3" DIAM, SCH 40 BLANK | BENTONITE | | | 45 | | As Above, except dense |
| | | 50 | | | | | | | | | | |
| | | 50 | | | | | | | | 46 | | |
| | | | | | | | | | | 47 | | |
| | | | | | | | | | | 48 | | |
| | | | | | | | MONTEREY 2/12 SAND | | | 49 | | |
| | | 31 | | | | | | | | 50 | SP | SAND (SP), grayish br (10Y, 5/2), dense, |
| | | 35 | | | | | | | | | | moist, fine-gr, moderate, med K. |
| | | 50 | | | | 0.010 PVC SCREEN | | | | 51 | | |
| | | | | | | | | | | 52 | | |

| PID/OVA | Sampler Type | Blow Counts | Advance (in.) | Rcvd (in.) | Casing | Annulus ~~Casing~~ | ~~Annulus~~ | Sample Rec | Analyses | Depth Feet | | Boring # MW#D-19-01 Sheet 4 of 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Project: NAS Alameda / CTO 280 |
| | | | | | | | | | | | | Job # 2738.1406 Site: 19 |
| | | | | | | | | | | 52 | SP | |
| | | | | | | | | | | 53 | | |
| | | | | | | | | | | 54 | | |
| | | 27 50 | | | 3" DIAM, 0.010 SLOTTED PVC | MONTEREY 2/12 SAND | | | | 55 | | SAND (SP), dk br (10Y, 3/3), dense, moist, fine-gr, moderate, med K. |
| | | | | | | | | | | 56 | | |
| | | | | | | | | | | 57 | | |
| | | | | | | | | | | 58 | | |
| | | | | | | | | | | 59 | | |
| | | 36 50 | | | | | | | | 60 | | AS Above |
| | | | | | | | | | | 61 | | Bottom of Borehole = 61' bgs. |
| | | | | | | | | | | 2 | | |
| | | | | | | | | | | 3 | | |
| | | | | | | | | | | 4 | | |
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 6 | | |
| | | | | | | | | | | 7 | | |
| | | | | | | | | | | 8 | | |
| | | | | | | | | | | 9 | | |
| | | | | | | | | | | 0 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | | | | | 2 | | |

BORING NO. D19-01

# MONITORING WELL SHEET

| | | |
|---|---|---|
| PROJECT NAS Alameda/CTO 280 | LOCATION Site 19 | DRILLER Matt Rugh |
| PROJECT NO. 2738.1406 | BORING D19-01 | DRILLING (Tonto Drilling) |
| ELEVATION | DATE 11/2/94 | METHOD Mud Rotary |
| FIELD GEOLOGIST John Valett | | DEVELOPMENT METHOD Surge, Bail, Pump. |




ELEVATION OF GROUND SURFACE: _____

ELEVATION OF TOP OF WELL CASING: _____

I.D. OF SURFACE CASING: N/A

TYPE OF SURFACE CASING: N/A

RISER PIPE I.D.: 3"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: Portland Cement Grout

ELEVATION / DEPTH OF SEAL: 43' bgs

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 46.5' bgs

ELEVATION / DEPTH TOP OF SCREEN: 50' bgs

FIRST ENCOUNTERED SATURATED ZONE

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH 0.010 x 10 feet

I.D. OF SCREEN 3"

TYPE OF SAND PACK: Monterey 2/12 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 60' bgs

Depth, bottom of End Cap 60.5' bgs

ELEVATION / DEPTH BOTTOM OF SAND PACK: 61' bgs

TYPE OF BACKFILL BELOW OBSERVATION WELL: Monterey 2/12 Sand

ELEVATION / DEPTH OF HOLE: 61' bgs

# ATTACHMENT I

# GEOPHYSICAL SURVEY REPORT

NORCAL

GEOPHYSICAL
CONSULTANTS
INC.

NORCAL GEOPHYSICAL CONSULTANTS INC.

NORCAL

November 10, 1994

Mr. Kenneth P. Leung
Montgomery Watson
365 Lennon Lane
Walnut Creek, CA 94598-2427

Dear Mr. Leung:

This report presents the findings of a geophysical investigation performed by NORCAL Geophysical Consultants, Inc. at the Alameda Naval Air Station in Alameda County, California. The field survey was conducted on July 19 and October 17, 1994 by Donald J. Kirker, Geophysicist and Ted Heinse, Geophysical Technician. Logistical support was provided by Daniel Kramer and Wade Westin of Montgomery Watson. This work was conducted under Montgomery Watson Contract No. N62474-88-D-5086.

## SITE DESCRIPTION

The geophysical investigation covered three sites at the Alameda Naval Air Station. These are designated as Site 7B, Site 7C, and Site 11. Descriptions of each site are presented in the following paragraphs.

### Site 7B

It has been reported that Site 7B was formerly used by the Navy Exchange as a service station. The area of investigation covers approximately 3,600 square feet. It is bound by Atlantic Avenue to the north, 8th Street to the east, and Building 162 to the south. Portions of the area are concrete paved, the remainder is covered by grass. An electrical transformer, bound by a chain link fence, is located in the center of the survey area. An air conditioning unit and a storage area are located in the southwest corner of the site. Both are bound by chain link fences. A plan view diagram of the site is shown on Plate 1.

A visual inspection of Site 7B revealed several tank-like features near the northeast corner of Building 162. These features include two vent lines that run out of the ground and parallel to the wall of Bldg. 162. Eight 1 inch diameter and two 4 inch diameter lines exit the building and enter the ground surface between the vent lines. Two 3 inch diameter pipes, cut off flush with the ground surface, are evident in the grass adjacent to the vent lines. These concrete-filled pipes are approximately 13

1350 INDUSTRIAL AVENUE SUITE A • PETALUMA, CA 94952
TELEPHONE (707) 763-1312 • FAX (707) 762-5587

feet from the building and resemble abandoned underground storage tank (UST) fill ports. In addition, two UST fill ports are located in the sidewalk approximately 14 feet east of the concrete filled pipes. We opened their covers and noted that they made a 90 degree bend towards the concrete-filled pipes. These pipes may represent remote fill lines associated with the former UST's.

Site 7C

Site 7C is a former on-base annex service station that is located between 11th and Main Streets. The area of investigation occupies the western portion of the site. It is approximately 260 feet long (north-south) and 120 feet wide (east-west). It is separated into three separate parcels by east-west trending chain link fences. These connect to a north-south trending fence which forms the west boundary of the site. We refer to the parcels as Sites 7C(A), 7C(B), and 7C(C). Three 12,000 gallon fiberglass UST's, as well as the pump islands and canopy, are located north of the three parcels. Historical information, provided by Montgomery Watson, indicates that the site contains two additional steel UST's with volumes of 10,000 and 5,000 gallons. It is suspected that these tanks, reportedly used for waste oil, are located either northwest or southwest of the canopy (Building 547, not shown). A plan view diagram of Site 7C is shown on Plate 2.

Site 11

The geophysical investigation performed at Site 11 covered an asphalt paved lot of approximately 10,000 square feet. The area is bound by Building 14 to the north and a chain link fence to the south. An electrical transformer, bound by a chain link fence, is located in the west central portion of the survey area. Two large manhole covers are located along the east boundary. Historical information, provided by Montgomery Watson, indicates that Building 14 was constructed in 1946 and served as an aircraft engine test facility. It has been reported that abandoned UST's may be located south of this building. A visual inspection of the survey area revealed three UST vent lines along the southern wall of the building. Adjacent to these lines are two large concrete vaults that are covered with wood. Further inspection of these vaults revealed the manway entrances and turbines to three UST's. Directly south of these vaults are three concrete filled pipes that are flush with the ground surface. These pipes may represent the former fill ports to the UST's.

## PURPOSE

The purpose of this geophysical investigation is to obtain subsurface information that will aid in determining the locations of abandoned UST's and their associated piping at each site.

## METHODOLOGY

For this investigation, we employed the magnetic, electromagnetic, ground penetrating radar, and electromagnetic line locating methods. Magnetometer surveys are used to determine the presence of buried ferrous metal objects and to define the general limits of fill containing metallic debris. Electromagnetic surveys are used to determine variations in subsurface electrical conductivity. These variations may indicate the presence of buried metal objects or related conditions. The ground penetrating radar method is used to further characterize any anomalous areas detected by the magnetic or electromagnetic methods. The line locating method was also used to further characterize anomalous areas and to locate utilities associated with suspected UST's.

### Magnetic (MAG)

Magnetometers measure variations in the earth's magnetic field. These may include the total intensity of the field and/or its vertical or horizontal gradient. Measurements of the vertical magnetic gradient (VMG) are commonly used in environmental surveys because they provide better discrimination of closely spaced buried objects that total field measurements.

A magnetic gradiometer measures the vertical gradient of the earth's magnetic field. It consists of two total field magnetic sensors separated vertically by one-half meter. The magnetic field strength is measured simultaneously at both of these sensors. The difference in magnetic intensity between these measurements is proportional to the vertical gradient of the earth's magnetic field. Because the vertical gradient is constant with respect to time, it is immune to diurnal variations. Because the sensors are closely spaced, the gradient is affected primarily by near-field sources. Therefore, gradiometers provide better resolution of buried objects than magnetometers that measure only the total field.

Areas with significant amounts of buried metal typically produce anomalously steep magnetic gradients. These gradients can be positive or negative depending on the size, shape, distance to sensor, or magnetization of the source. Objects that form magnetic dipoles can produce both positive and negative values. Since all magnetometers are sensitive to ferrous metal sources both above and below ground, site and vicinity surface conditions can effect survey results.

We used an EDA OMNI IV tie-line magnetometer to obtain both the vertical magnetic gradient and total field data. This instrument features a built-in memory that stores the vertical magnetic gradient data (in gammas/meter), and survey grid information. The information can be down loaded to a computer for further processing.

Electromagnetic Induction (EM)

The electromagnetic method is used to measure variations in subsurface electrical conductivity. The electromagnetic system utilizes two coils separated by a specified distance. One of these coils transmits a time-varying electromagnetic signal (primary magnetic field) which induces current flow in the earth. This in turn creates a secondary magnetic field which is detected by the receiver coil. The secondary signal is complex and has both quadrature and in-phase components. The amplitude of the quadrature component is proportional to the electrical conductivity of the subsurface materials. The in-phase component is proportional to conductivity, but is also affected by magnetic properties. The instrument displays the quadrature component in units of milliSiemens/meter (mS/m). Since this measurement represents the conductivity of the volume of material sampled, rather than individual layers, it is an apparent value and is referred to as terrain conductivity (TC). The instrument displays the in-phase value, which is a ratio, in units of parts per thousand (ppt).

Our instrumentation consisted of a Geonics EM31-DL ground conductivity meter connected to an Omnidata data recorder. The EM31 has a fixed coil separation of 12 feet. This results in a total depth of investigation of approximately 15 feet, depending upon local site conditions. The data recorder automatically stores terrain conductivity values in memory at preselected intervals. The data recorder also stores station locations and annotations regarding cultural features.

Ground Penetrating Radar (GPR)

Ground penetrating radar is a method that provides a continuous, high resolution cross-section depicting variations in the electrical properties of the shallow subsurface. The method is particularly sensitive to variations in electrical conductivity and electrical permittivity (the ability of a material to hold a charge when an electrical field is applied).

The system operates by continuously radiating an electromagnetic pulse into the ground from a transducer (antenna) as it is moved along a traverse. Since most earth materials are transparent to electromagnetic energy, only a portion of the radar signal is reflected back to the surface from interfaces representing variations in electrical properties. When the signal encounters a metal object, however, all of the incident energy is reflected. The reflected signals are received by the same transducer and are printed in cross-section form on a graphical recorder. Depending upon depth and/or thickness the resulting records can provide information regarding the location of UST's, underground utilities, and the location of buried objects. Generally, reinforcing steel (rebar) and electrically conductive materials such as saturated clay can reduce the penetration capability and limit radar performance.

For this investigation we used a Geophysical Survey Systems, Inc. SIR-3 Subsurface Interface Radar System equipped with a 500 megahertz (MHz) antenna. This antenna is near the center of the available frequency range and is used to provide high resolution at shallow depths.

Electromagnetic Line Location (LL)

Electromagnetic line location techniques are used to locate the magnetic field resulting from an electric current flowing on a line. These magnetic fields can arise from currents already on the line (passive) or currents applied to a line with a transmitter (active). The most common passive signals are generated by live electric lines and re-radiated radio signals. Active signals can be introduced by connecting the transmitter to the line at accessible locations or by induction.

The detection of underground utilities is determined by the composition and construction of the line in question. Utilities detectable with standard line location techniques include any continuously connected metal pipes, cables/wires or utilities with tracer wires. Unless carrying a passive current these utilities must be exposed at the surface or in accessible

utility vaults. These generally include water, electric, natural gas, telephone, and other conduits related to facility operations. Utilities that are not detectable using standard electromagnetic line location techniques include those made of nonelectrically conductive materials such as pvc, fiberglass, vitrified clay, and pipes with insulated connections.

Our instrumentation for this investigation consisted of a Radiodetection RD-400 line locator and a Fisher TW-6 inductive pipe and cable locator.

## DATA ACQUISITION

Site 7B

We could not obtain VMG and EM data at this site because of interference caused by the numerous above ground metal structures in the area. Therefore, we obtained GPR data along east-west trending profiles spaced 10 ft apart. This was supplemented by north-south trending traverses spaced 3 to 7 ft apart in the suspected UST area. The east-west profiles ranged in length from 117 to 168 ft. The north-south profiles were 25 to 35 ft long. The locations of the GPR profiles are shown on Plate 1. In addition to the GPR survey, we used the LL method to delineate the surface trace of the apparent UST associated utilities evident along the wall of the building.

Sites 7C and 11

At Site 7C we collected VMG and EM data at 10 foot intervals along north-south trending traverses spaced 10 feet apart. At Site 11 we collected VMG and EM data at 10 foot intervals along east-west trending traverses spaced 10 feet apart. The limits of the VMG and EM surveys are illustrated on Plates 2 and 3. In addition, we obtained GPR data over each VMG and EM anomaly. The profiles were oriented north-south and east-west, and were spaced 5 feet apart. Typically the GPR traverses ranged in length from 20 to 80 feet.

## DATA ANALYSIS

Preliminary data analysis was performed in the field to monitor data quality and field survey parameters. Final analysis and data presentation was completed in our Petaluma, California office.

Computer Data Processing

We down loaded the MAG and EM data to a micro-computer. The MAG data were downloaded using the program MAGDMP88 by EDA. We then used a proprietary program to convert the raw field data to an XYZ format. The EM data were downloaded and converted using the software package DAT31Q by Geonics Ltd. For both data sets, we generated a uniform grid and contoured the data using commercially available contouring software. This resulted in the VMG and TC contour maps shown on Plates 4 through 8.

Contour Map Interpretation

A general explanation of contour diagram interpretation is as follows. Generally, terrain conductivity and magnetic values vary smoothly throughout a given region. Areas where variations are strong are defined by closely spaced contours and are typically considered anomalous. If the source of a particular anomaly is an isolated object or a group of closely spaced objects, the contours may form circular or elliptical closures. A large accumulation of buried objects may appear as a group of closely spaced anomalies or one large anomaly.

Actual anomaly magnitude and shape are dependent on the relative position and size of the buried objects with respect to the observed data points. In general, anomaly magnitude will decrease and anomaly width will increase as depth to the source increases.

Ground Penetrating Radar Profiles

We examined the GPR records for reflection patterns characteristic of UST's and/or the possible limits of former excavations.

## RESULTS

The results of the geophysical investigation for the Alameda Naval Air Station are presented on Plates 1 and 4 through 8. The specific results at each site are described in the following paragraphs.

Vertical Magnetic Gradient and Terrain Conductivity contour maps of Site 7C are shown on Plates 4, 5, and 6. The Vertical Magnetic Gradient and Terrain Conductivity contour maps of Site 11 are shown on Plates 7 and 8, respectively.

Site 7B

The results of the GPR and LL surveys at Site 7B are shown on Plate 1. Prior to the GPR investigation, we used the LL method to determine the surface trace of the two vent lines, remote fill lines, and apparent product lines. The surface trace of these lines trend toward the severed pipes, as shown on Plate 1. Therefore, we believe that these pipes represent two UST fill ports.

The GPR records obtained in close proximity to the suspected fill ports (described above) exhibit reflection patterns characteristic of disturbed soils. These conditions may represent backfill material associated with the suspected UST's. The outline of the disturbed soils is shown on Plate 1.

Within the area of the disturbed soils, one of the east-west GPR profiles resolved reflection patterns characteristic of small UST's oriented perpendicular to the profile. The location of the GPR anomaly is shown on Plate 1. However, because the reflection patterns were not resolved by the other profiles, we cannot determine the lateral extent of the suspected UST's. This lack of definition may be due to variable fill characteristics and/or the fact that numerous pipes are located above the UST's. Since the definition of the UST's was variable, we recommend that extreme caution be exercised when drilling in this area. The GPR depth of investigation was estimated at approximately 3 to 4 feet.

The GPR records obtained throughout the remainder of the site did not resolve reflection patterns characteristic of UST's within the upper three to four feet. However, the data do resolve numerous localized reflection patterns characteristic of small objects. These patterns probably indicate utility alignments and previous excavations associated with the present facility.

Site 7C

The area of investigation at Site 7C has been separated into three parcels. These parcels, designated 7C(A), 7C(B), and 7C(C), represent the southern, central, and northern

portions, respectively, as shown on Plate 2. The results of the VMG and EM surveys at each parcel are shown on Plates 4, 5, and 6.

7C(A)

The contour map on the left side of Plate 4 represents variations in VMG. The closely spaced contours along the borders of the area are caused by the chain link fence. However, there is a relatively low amplitude (approximately 40 gammas/meter) closure near the west boundary of the area. This anomaly is labeled "A" on the map. Since the anomaly is not located in close proximity to surface structures, it is probably caused by buried objects. GPR data obtained over anomaly A do not resolve reflection patterns characteristic of a UST within the upper three to four feet. However, the GPR data do resolve isolated reflection patterns characteristic of small objects. These patterns may represent abandoned utility lines that were associated with former facilities. Objects such as these could account for the VMG anomaly.

The contour map on the right side of Plate 4 represents the variations in TC. The closely spaced contours in the eastern portion of this area are probably caused by utility alignments that were marked on the pavement by others. The EM data does not resolve additional anomalous gradients in this area.

7C(B)

The contour map on the left side of Plate 5 represents variations in the VMG. The closely spaced contours along the borders are caused by the chain link fence. The circular contour closures in the western portion of this site are not associated with any known above ground cultural features. Therefore, they are designated as magnetic anomalies and have been labeled "B". GPR data obtained in this area did not resolve reflection patterns characteristic of a UST. However, the GPR data do resolve reflection patterns characteristic of small buried objects. These could represent abandoned utility lines and isolated debris. Such objects could be the cause of the VMG anomalies.

The contour map on the right side of Plate 5 represents the variation in TC. The map shows closely spaced north-south trending contours between 70E and 90E. We believe that this trend is caused by the continuation of the utility alignment trending from Site 7C(A). The EM data does not resolve additional anomalies in this area.

7C(C)

The VMG contour map shown on Plate 6 exhibits closely spaced contours along the boundaries of the survey area. We believe that the steep gradients are caused by the chain link fence that borders the south and west sides of the site, and the metal canopy of Bldg 547 that occupies the southeast quadrant of site (not shown). The VMG data does not resolve additional anomalies in this area.

The EM contour map on Plate 6 shows closely spaced contours in the northeast portion of the survey area. We believe that these anomalies are caused by utility alignments that trend from the known UST's (immediately north of the area) to the present station building (located east of the area). The EM data do not resolve additional anomalies that could be associated with large buried metal objects.

The GPR data obtained beneath the canopy do not resolve reflection patterns within the upper three to four feet that are characteristic of a UST. However, the GPR data do resolve reflection patterns characteristic of closely spaced rebar. The records also exhibit numerous localized reflection patterns characteristic of utility alignments. These are located near the pump islands and known UST's, and probably indicate utility alignments associated with the present facility.

Site 7C Discussion

Because of the low magnitudes of Anomalies A and B in Sites 7C(A) and (B), we do not believe that these anomalies are caused by the large UST's (5,000 and 10,000 gallons) that are presumed to be in this area. Furthermore, the EM data did not resolve anomalies that corresponded to the VMG anomalies. Typically, UST's will produce large anomalies with both the VMG and EM methods.

Site 11

The VMG contour map shown on Plate 7 does not exhibit anomalous conditions associated with unknown buried objects. All of the anomalies shown on the map correlate with known objects. For example, the closely spaced contours along the north boundary of the site are probably caused by the building adjacent to the survey area. The circular closures in the eastern portion of the site coincide with two man-way covers and a utility

vault. Finally, the large elliptical anomaly in the center of the survey area is caused by the three known UST's.

The EM contour map shown on Plate 8 does not resolve anomalous conditions associated with unknown buried objects. All of the anomalies shown on the map correlate with known objects. For example, the high amplitude (1400 mS/m) circular contour closure on the north boundary in the eastern portion of the survey area correlates with the loading dock next to the building. The contours that parallel the southern boundary of the site probably represents the effect of the chain link fence. The conductivity low (hashured contour closure) in the center of the area coincides with the known UST's.

We had performed GPR profiles over the known UST's in order to define their lateral extent. However, the resulting data did not resolve reflections patterns typical of UST's. The GPR data do resolve reflection patterns characteristic of closely spaced rebar and shallow fill horizons beneath the concrete slab. In addition to these near surface reflections, the data also resolve deeper reflecting horizons characteristic of uniform subsurface conditions. This lack of definition may be due to a change in fill material over the tanks. Since these UST's could not be detected with the GPR, we recommend that extreme caution be exercised when drilling in this area. The GPR depth of investigation was estimated at approximately 2 to 3 feet. Based on visual evidence in the tank vaults, the depth to the top of the UST's is greater than 4 feet.

## STANDARD CARE AND WARRANTY

The scope of NORCAL's services for this project consisted of using geophysical methods to characterize the shallow subsurface. The accuracy of our findings is subject to specific site conditions and limitations inherent to the techniques used. We performed our services in a manner consistent with the level of skill ordinarily exercised by members of the profession currently employing similar methods. No other warranty, with respect to the performance of services or products delivered under this agreement, expressed or implied, is made by NORCAL.

NORCAL



We appreciate having had the opportunity to provide our services to Montgomery Watson for this project. If you have any questions, or if we can be of additional service, please do not hesitate to call.

Respectfully,

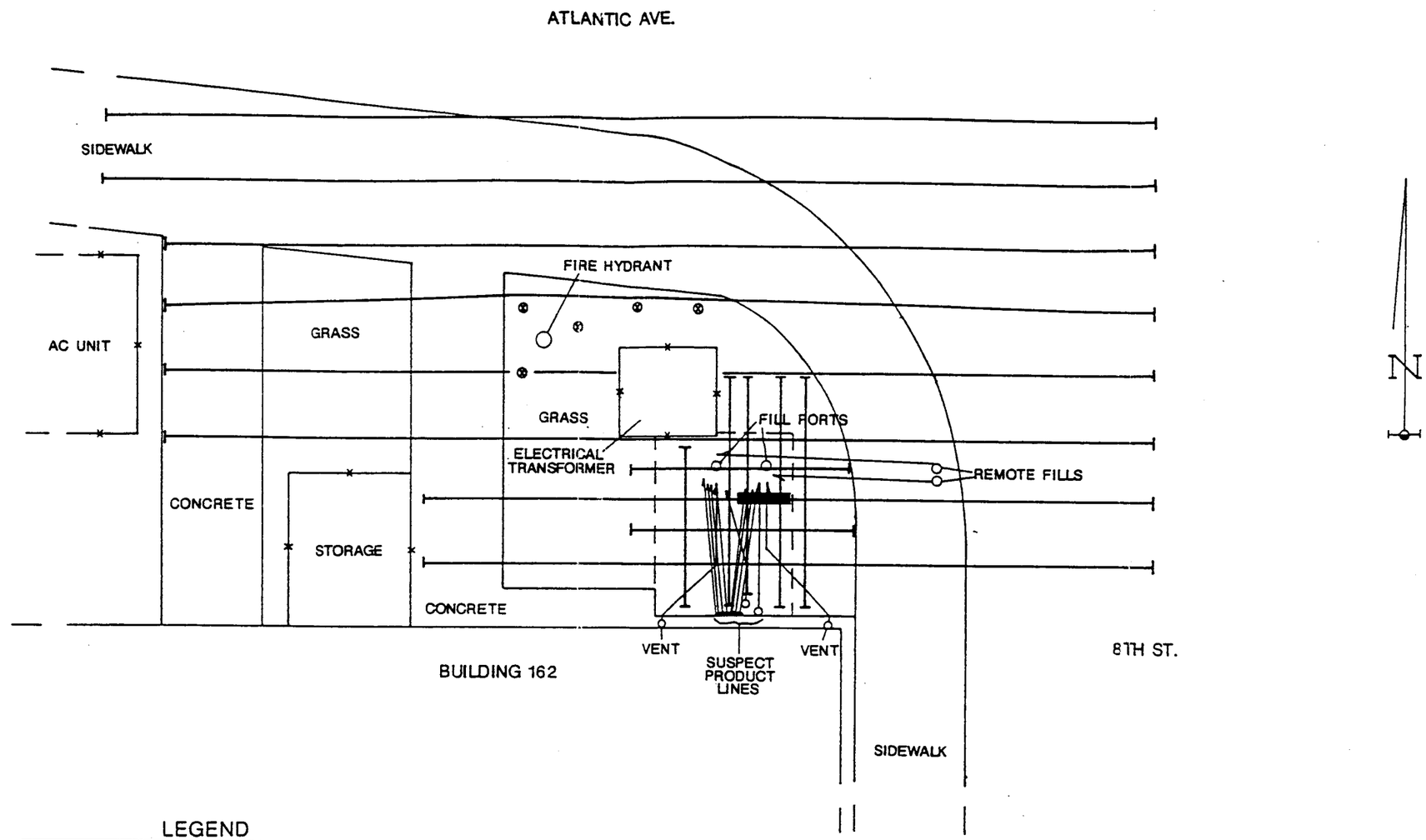
NORCAL Geophysical Consultants, Inc.

Donald J. Kirker

Donald J. Kirker
Geophysicist, GP-997

DJK/jh

Enclosures: Plates 1 through 8



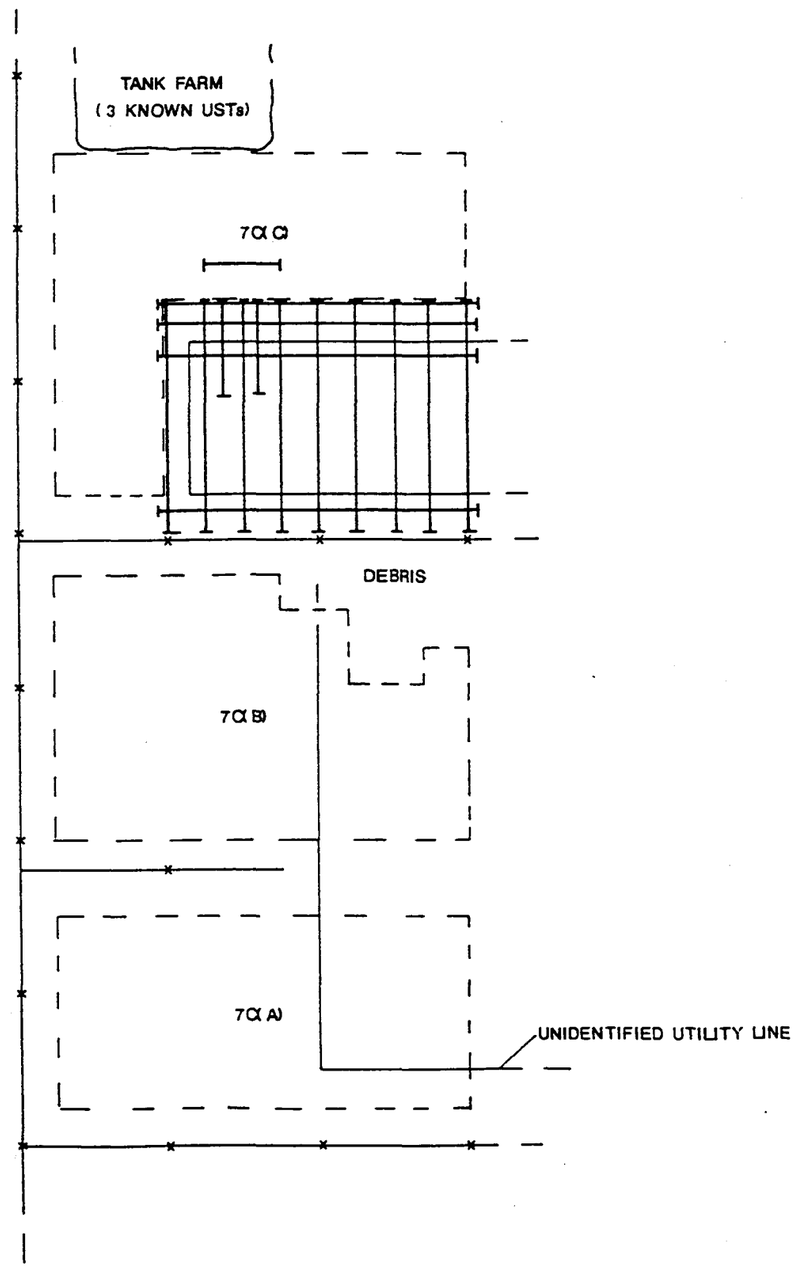

## LEGEND

- METAL POST
- OUTLINE OF DISTURBED SOILS AREA
- GPR TRAVERSE
- TANK ASSOCIATED UTILITY LINES
- CHAIN LINK FENCE
- GPR ANOMALY

0 20 40
SCALE (FT)

| | | | |
|---|---|---|---|
| NORCAL GEOPHYSICAL CONSULTANTS | | | SITE 7B LOCATION MAP |
| JOB: 94-157.15 | APPR: DEB | DATE: 10/94 | GEOPHYSICAL INVESTIGATION ALAMEDA NAS ALAMEDA, CA |

PLATE 1



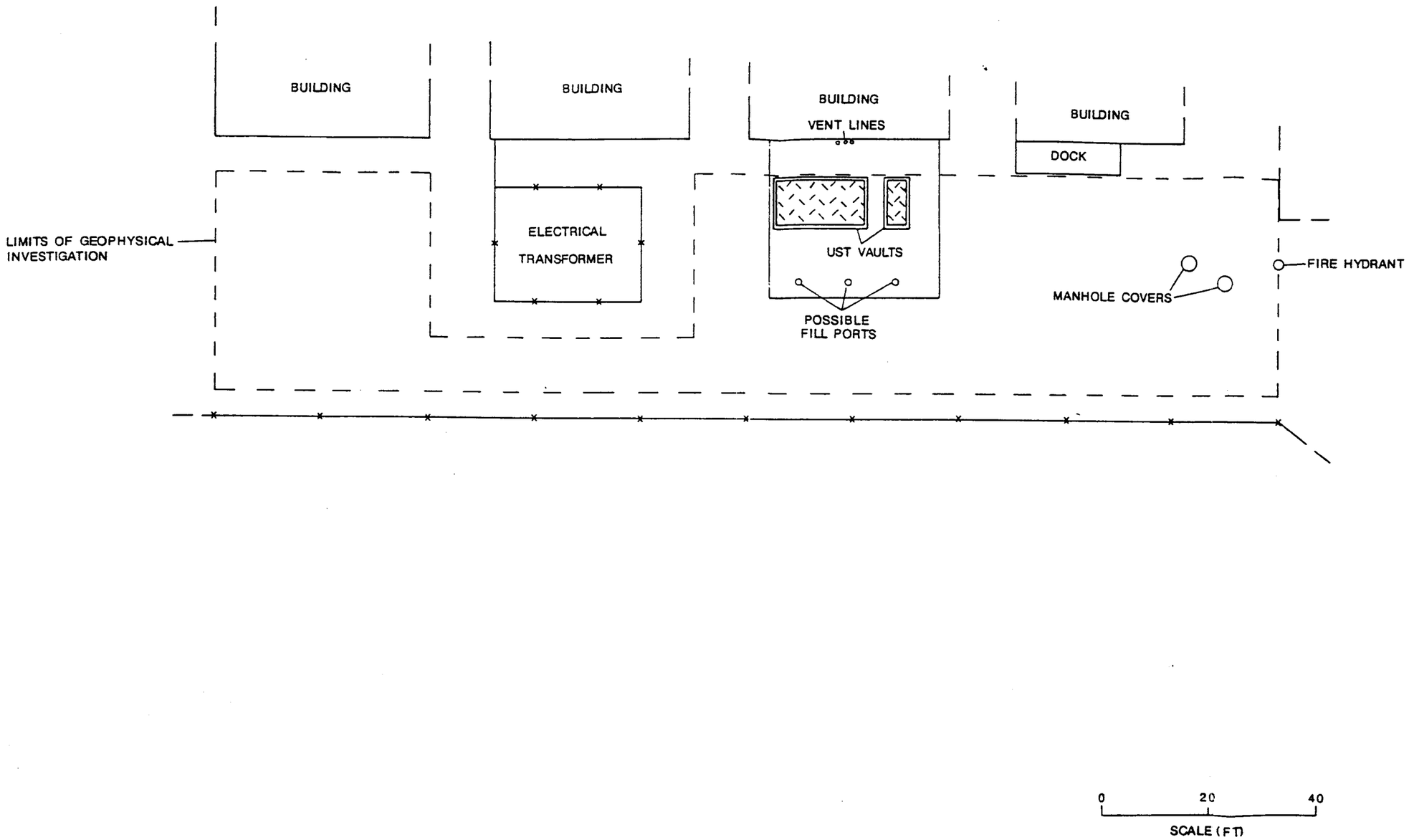
LEGEND

- GPR TRAVERSE
- LIMITS OF VMG AND TC INVESTIGATIONS
- CHAIN LINK FENCE

0 40 80
SCALE (FT)

| | | | |
|---|---|---|---|
| NORCAL GEOPHYSICAL CONSULTANTS | | | SITE 7C LOCATION MAP |
| JOB: 94-157.15 | APPR: web | DATE: 10/94 | GEOPHYSICAL INVESTIGATION<br>ALAMEDA NAS<br>ALAMEDA, CA |

PLATE 2




NORCAL
GEOPHYSICAL CONSULTANTS

NORCAL

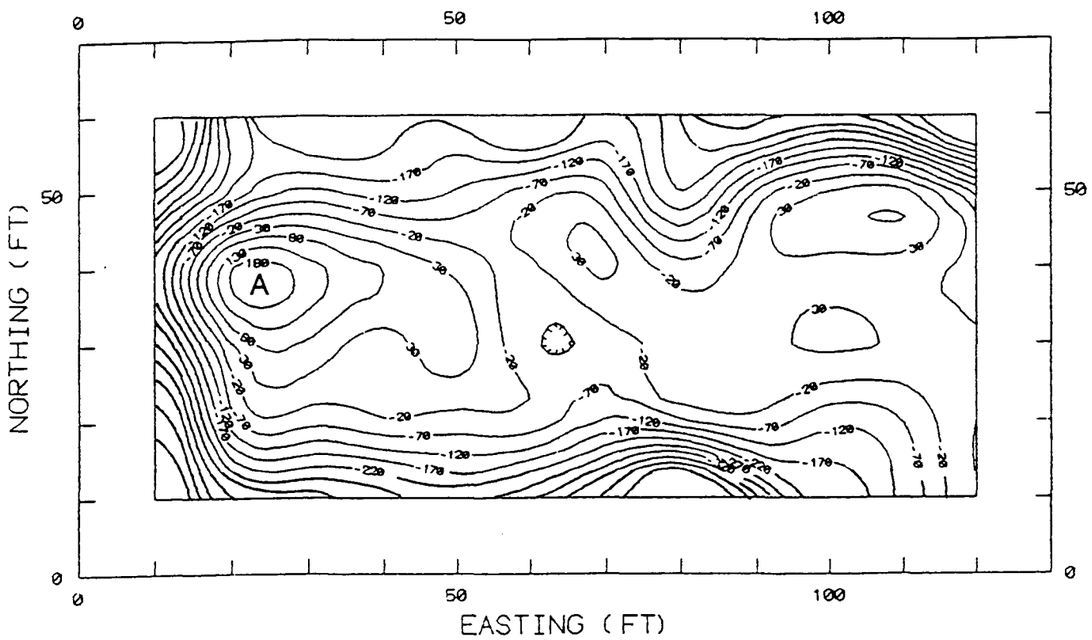
JOB: 94-157.15 | APPR: WEB | DATE: 10/94

SITE 11 LOCATION MAP

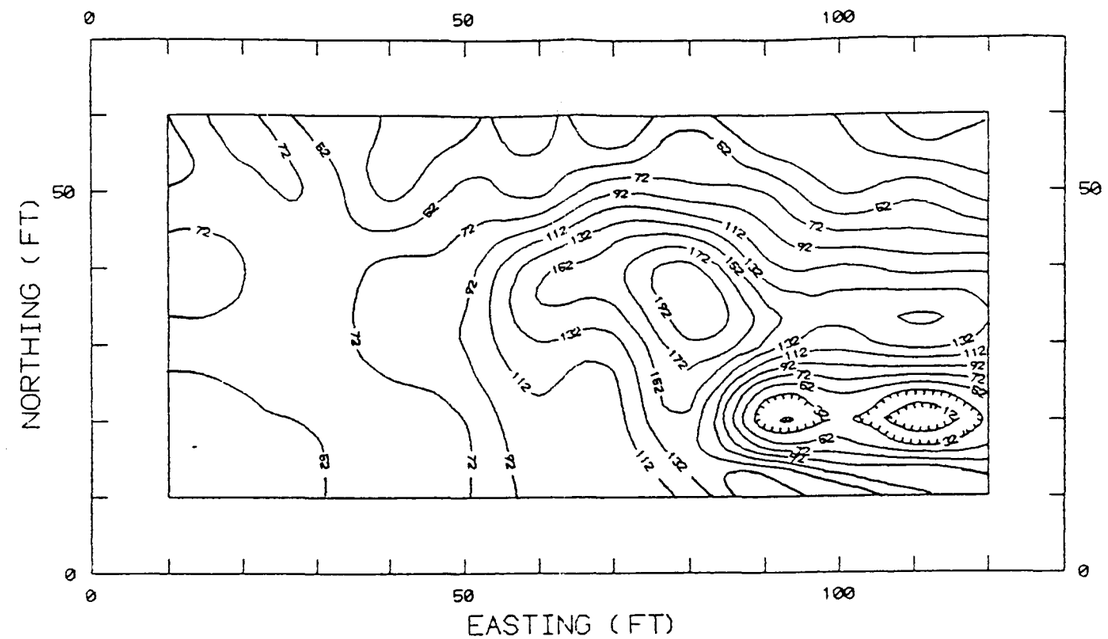
GEOPHYSICAL INVESTIGATION
ALAMEDA NAS
ALAMEDA, CA

PLATE 3

VERTICAL MAGNETIC GRADIENT CONTOUR MAP




TERRAIN CONDUCTIVITY CONTOUR MAP




## LEGEND

VERTICAL MAGNETIC GRADIENT CONTOUR
CONTOUR INTERVAL = 50 g/m

TERRAIN CONDUCTIVITY CONTOUR
CONTOUR INTERVAL = 20 mMhos/m

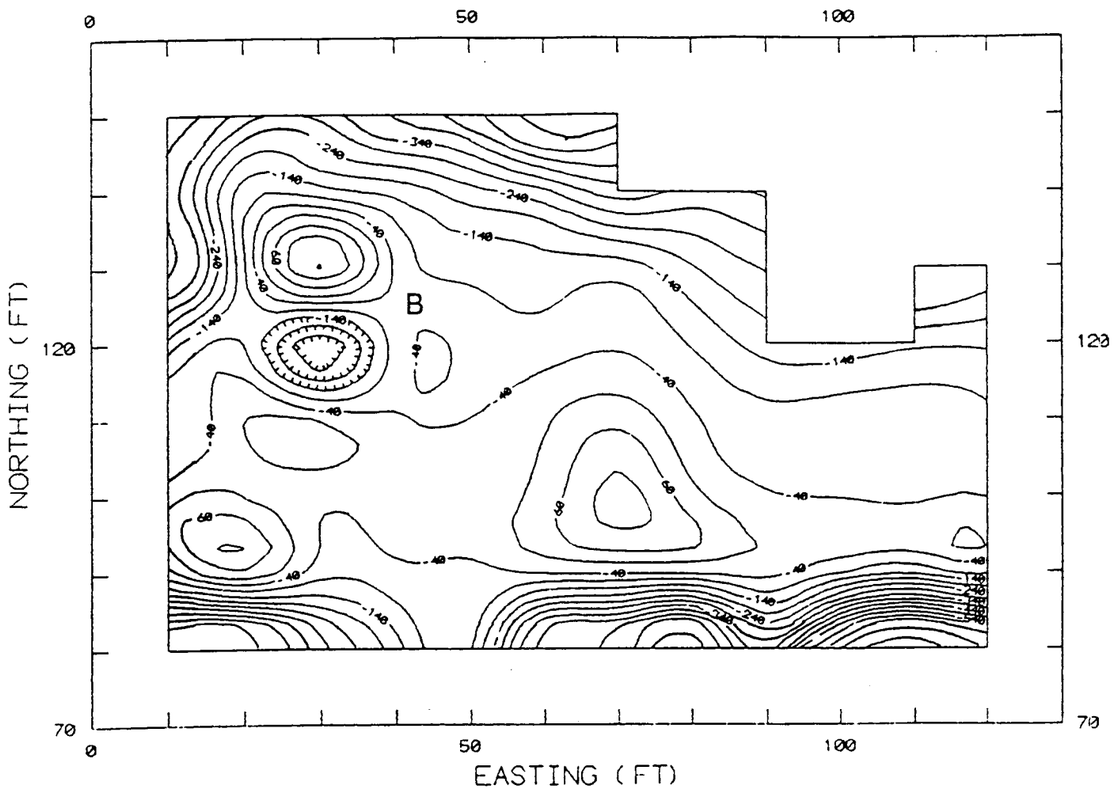
N

0 20 40
SCALE (FT)

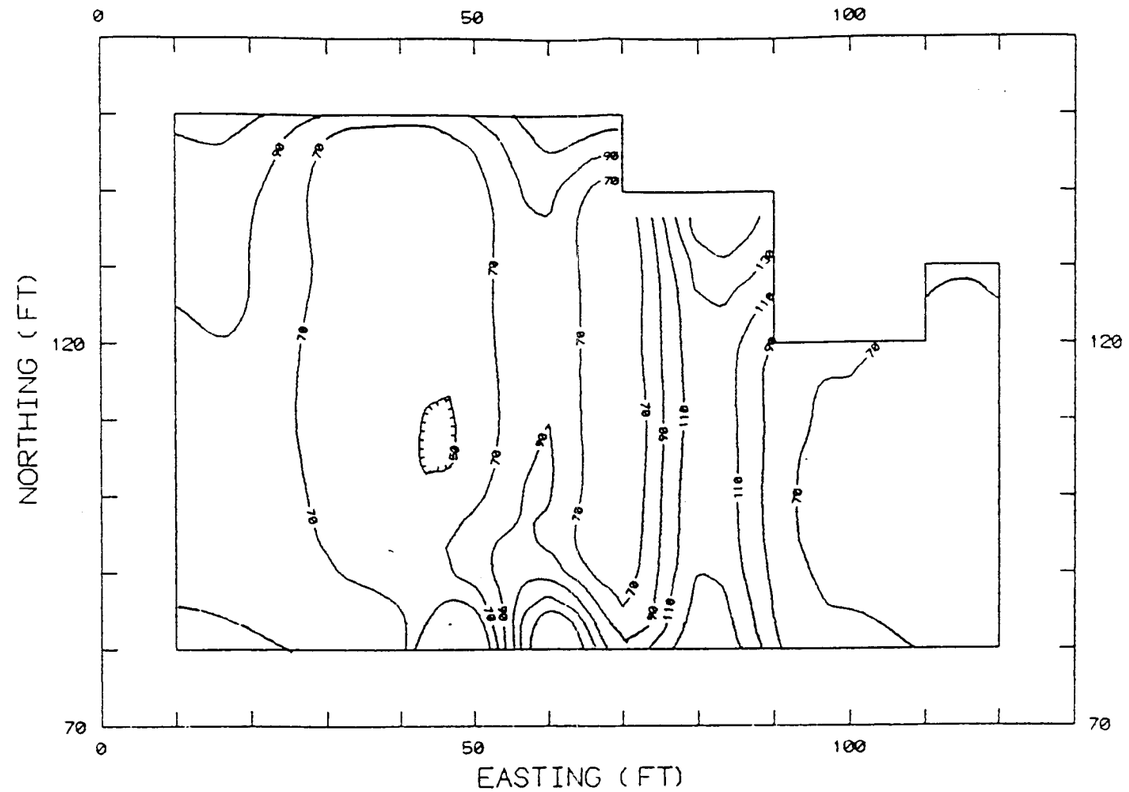
| | | | |
|---|---|---|---|
| NORCAL GEOPHYSICAL CONSULTANTS | | | SITE 7C (A) VERTICAL MAGNETIC GRADIENT AND TERRAIN CONDUCTIVITY CONTOUR MAP |
| JOB: 94-157.15 | APPR: WEB | DATE: 10/94 | GEOPHYSICAL INVESTIGATION ALAMEDA NAS ALAMEDA, CA |

PLATE 4

VERTICAL MAGNETIC GRADIENT CONTOUR MAP




TERRAIN CONDUCTIVITY CONTOUR MAP




## LEGEND

VERTICAL MAGNETIC GRADIENT CONTOUR
CONTOUR INTERVAL = 50 g/m

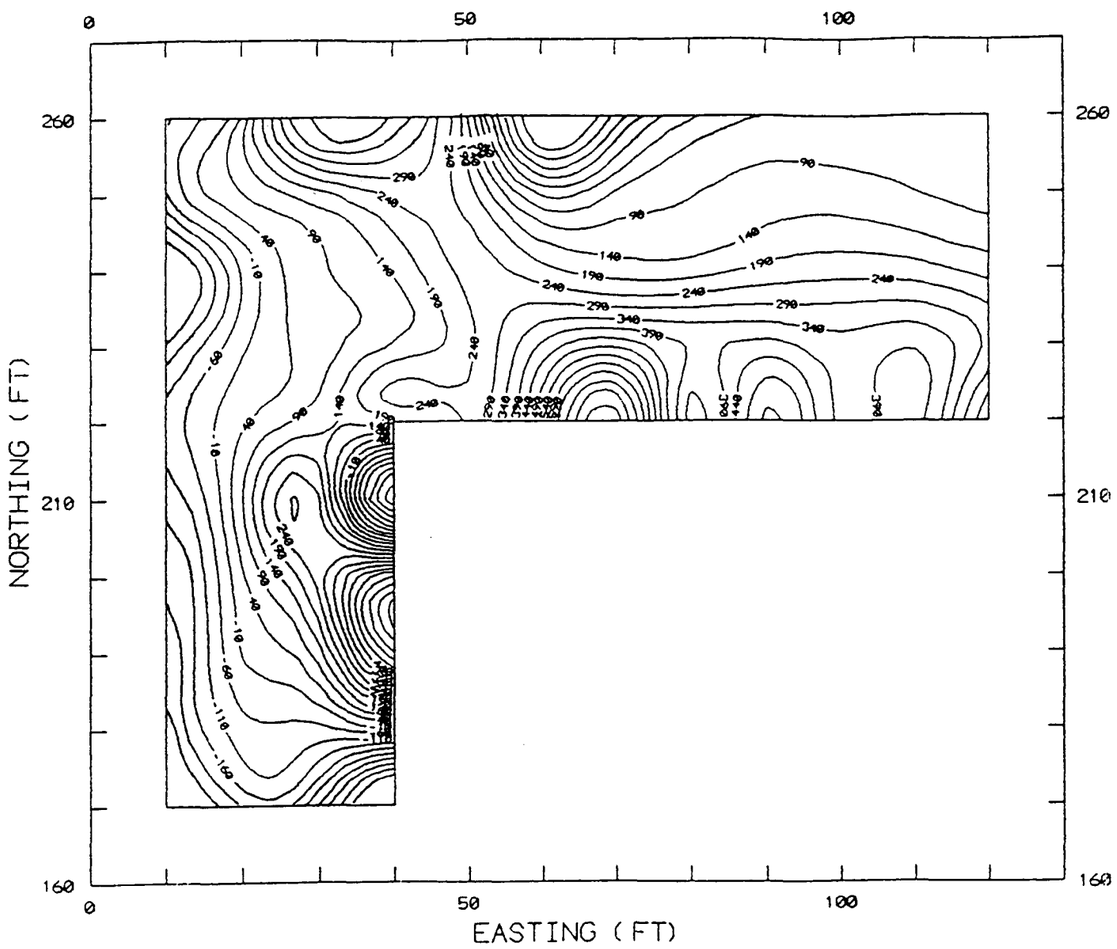
TERRAIN CONDUCTIVITY CONTOUR
CONTOUR INTERVAL = 20 mMhos/m

N

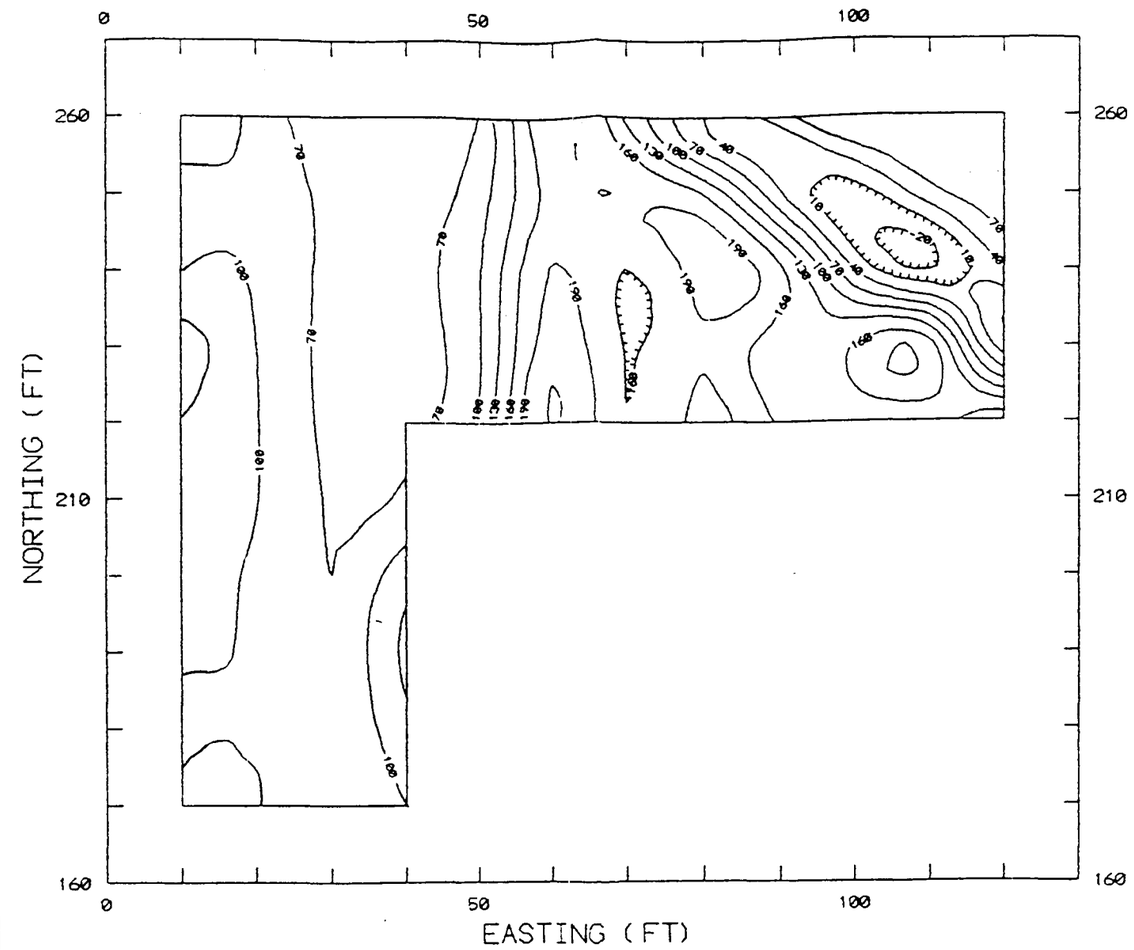
0 20 40
SCALE (FT)

| | | | |
|---|---|---|---|
| NORCAL GEOPHYSICAL CONSULTANTS | | | SITE 7C (B) VERTICAL MAGNETIC GRADIENT AND TERRAIN CONDUCTIVITY CONTOUR MAP GEOPHYSICAL INVESTIGATION ALAMEDA NAS ALAMEDA, CA |
| JOB: 94-157.15 | APPR: wcb | DATE: 10/94 | PLATE 5 |

## VERTICAL MAGNETIC GRADIENT CONTOUR MAP




## TERRAIN CONDUCTIVITY CONTOUR MAP




### LEGEND

VERTICAL MAGNETIC GRADIENT CONTOUR
CONTOUR INTERVAL = 50 g/m

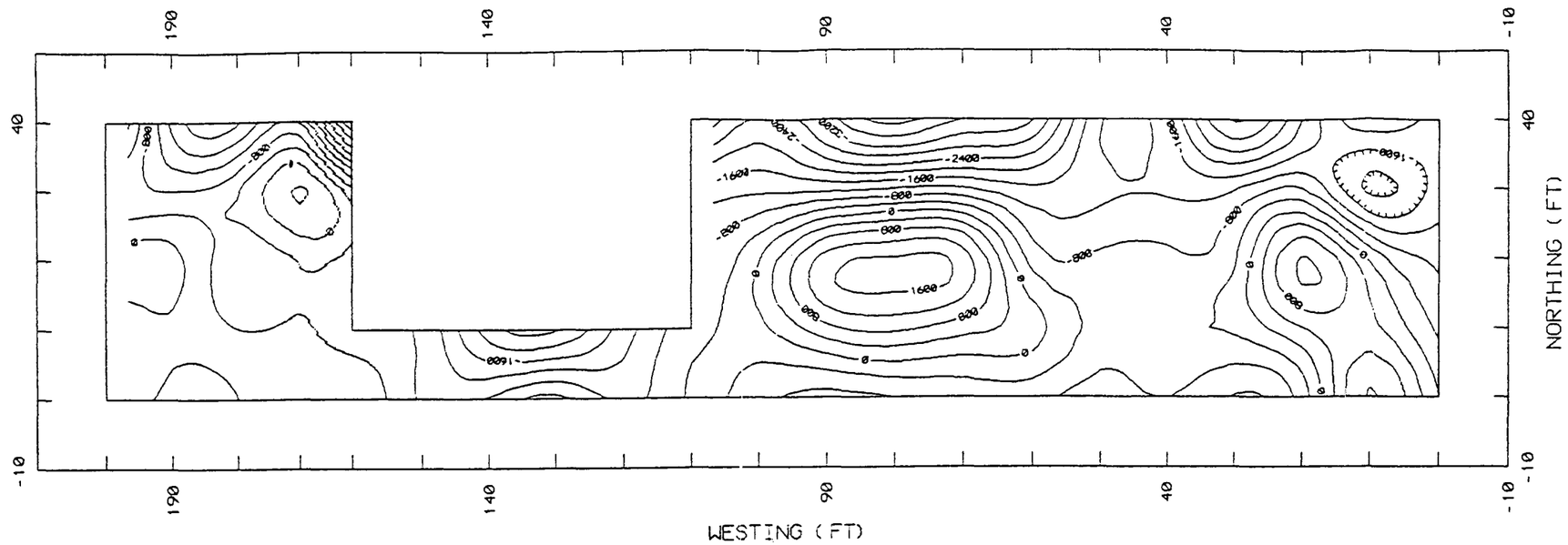
TERRAIN CONDUCTIVITY CONTOUR
CONTOUR INTERVAL = 30 mMhos/m

N

0 20 40
SCALE (FT)

| | | | |
|---|---|---|---|
| NORCAL GEOPHYSICAL CONSULTANTS | | | SITE 7C (C) VERTICAL MAGNETIC GRADIENT AND TERRAIN CONDUCTIVITY CONTOUR MAP |
| JOB: 94-157.15 | APPR: WEB | DATE: 10/94 | GEOPHYSICAL INVESTIGATION ALAMEDA NAS ALAMEDA, CA |

PLATE 6




## LEGEND

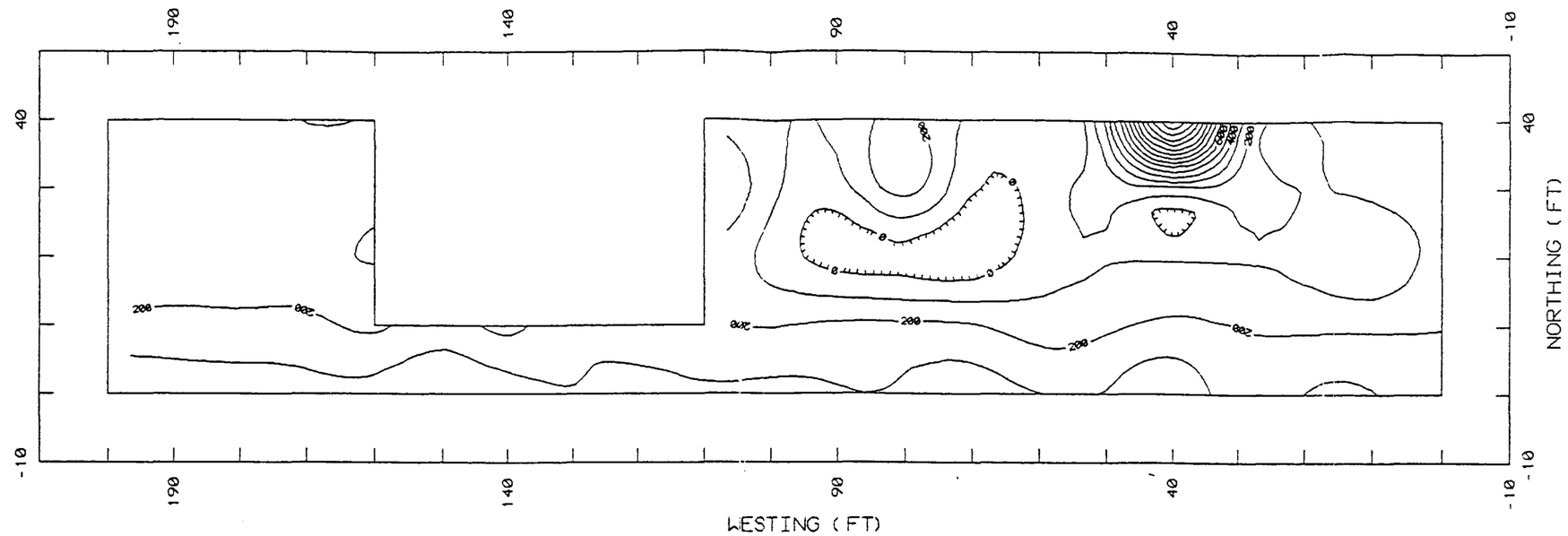
VERTICAL MAGNETIC GRADIENT CONTOUR
CONTOUR INTERVAL = 400 g/m

N

0 20 40
SCALE (FT)

| | | | |
|---|---|---|---|
| NORCAL GEOPHYSICAL CONSULTANTS | | | SITE 11 VERTICAL MAGNETIC GRADIENT CONTOUR MAP |
| JOB: 94-157.15 | APPR: WEB | DATE: 10/94 | GEOPHYSICAL INVESTIGATION ALAMEDA NAS ALAMEDA, CA |

PLATE 7




LEGEND

TERRAIN CONDUCTIVITY CONTOUR
CONTOUR INTERVAL = 100 mMhos/m

N

0 20 40
SCALE (FT)

| | | | |
|---|---|---|---|
| NORCAL GEOPHYSICAL CONSULTANTS | | | SITE 11 TERRAIN CONDUCTIVITY CONTOUR MAP |
| JOB: 94-157.15 | APPR: WEB | DATE: 10/94 | GEOPHYSICAL INVESTIGATION ALAMEDA NAS ALAMEDA, CA |

PLATE 8

# ATTACHMENT J

# GEOPROBE INVESTIGATION

## CONTENTS


| Section | | Page |
|---|---|---|
| 1.0 | INTRODUCTION AND PURPOSE | J-1 |
| 2.0 | GEOPROBE SAMPLING METHODOLOGY | J-2 |
| 2.1 | SOIL SAMPLING METHODOLOGY | J-2 |
| 2.2 | GROUNDWATER SAMPLING METHODOLOGY | J-3 |
| 3.0 | GEOPROBE SAMPLING ACTIVITIES AND RESULTS | J-4 |
| 3.1 | SITE 3 GEOPROBE INVESTIGATION | J-4 |
| 3.1.1 | Geoprobe Sampling Activities | J-4 |
| 3.1.2 | Site 3 Geoprobe Analytical Results | J-5 |
| 3.2 | SITE 5 GEOPROBE INVESTIGATION | J-5 |
| 3.2.1 | Site 5 Geoprobe Sampling Activities | J-5 |
| 3.2.2 | Site 5 Geoprobe Analytical Results | J-6 |
| 3.3 | SITE 13 GEOPROBE INVESTIGATION | J-6 |
| 3.3.1 | Site 13 Geoprobe Sampling Activities | J-7 |
| 3.3.2 | Site 13 Geoprobe Analytical Results | J-7 |
| 3.4 | SITE 16 GEOPROBE INVESTIGATION | J-7 |
| 3.4.1 | Site 16 Geoprobe Sampling Activities | J-7 |
| 3.4.2 | Site 16 Geoprobe Analytical Results | J-8 |

## 1.0 INTRODUCTION AND PURPOSE

PRC Environmental Management, Inc. (PRC), received Contract Task Order (CTO) 280 from the Department of the Navy, Western Division, Naval Facilities Engineering Command, (WESTDIV) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62474-88-D-5086. Under CTO 280, PRC performed soil and groundwater sampling using a Geoprobe and Geoprobe sampling techniques at the Naval Air Station (NAS) Alameda, California. The sampling was conducted at Installation Restoration (IR) Sites 3, 5, 13, and 16.

The Geoprobe sampling at NAS Alameda during CTO 280 was conducted in two separate phases (Phase A and Phase B). Phase A consisted of sampling at Sites 3, 5, 13, and 16 and was conducted August 9 through August 18, 1994. Phase B consisted of additional sampling at Site 3 and was conducted September 6 through September 12, 1994.

The objectives of the Geoprobe investigation were to assist in determining the nature and extent of soil and groundwater contamination and to guide placement of soil borings and monitoring wells to be completed under CTO 280. This attachment presents an introduction, the Geoprobe sampling methodology, sampling activities, and results for each site.

## 2.0 GEOPROBE SAMPLING METHODOLOGY

At each soil and/or groundwater Geoprobe boring, samples were collected at discrete intervals with a hydraulic powered probe-sampling machine (the Geoprobe). The Geoprobe is mounted in the bed of a pick-up truck or van and is capable of collecting soil and groundwater samples up to 80 feet below ground surface or until refusal from an impervious object. The Geoprobe was used to compliment the remedial investigation sampling activities, because it is able to access tight locations more easily than a drill rig, the methodology generates minimal investigation-derived waste (IDW), and, at shallow depths, a Geoprobe sampling team can collect between 10 to 20 samples per day.

### 2.1 SOIL SAMPLING METHODOLOGY

Soil sampling was conducted using both a 1.4-inch diameter by 2-foot long core barrel with a retractable piston drive point and a 2-inch diameter by 4-foot long core barrel continuous sampler.

The 1.4-inch diameter by 2-foot soil sampler is known as a large bore (LB) sampler. The sampler uses a retractable piston that allows the collection of soil samples at discrete sample depths. To collect a soil sample, the LB sampler is driven to the top of the sampling interval and a set screw that prevents the piston from moving is removed. The sampler is then driven 2-feet, to the bottom the sampling depth. As the sampler is driven into the soil, the soil is forced into a one-inch diameter acetate liner in the LB sampler while the soil displaces the piston in the sampler. The sampler is then removed from the boring, the sampler disassembled, and the soil sample removed.

The 2-inch diameter by 4-foot soil sampler is known as a macro core (MC) sampler. The MC sampler collects a continuous (up to 4 feet in length) , 1.5 inches in diameter, sample. In sandy soils, the MC sampler is mostly used where sampling depths are less than 4 feet. In clay and silty soils, the MC sampler is mostly used above the water table.

After the soil sample is collected, the sample liner containing the soil is then cut to specified length to represent a discrete depth. Teflon squares are placed on the ends of the sample liner and is subsequently capped with vinyl end caps. A label identifying the time, date, boring number, sample depth, and sample number is placed on the sample liner. The samples are placed in an ice chest, preserved at 4°C, and

shipped to the assigned laboratory for analysis. Soil cuttings are placed in a 55-gallon drum for storage prior to disposal. The soil samplers are decontaminated prior to reuse and the boring is backfilled with a Portland cement and bentonite slurry in a 95/5 percent mixture.

## 2.2 GROUNDWATER SAMPLING METHODOLOGY

Groundwater samples are collected by the Geoprobe using a 1-inch diameter by 2-foot long mill-slotted well point groundwater sampler. The sampler has 0.02-inch mill cut slots that are 1.7-inches long. The slotted pipe is driven to the desired sample depth and allowed to fill with groundwater. For volatile organic analysis, polyethylene tubing is placed inside the drill pipe and lowered into the groundwater sampler. The top of the tubing is bent, thereby forming a seal at the top of the tubing. The seal allows the groundwater to remain inside the tubing as it is removed from the drill rod. The water inside of the tubing is placed inside the sample container by straightening out the bend in the tubing. This is done to minimize the disturbance to the groundwater and possible release of volatile organic compounds from the groundwater. Containers for all other analytes are filled with the use of a peristaltic pump, that pulls the groundwater to the surface for dispensation into the sample containers. A label identifying the time, date, boring number, sample depth, and sample number is placed on the sample container. The samples are placed in an ice chest, preserved at 4°C, and shipped to the assigned laboratory for analysis. After the sample is collected, the drill rod is withdrawn from the borehole and decontaminated prior to reuse, and the boring is backfilled with a Portland cement and bentonite slurry in a 95/5 percent mixture.

# 3.0 GEOPROBE SAMPLING ACTIVITIES AND RESULTS

This section presents a site by site description of the Geoprobe investigation sampling activities and results.

## 3.1 SITE 3 GEOPROBE INVESTIGATION

The objective of sampling at this site was to define the extent of contamination by progressively expanding the area of investigation if the screening results indicated contamination. Sampling at Site 3 was completed during the Phase A and Phase B sampling activities. Soil samples were analyzed by a PRC field laboratory and water samples were screened with field test kits. Confirmation samples were collected at 20 percent of the sample locations to measure the validity of the screening results. These confirmation samples were sent to a California State-certified laboratory (referred to as the CLP laboratory) to perform contract laboratory program (CLP) analyses.

### 3.1.1 Geoprobe Sampling Activities

During the Phase A and Phase B investigation activities, soil samples were collected from 32 locations at Site 3 (Figure J-1). In general, at each boring location soil samples were collected at 1.0 and 3.0 feet below ground surface (bgs), and at the soil/groundwater interface. Soil samples were not collected at locations where a hydrocarbon odor was evident. In total, 108 soil samples were collected at Site 3; eighty-eight soil samples were submitted to a PRC field laboratory for TPH-purgeable (TPH-P), TPH-extractable (TPH-E), and BTEX analyses, and twenty soil samples were submitted as confirmation samples to the CLP laboratory for CLP VOC, TPH-P, and TPH-E analyses.

In addition, groundwater samples were collected from the 32 locations at Site 3 during the Phase A and Phase B investigation activities (Figure J-2). A total of thirty-two groundwater samples were collected, one from each borehole location, and analyzed using field screening test kits. Screening analytical results from the collected groundwater samples indicated that eight of the sample locations were outside the extent of contamination. These eight groundwater sampling locations were re-sampled, and the samples were submitted to the CLP laboratory for CLP VOC, TPH-P, and TPH-E analyses. Groundwater samples were not collected at locations where a hydrocarbon odor was evident in the soils.

### 3.1.2 Site 3 Geoprobe Analytical Results

This section presents the analytical results from the Phase A and B soil and groundwater investigations. Table J-1 presents a summary of the PRC field laboratory results for the screening soil samples. Table J-2 presents a summary of the CLP laboratory results for the confirmation soil samples. Table J-3 presents a summary of the CLP laboratory results for the confirmation groundwater samples.

**Soil**

- Twenty-three soil samples from the Phase A were screened and exhibited detections of TPH-P, TPH-E, benzene, toluene, ethylbenzene, and xylene.
- No aromatic hydrocarbons were detected above the reporting limit in any of the screened soil samples collected during the Phase B investigation activities.
- No TPH-P was detected in any of the screened soil samples collected during the Phase B investigation activities.
- TPH-E was detected in 10 screened soil samples collected during the Phase B investigation activities.
- The CLP laboratory results supported the screening results.

**Water**

- Low levels of TPH-P, TPH-E, benzene, toluene, ethylbenzene, and xylene were detected in five of the eight water samples sent to the CLP laboratory.

## 3.2 SITE 5 GEOPROBE INVESTIGATION

This section describes the sampling activities and analytical results of the Site 5 Geoprobe investigation. Sampling at Site 5 was completed during the Phase A investigation activities.

### 3.2.1 Site 5 Geoprobe Sampling Activities

Three soil samples were collected from one boring location at Site 5 (Figure J-3). The soil samples were

collected from the boring location at depths of 1.0 and 3.0 feet bgs, and at the soil/groundwater interface. The soil samples at Site 5 were submitted to the CLP laboratory for CLP VOC, CLP SVOC, CLP metals, TPH-P, and TPH-E analyses.

Groundwater samples were collected from three locations at Site 5, as shown on Figure J-3. All three groundwater samples were submitted to the CLP laboratory for CLP VOC, CLP SVOC, CLP metals, TPH-P, and TPH-E analyses.

### 3.2.2 Site 5 Geoprobe Analytical Results

Detected results from the soil and groundwater samples from the CLP laboratory are presented in Tables J-2 and J-3, respectively. A brief discussion of the results is presented below.

**Soil**

- VOCs, TPH-P, and TPH-E were not detected in the soil samples.
- Phenols were detected in the soil/water interface sample.
- No metals were detected at levels greater than 10 times the soluble threshold limit concentration (STLC).

**Water**

- Low levels of chlorinated hydrocarbons were detected two of the three water samples.

## 3.3 SITE 13 GEOPROBE INVESTIGATION

This section describes sampling activities and analytical results of the Site 13 Geoprobe investigation.

Field screening

methods for water were used at Site 13 to guide placement of CLP laboratory sampling locations. Sampling at Site 13 was completed during the Phase A investigation activities.

### 3.3.1 Site 13 Geoprobe Sampling Activities

No soil samples were collected at Site 13. Groundwater samples were collected at six locations at Site 13 (Figure J-4) and analyzed using field screening test kits. Screening analytical results from the collected groundwater samples indicated that two of the sample locations were outside the extent of contamination. These two groundwater sampling locations (Figure J-4) were re-sampled, and the samples were submitted to the CLP laboratory for CLP VOC, TPH-P, and TPH-E analyses.

### 3.3.2 Site 13 Geoprobe Analytical Results

No target analytes were detected in any of the water samples submitted for analyses.

## 3.4 SITE 16 GEOPROBE INVESTIGATION

This section describes the sampling activities and results of the Site 16 Geoprobe investigation. Sampling at Site 16 was completed during the Phase A investigation activities.

### 3.4.1 Site 16 Geoprobe Sampling Activities

Soil samples were collected from three boring locations at Site 16 (Figure J-5). Soil samples were collected at a depth of 6 feet bgs. Soil samples were submitted to the CLP laboratory for CLP VOC, CLP SVOC, CLP Pesticide/PCB, CLP metals, cyanide, and general chemistry analyses.

Groundwater samples were collected at three locations at Site 16 (Figure J-5), and submitted to the CLP laboratory for CLP VOC, CLP SVOC, CLP Pesticide/PCB, CLP metals, cyanide, and general chemistry analyses.

### 3.4.2 Site 16 Geoprobe Analytical Results

Results from analyses conducted at the CLP laboratory for soil and groundwater samples are presented in Tables J-2 and J-3 respectively. A brief discussion of the results is presented below.

**Soil**

- VOCs, pesticides/PCBs, and cyanide were not detected in the soil samples submitted for analyses.
- Phenol was detected in one of the three soil samples collected.
- No metals were detected at concentrations greater than 10 times the STLC.

**Water**

- 1,2-Dichloroethene was detected in one of the three groundwater samples.

**TABLE J-1**
**SUMMARY OF SOIL SCREENING RESULTS**
**PRC FIELD LABORATORY**
**SOIL (mg/kg)**
**(Page 1 of 4)**

| Location | Depth | TPH-P | TPH-E | Benzene | Toluene | Ethylbenzene | Xylene |
|---|---|---|---|---|---|---|---|
| GPS03-001-1.5 | 0.5'- 1.5' | 15.22 | <51 | <0.05 | 3.02 | <0.05 | <0.16 |
| GPS03-002-1.0 | 0.5' - 1.0' | <9 | <60 | <0.05 | <0.05 | <0.05 | <0.14 |
| GPS03-003-1.5 | 0.5' - 1.5' | <10 | <55 | <0.05 | <0.05 | <0.05 | <0.15 |
| GPS03-003-3.5 | 2.5' - 3.5' | <9 | <49 | <0.05 | <0.05 | <0.05 | <0.13 |
| GPS03-003-6.5 | 5.5' - 6.5' | 2936 | 239.9 | <3.00 | 236.65 | 30.91 | 49.61 |
| GPS03-003-11.0 | 10.0' - 11.0' | <15 | <68 | <0.07 | <0.07 | <0.07 | <0.22 |
| GPS03-004-1.5 | 0.5' - 1.5' | <10 | <49 | <0.05 | <0.05 | <0.05 | <0.15 |
| GPS03-004-3.5 | 2.5' - 3.5' | <9 | <54 | <0.04 | <0.04 | <0.04 | <0.13 |
| GPS03-004-6.5 | 5.5' - 6.5' | 26.85 | <54 | 0.10 | 3.52 | 0.30 | 0.90 |
| GPS03-005-1.5 | 0.5' - 1.5' | <10 | <45 | <0.05 | <0.05 | <0.05 | <0.15 |
| GPS03-005-3.5 | 2.5' - 3.5' | 23.62 | <51 | <0.05 | 0.94 | <0.05 | 0.23 |
| GPS03-006-1.5 | 0.5' - 1.5' | <10 | <54 | <0.05 | <0.05 | <0.05 | <0.16 |
| GPS03-006-4.0 | 3.5' - 4.0' | <10 | <55 | <0.05 | <0.05 | <0.05 | <0.14 |
| GPS03-007-1.5 | .5' - 1.5' | <11 | <53 | <0.05 | 0.22 | <0.05 | <0.16 |
| GPS03-007-3.5 | 3.5' - 4.0' | <11 | <50 | <0.05 | <0.05 | <0.05 | <0.16 |
| GPS03-007-5.5 | 5.5' - 6.0' | <12 | <61 | <0.06 | <0.06 | <0.06 | <0.18 |
| GPS03-008-1.0 | 0.5' - 1.0' | 8.72 | 30.5 | <0.05 | 0.11 | <0.05 | <0.15 |
| GPS03-008-3.0 | 2.5' - 3.0' | 37.95 | <61 | <0.06 | 6.39 | 0.92 | 0.26 |
| GPS03-008-5.5 | 5.0' - 5.5' | 618.02 | 90.1 | <0.22 | 139.73 | 14.35 | 4.80 |
| GPS03-009-1.0 | 0.5' - 1.0' | 11.81 | 231.2 | <0.04 | 3.56 | 0.08 | <0.11 |
| GPS03-009-3.0 | 2.5' - 3.0' | 6.0 | <49 | <0.05 | <0.05 | <0.05 | <0.14 |
| GPS03-009-5.0 | 4.0' - 5.0' | 9176.22 | 546.3 | <2.45 | 1219.68 | 12.75 | 35.39 |
| GPS03-010-1.0 | 0.5' - 1.0' | <10 | 252.3 | <0.05 | 1.05 | <0.05 | <0.14 |
| GPS03-010-3.0 | 2.5' - 3.0' | <10 | <44 | <0.05 | <0.05 | <0.05 | <0.15 |
| GPS03-010-5.5 | 5.0' - 5.5' | <11 | <46 | <0.05 | 0.08 | <0.05 | <0.16 |
| GPS03-011-1.0 | 0.5' - 1.0' | 45.46 | 134.0 | <0.10 | 10.29 | 0.59 | 0.49 |

**TABLE J-1**
**SUMMARY OF SOIL SCREENING RESULTS**
**PRC FIELD LABORATORY**
**SOIL (mg/kg)**
**(Page 2 of 4)**

| Location | Depth | TPH-P | TPH-E | Benzene | Toluene | Ethylbenzene | Xylene |
|---|---|---|---|---|---|---|---|
| GPS03-011-3.0 | 2.5' - 3.0' | 683.98 | 501.5 | <0.09 | 268.56 | 27.50 | 1.89 |
| GPS03-011-6.0 | 5.5' - 6.0' | <11 | 266.1 | <0.06 | 0.16 | 0.03 | <0.17 |
| GPS03-012-1.0 | 0.5' - 1.0' | <10 | <52 | <0.05 | 0.03 | <0.05 | <0.15 |
| GPS03-012-2.0 | 1.5' - 2.0' | <10 | <52 | <0.05 | 0.04 | <0.05 | <0.15 |
| GPS03-013-1.0 | 0.5' - 1.0' | <11 | 307.5 | <0.05 | 0.11 | <0.05 | <0.16 |
| GPS03-013-3.0 | 2.5' - 3.0' | <9 | <49 | <0.05 | <0.05 | <0.05 | <0.14 |
| GPS03-013-6.0 | 5.0' - 6.0' | <10 | <59 | <0.05 | <0.05 | <0.05 | <0.16 |
| GPS03-014-1.0 | 0.5' - 1.0' | 39.58 | 220.8 | <0.09 | 0.33 | 0.05 | <0.28 |
| GPS03-014-3.0 | 2.5' - 3.0' | <10 | <53 | <0.05 | 0.06 | <0.05 | <0.15 |
| GPS03-014-5.0 | 4.5' - 5.0' | <8 | <48 | <0.04 | <0.04 | <0.04 | <0.12 |
| GPS03-016-1.0 | 0.5' - 1.0' | 37.98 | 1126.6 | <0.05 | 5.14 | 0.07 | 0.18 |
| GPS03-016-3.0 | 2.5' - 3.0' | <10 | <47 | <0.05 | 0.08 | <0.05 | <0.14 |
| GPS03-016-5.5 | 4.5' - 5.5' | 6.21 | 59.1 | <0.05 | 0.96 | 0.04 | 0.18 |
| GPS03-018-1.0 | 0.5' - 1.0' | <10 | <55 | <0.05 | <0.05 | <0.05 | <0.15 |
| GPS03-018-2.5 | 2.0' - 2.5' | <7 | <42 | <0.03 | <0.03 | <0.03 | <0.10 |
| GPS03-018-5.5 | 4.5' - 5.5' | 127.06 | 155.9 | <0.05 | 256.58 | 0.75 | 0.74 |
| GPS03-019-1.0 | 0.5' - 1.0' | <10 | <52 | <0.05 | <0.05 | <0.05 | <0.16 |
| GPS03-019-3.0 | 2.5' - 3.0' | <10 | <50 | <0.05 | <0.05 | <0.05 | <0.15 |
| GPS03-019-5.5 | 5.0' - 5.5' | <11 | <58 | <0.05 | 0.03 | <0.05 | <0.16 |
| GPS03-021-1.5 | 1.0' - 1.5' | <11 | 466.8 | <0.05 | <0.05 | <0.05 | 0.14 |
| GPS03-021-3.0 | 2.5' - 3.0' | <12 | <59 | <0.06 | <0.06 | <0.06 | <0.17 |
| GPS03-022-1.0 | 0.5' - 1.0' | <9 | <52 | <0.05 | <0.05 | <0.05 | <0.14 |
| GPS03-022-3.0 | 2.5' - 3.0' | <11 | <61 | <0.06 | <0.06 | <0.06 | <0.16 |
| GPS03-022-6.5 | 5.5' - 6.5' | <18 | 81.7 | <0.09 | <0.09 | <0.09 | <0.27 |
| GPS03-023-1.0 | 0.5' - 1.0' | <10 | 28.6 | <0.05 | <0.05 | <0.05 | <0.16 |
| GPS03-023-3.0 | 2.5' - 3.0' | <10 | <46 | <0.05 | <0.05 | <0.05 | <0.14 |

**TABLE J-1**
**SUMMARY OF SOIL SCREENING RESULTS**
**PRC FIELD LABORATORY**
**SOIL (mg/kg)**
**(Page 3 of 4)**

| Location | Depth | TPH-P | TPH-E | Benzene | Toluene | Ethylbenzene | Xylene |
|---|---|---|---|---|---|---|---|
| GPS03-023-6.0 | 5.0' - 6.0' | <11 | <47 | <0.05 | <0.05 | <0.05 | <0.16 |
| GPS03-024-1.0 | 0.5' - 1.0' | <9 | <47 | <0.05 | <0.05 | <0.05 | <0.14 |
| GPS03-024-3.0 | 2.5' - 3.0' | <9 | <50 | <0.04 | <0.04 | <0.04 | <0.13 |
| GPS03-024-6.0 | 5.0' - 6.0' | <10 | <55 | <0.05 | <0.05 | <0.05 | <0.16 |
| 03GPS026-1.2 | 0.7' - 1.2' | <19 | 63.6 | <0.05 | <0.05 | <0.05 | <0.15 |
| 03GPS026-3.0 | 2.5' - 3.0' | <20 | 246.6 | <0.05 | <0.05 | <0.05 | <0.15 |
| 03GPS026-7.0 | 6.0' - 7.0' | <22 | 94 | <0.05 | 0.03 | <0.05 | 0.14 |
| 03GPS027-1.5 | 1.0' - 1.5' | <17 | 45.7 | <0.04 | <0.04 | <0.04 | <0.13 |
| 03GPS027-3.0 | 2.5' - 3.0' | <25 | 288.6 | <0.06 | <0.06 | <0.06 | <0.19 |
| 03GPS027-5.5 | 5.0' - 5.5' | <34 | <86 | <0.08 | <0.08 | <0.08 | <0.25 |
| 03GPS028-1.2 | 0.7' - 1.2' | <41 | 566.8 | <0.05 | <0.05 | <0.05 | <0.15 |
| 03GPS028-3.0 | 2.5' - 3.0' | <9 | <54 | <0.05 | <0.05 | <0.05 | <0.14 |
| 03GPS028-5.5 | 5.0' - 5.5' | <12 | 71.5 | <0.06 | <0.06 | <0.06 | <0.18 |
| 03GPS029-1.0 | 0.5' - 1.0' | <19 | 237.8 | <0.05 | <0.05 | <0.05 | <0.14 |
| 03GPS030-1.2 | 0.7' - 1.2' | <9 | <50 | <0.05 | <0.05 | <0.05 | <0.14 |
| 03GPS030-3.0 | 2.5' - 3.0' | <10 | <50 | <0.05 | <0.05 | <0.05 | <0.15 |
| 03GPS030-7.0 | 6.5' - 7.0' | <11 | <54 | <0.06 | <0.06 | <0.06 | <0.17 |
| 03GPS031-3.0 | 2.5' - 3.0' | <9 | <49 | <0.05 | <0.05 | <0.05 | <0.13 |
| 03GPS031-4.0 | 3.5' - 4.0' | <10 | <46 | <0.05 | <0.05 | <0.05 | <0.15 |
| 03GPS031-7.0 | 6.5' - 7.0' | <16 | 405.1 | <0.08 | <0.08 | <0.08 | <0.23 |
| 03GPS032-1.2 | 0.7' - 1.2' | <10 | <50 | <0.05 | <0.05 | <0.05 | <0.15 |
| 03GPS032-3.0 | 2.5' - 3.0' | <8 | <54 | <0.04 | <0.04 | <0.04 | <0.12 |
| 03GPS032-5.5 | 5.0' - 5.5' | <11 | <56 | <0.05 | <0.05 | <0.05 | <0.16 |
| 03GPS033-3.0 | 2.5' - 3.0' | <9 | <42 | <0.05 | <0.05 | <0.05 | <0.14 |
| 03GPS033-5.5 | 5.0' - 5.5' | <10 | <51 | <0.05 | <0.05 | <0.05 | <0.15 |
| 03GPS034-1.5 | 1.0' - 1.5' | <9 | <51 | <0.05 | <0.05 | <0.05 | <0.14 |

**TABLE J-1**
**SUMMARY OF SOIL SCREENING RESULTS**
**PRC FIELD LABORATORY**
**SOIL (mg/kg)**
**(Page 4 of 4)**

| Location | Depth | TPH-P | TPH-E | Benzene | Toluene | Ethylbenzene | Xylene |
|---|---|---|---|---|---|---|---|
| 03GPS034-3.0 | 2.5' - 3.0' | <9 | <51 | <0.05 | <0.05 | <0.05 | <0.14 |
| 03GPS034-5.5 | 5.0' - 5.5' | <14 | <74 | <0.07 | 0.04 | <0.07 | <0.21 |
| 03GPS035-1.0 | 0.5' - 1.0' | <9 | 150.7 | <0.05 | <0.05 | <0.05 | <0.14 |
| 03GPS035-3.0 | 2.5' - 3.0' | <10 | <49 | <0.05 | <0.05 | <0.05 | <0.15 |
| 03GPS035-5.5 | 5.0' - 5.5' | <11 | <53 | <0.05 | <0.05 | <0.05 | <0.16 |
| 03GPS037-1.0 | 0.5' - 1.0' | <10 | <51 | <0.05 | <0.05 | <0.05 | <0.16 |
| 03GPS037-3.0 | 2.5' - 3.0' | <10 | <45 | <0.05 | <0.05 | <0.05 | <0.15 |
| 03GPS037-6.0 | 5.5' - 6.0' | <12 | <60 | <0.06 | <0.06 | <0.06 | <0.18 |
| 03GPS038-3.0 | 2.5' - 3.0' | <9 | <52 | <0.05 | <0.05 | <0.05 | <0.14 |
| 03GPS038-5.0 | 4.5' - 5.0' | <17 | <82 | <0.08 | <0.08 | <0.08 | nn<0.25 |

TABLE J-2

SUMMARY OF SOIL CHEMICAL ANALYSES
GEOPROBE INVESTIGATION
CTO-280
ALAMEDA NAVAL AIR STATION

| Boring No. | Sample No. | Sample Depth (ft) | Volatile Organic Compounds (ug/kg) | Semivolatile Organic Compounds (ug/kg) | Pesticides/PCBs (ug/kg) | Total Petroleum Hydrocarbons Extractable (ug/kg) | Total Petroleum Hydrocabons Purgeable (ug/kg) | Metals (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| **SITE 03** | | | | | | | | |
| 03GB015 | GPS03-015-1.0 | 1.0 | ND | NA | NA | TPHC as Motor Oil: 49000(J)h | ND | NA |
| 03GB015 | GPS03-015-3.0 | 3.0 | ND | NA | NA | ND | ND | NA |
| 03GB015 | GPS03-015-5.0 | 5.0 | ND | NA | NA | TPHC as Motor Oil: 30000(J)h | ND | NA |
| 03GB017 | GPS03-017-1.0 | 1.0 | ND | NA | NA | TPHC as Motor Oil: 1660000(J)h | TPHC as Gasoline: 5300(J)h | NA |
| 03GB017 | GPS03-017-3.0 | 3.0 | ND | NA | NA | TPHC as Motor Oil: 29000(J)h | TPHC as Gasoline: 630(J)h | NA |
| 03GB017 | GPS03-017-5.5 | 5.5 | Ethylbenzene: 130<br>Toluene: 360<br>Xylene(Total): 500 | NA | NA | TPHC as Motor Oil: 86000(J)h | TPHC as Gasoline: 950000(J)h | NA |
| 03GB020 | GPS03-020-1.0 | 1.0 | ND | NA | NA | TPHC as Motor Oil: 220000(J)h | ND | NA |
| 03GB020 | GPS03-020-3.0 | 3.0 | ND | NA | NA | TPHC as Motor Oil: 30000(J)h | ND | NA |
| 03GB020 | GPS03-020-5.5 | 5.5 | ND | NA | NA | TPHC as Motor Oil: 48000(J)h | ND | NA |
| 03GB025 | GPS03-025-1.0 | 1.0 | ND | NA | NA | ND | ND | NA |
| 03GB025 | GPS03-025-3.0 | 3.0 | ND | NA | NA | ND | ND | NA |
| 03GB025 | GPS03-025-6.0 | 6.0 | ND | NA | NA | ND | ND | NA |
| 03GB036 | 03GPS036-1.5 | 1.5 | ND | NA | NA | TPHC as Motor Oil: 38000J(h) | ND | NA |
| 03GB036 | 03GPS036-3.0 | 3.0 | ND | NA | NA | ND | ND | NA |
| 03GB039 | 03GPS039-1.2 | 1.2 | ND | NA | NA | TPHC as Motor Oil: 120000J(h) | ND | NA |
| 03GB039 | 03GPS039-3.0 | 3.0 | ND | NA | NA | TPHC as Motor Oil: 460000J(h) | ND | NA |
| 03GB039 | 03GPS039-6.5 | 6.5 | ND | NA | NA | TPHC as Motor Oil: 180000J(h) | ND | NA |
| 03GB040 | 03GPS040-1.2 | 1.2 | ND | NA | NA | TPHC as Motor Oil: 29000J(h) | ND | NA |
| 03GB040 | 03GPS040-3.0 | 3.0 | ND | NA | NA | ND | ND | NA |
| 03GB040 | 03GPS040-5.5 | 5.5 | ND | NA | NA | ND | ND | NA |

TABLE J-2 (cont)

SUMMARY OF SOIL CHEMICAL ANALYSES
GEOPROBE INVESTIGATION
CTO-280
ALAMEDA NAVAL AIR STATION

| Boring No. | Sample No. | Sample Depth (ft) | Volatile Organic Compounds (ug/kg) | Semivolatile Organic Compounds (ug/kg) | Pesticides/PCBs (ug/kg) | Total Petroleum Hydrocarbons Extractable (ug/kg) | Total Petroleum Hydrocabons Purgeable (ug/kg) | Metals (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| **SITE 05** | | | | | | | | |
| 05GB003 | GPS05-003-1.0 | 1.0 | ND | ND | NA | ND | ND | Aluminum: 13200<br>Calcium: 4920<br>Chromium: 2.7<br>Cobalt: 13.6<br>Iron: 30000<br>Lead: 2.0<br>Magnesium: 9700<br>Manganese: 527<br>Vanadium: 74.9<br>Zinc: 30.5 |
| 05GB003 | GPS05-003-3.0 | 3.0 | ND | ND | NA | ND | ND | Aluminum: 4120<br>Calcium: 2200<br>Chromium: 29.1<br>Iron: 7910<br>Lead: 1.8<br>Magnesium: 2190<br>Manganese: 108<br>Nickel: 25.2<br>Vanadium: 18.7<br>Zinc: 19.8 |
| 05GB003 | GPS05-003-5.5 | 5.5 | ND | Phenol: 3800 | NA | ND | ND | Aluminum: 4710<br>Calcium: 2030<br>Chromium: 27.2<br>Iron: 8780<br>Lead: 1.9<br>Magnesium: 2550<br>Manganese: 91.5<br>Nickel: 29.3<br>Vanadium: 19.3<br>Zinc: 23.4 |

TABLE J-2 (cont)

SUMMARY OF SOIL CHEMICAL ANALYSES
GEOPROBE INVESTIGATION
CTO-280
ALAMEDA NAVAL AIR STATION

| Boring No. | Sample No. | Sample Depth (ft) | Volatile Organic Compounds (ug/kg) | Semivolatile Organic Compounds (ug/kg) | Pesticides/PCBs (ug/kg) | Total Petroleum Hydrocarbons Extractable (ug/kg) | Total Petroleum Hydrocabons Purgeable (ug/kg) | Metals (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| **SITE 16** | | | | | | | | |
| 16GB001 | GPS16-001-6.0 | 6.0 | ND | Phenol: 580 | ND | NA | NA | Aluminum: 3780<br>Calcium: 2150<br>Chromium: 26.2<br>Iron: 6510<br>Lead: 2.0<br>Magnesium: 2050<br>Manganese: 87.1<br>Nickel: 24.2<br>Vanadium: 15.9<br>Zinc: 17.6 |
| 16GB002 | GPS16-002-6.0 | 6.0 | ND | ND | ND | NA | NA | Aluminum: 3570<br>Calcium: 1900<br>Chromium: 21.1<br>Iron: 6570<br>Lead: 1.5<br>Magnesium: 2110<br>Manganese: 88.0<br>Nickel: 23.8<br>Vanadium: 15.5<br>Zinc: 17.6 |
| 16GB003 | GPS03-003-6.0 | 6.0 | ND | ND | ND | NA | NA | Aluminum: 4340<br>Calcium: 2300<br>Chromium: 28.1<br>Iron: 7600<br>Lead: 2.2<br>Magnesium: 2270<br>Manganese: 92.3<br>Nickel: 25.8<br>Vanadium: 20.0<br>Zinc: 23.1 |

Analytical Data Comments

| | |
|---|---|
| ug/L | = microgram per liter |
| mg/L | = milligram per liter |
| ug/kg | = microgram per kilogram |
| mg/kg | = milligram per kilogram |
| ND | = Analytes reported below detection limits |
| NA | = Not Analyzed |
| PCBs | = Polychlorinated Biphenyls |

Data Qualifiers And Comment Codes

| | |
|---|---|
| J | = Estimated concentration |
| (a) | = Surrogate recovery problem |
| (b) | = Blank contamination problem |
| (c) | = Matrix spike recovery problem |
| (d) | = Duplicate precision problem |
| (e) | = Internal standard problem |
| (f) | = Calibration problem |
| (g) | = Quantification below reporting limit |
| (h) | = Other problem, refer to data validation report |

TABLE J-3

SUMMARY OF WATER CHEMICAL ANALYSES
GEOPROBE INVESTIGATION
CTO-280
ALAMEDA NAVAL AIR STATION

| Boring No. | Sample No. | Water Bearing Zone | Volatile Organic Compounds (ug/L) | Semivolatile Organic Compounds (ug/L) | Pesticides/PCBs (ug/L) | Total Petroleum Hydrocarbons Extractable (ug/L) | Total Petroleum Hydrocabons Purgeable (ug/L) | Metals and Inoranic Chemicals (ug/L) |
|---|---|---|---|---|---|---|---|---|
| **SITE 03** | | | | | | | | |
| 03GB002 | GPW03-002 | 1 | Carbon Disulfide: 2<br>Trichloroethene: 1 | NA | NA | ND | TPHC as Gasoline 450J(h) | NA |
| 03GB015 | GPW03-150 | 1 | ND | NA | NA | TPHC as Motor Oil: 990J(h) | TPHC as Gasoline 210J(h) | NA |
| 03GB017 | GPW03-170 | 1 | Benzene: 6<br>Ethylbenzene: 3<br>Toluene: 21<br>Xylene(total): 13 | NA | NA | TPHC as Motor Oil: 730J(h) | TPHC as Gasoline 260J(h) | NA |
| 03GB024 | GPW03-240 | 1 | Xylene(total): 2 | NA | NA | TPHC as Motor Oil: 860J(h) | ND | NA |
| 03GB032 | 03GPW032 | 1 | ND | NA | NA | TPHC as Motor Oil: 600J(h) | ND | NA |
| 03GB036 | 03GPW036 | 1 | Carbon Disulfide: 1 | NA | NA | TPHC as Motor Oil: 610J(h) | ND | NA |
| 03GB038 | 03GPW038 | 1 | Xylene(total): 2 | NA | NA | TPHC as Motor Oil: 1000J(h) | ND | NA |
| 03GB039 | 03GPW039 | 1 | ND | NA | NA | ND | ND | NA |

TABLE J-3 (cont)

SUMMARY OF WATER CHEMICAL ANALYSES
GEOPROBE INVESTIGATION
CTO-280
ALAMEDA NAVAL AIR STATION

| Boring No. | Sample No. | Water Bearing Zone | Volatile Organic Compounds (ug/L) | Semivolatile Organic Compounds (ug/L) | Pesticides/PCBs (ug/L) | Total Petroleum Hydrocarbons Extractable (ug/L) | Total Petroleum Hydrocabons Purgeable (ug/L) | Metals and Inoranic Chemicals (ug/L) |
|---|---|---|---|---|---|---|---|---|
| **SITE 05** | | | | | | | | |
| 05GB001 | GPW05-001 | 1 | ND | ND | NA | TPHC as JP5: 230J(h) | TPHC as Gasoline 110J(h) | Arsenic 20.7<br>Calcium 5940<br>Iron 105<br>Manganese 65.4<br>Sodium 6550 |
| 05GB002 | GPW05-002 | 1 | 1,1-Dichloroethane: 3 | ND | NA | ND | ND | Calcium 7440<br>Manganese 76.8<br>Sodium 27500 |
| 05GB002 Duplicate | GPW05-003 Duplicate of 002 | 1 | 1,1-Dichloroethane: 4 | ND | NA | ND | ND | Calcium 7560<br>Manganese 77.6<br>Sodium 27500 |
| 05GB003 | GPW05-005 | 1 | 1,1-Dichloroethane: 12 | ND | NA | ND | TPHC as Gasoline 70J(h) | Aluminum 501<br>Arsenic 79.0<br>Calcium 13900<br>Iron 1930<br>Magnesium 5100<br>Manganese 61.2<br>Potassium 7120<br>Sodium 71800<br>Cyanide 3.52 mg/L<br>Chloride 5.1 mg/L<br>Fluoride 1.6 mg/L<br>Sulfate 2.6 mg/L<br>Alkalinity 161 mg/L<br>TDS 318 mg/L<br>TOC 2.8 mg/L<br>Hardness 50.0 mg/L<br>pH 8.3 |
| **SITE 13** | | | | | | | | |
| 13GB001 | GPW13-100 | 1 | ND | NA | NA | ND | ND | NA |
| 13GB005 | GPW13-500 | 1 | ND | NA | NA | ND | ND | NA |

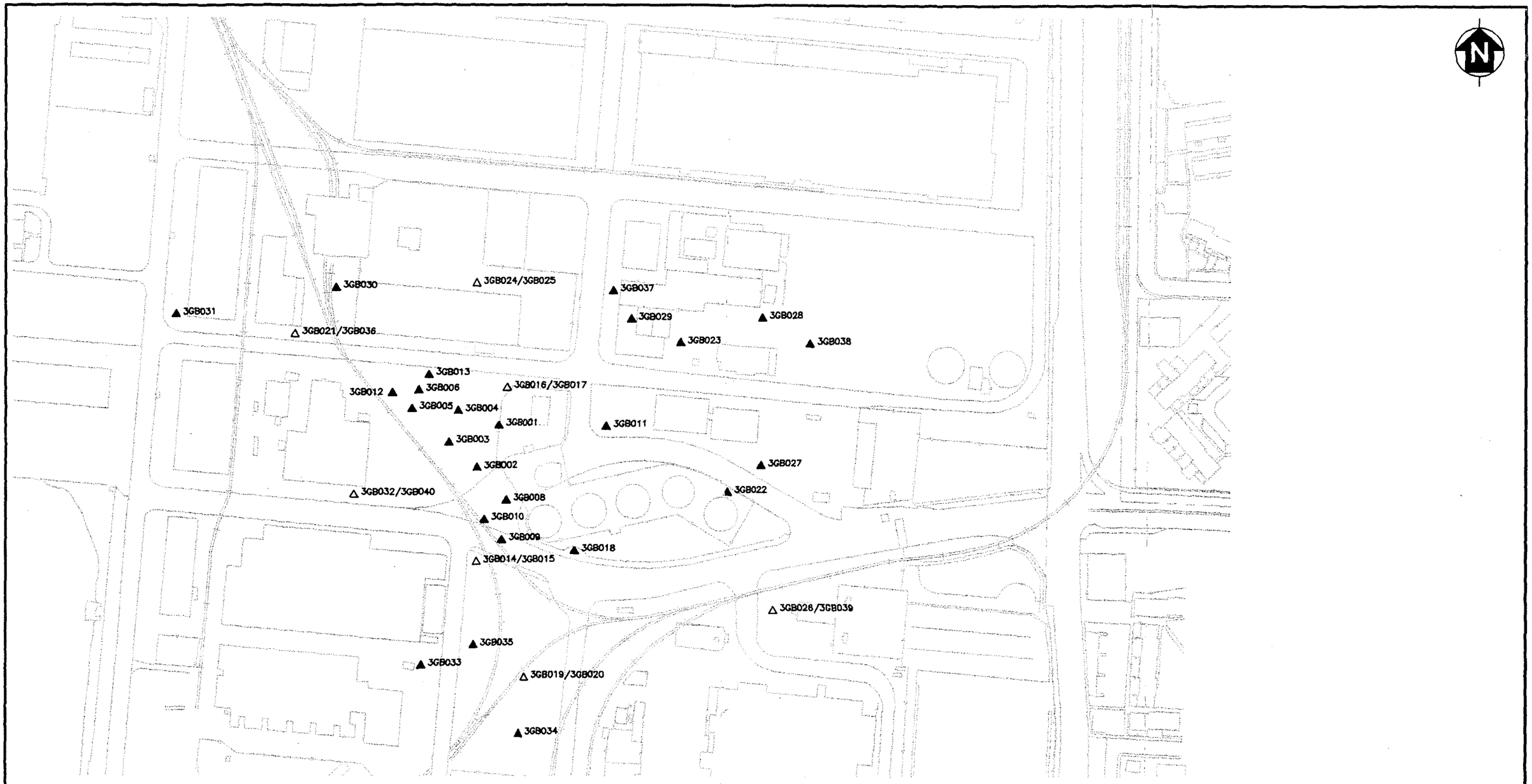
TABL( :ont)

SUMMARY OF WATER CHEMICAL ANALYSES
GEOPROBE INVESTIGATION
CTO-280
ALAMEDA NAVAL AIR STATION

| Boring No. | Sample No. | Water Bearing Zone | Volatile Organic Compounds (ug/L) | Semivolatile Organic Compounds (ug/L) | Pesticides/PCBs (ug/L) | Total Petroleum Hydrocarbons Extractable (ug/L) | Total Petroleum Hydrocabons Purgeable (ug/L) | Metals and Inoranic Chemicals (ug/L) |
|---|---|---|---|---|---|---|---|---|
| **SITE 16** | | | | | | | | |
| 16GB001 | GPW16-001 | 1 | Carbon Disulfide 1 | ND | ND | NA | NA | Calcium 9750<br>Manganese 21.6<br>Potassium 13900<br>Sodium 47100<br>Chloride 6.9 mg/L<br>Fluoride 0.13 mg/L<br>Sulfate 18.2 mg/L<br>Alkalinity 106 mg/L<br>TDS 202 mg/L<br>pH 8.4 |
| 16GB001 Duplicate | GPW16-002 Duplicate of 001 | 1 | Carbon Disulfide 1 | ND | ND | NA | NA | Calcium 9490<br>Manganese 20.9<br>Potassium 13500<br>Sodium 46200<br>Chloride 6.8 mg/L<br>Fluoride 0.13 mg/L<br>Sulfate 18.0 mg/L<br>Alkalinity 105 mg/L<br>TDS 208 mg/L<br>pH 8.3 |
| 16GB002 | GPW16-003 | 1 | 1,2-Dichloroethene 1 | ND | ND | NA | NA | Calcium 9920<br>Manganese 24.2<br>Potassium 15000<br>Sodium 48400<br>Zinc 29.6<br>Chloride 8.5 mg/L<br>Sulfate 18.2 mg/L<br>Alkalinity 107 mg/L<br>TDS 242 mg/L<br>pH 8.3 |
| 16GB003 | GPW16-004 | 1 | ND | ND | ND | NA | NA | Calcium 11500<br>Magnesium 5710<br>Potassium 7740<br>Sodium 7090<br>Chloride 5.0 mg/L<br>Sulfate 15.1 mg/L<br>Alkalinity 52.4 mg/L<br>TDS 126 mg/L<br>pH 8.2 |

| | | |
|---|---|---|
| Analytical Data Comments | µL | = microgram per liter |
| | mg/L | = milligram per liter |
| | ug/kg | = microgram per kilogram |
| | mg/kg | = milligram per kilogram |
| | ND | = Analytes reported below detection limits |
| | NA | = Not Analyzed |
| | PCBs | = Polychlorinated Biphenyls |

| | | |
|---|---|---|
| Data Qualifi And Comment Codes | J | = Estimated concentration |
| | (a) | = Surrogate recovery problem |
| | (b) | = Blank contamination problem |
| | (c) | = Matrix spike recovery problem |
| | (d) | = Duplicate precision problem |
| | (e) | = Internal standard problem |
| | (f) | = Calibration problem |
| | (g) | = Quantification below reporting limit |
| | (h) | = Other problem, refer to data validation report |




LEGEND

▲ *GEOPROBE FIELD SCREENING* SAMPLING LOCATION

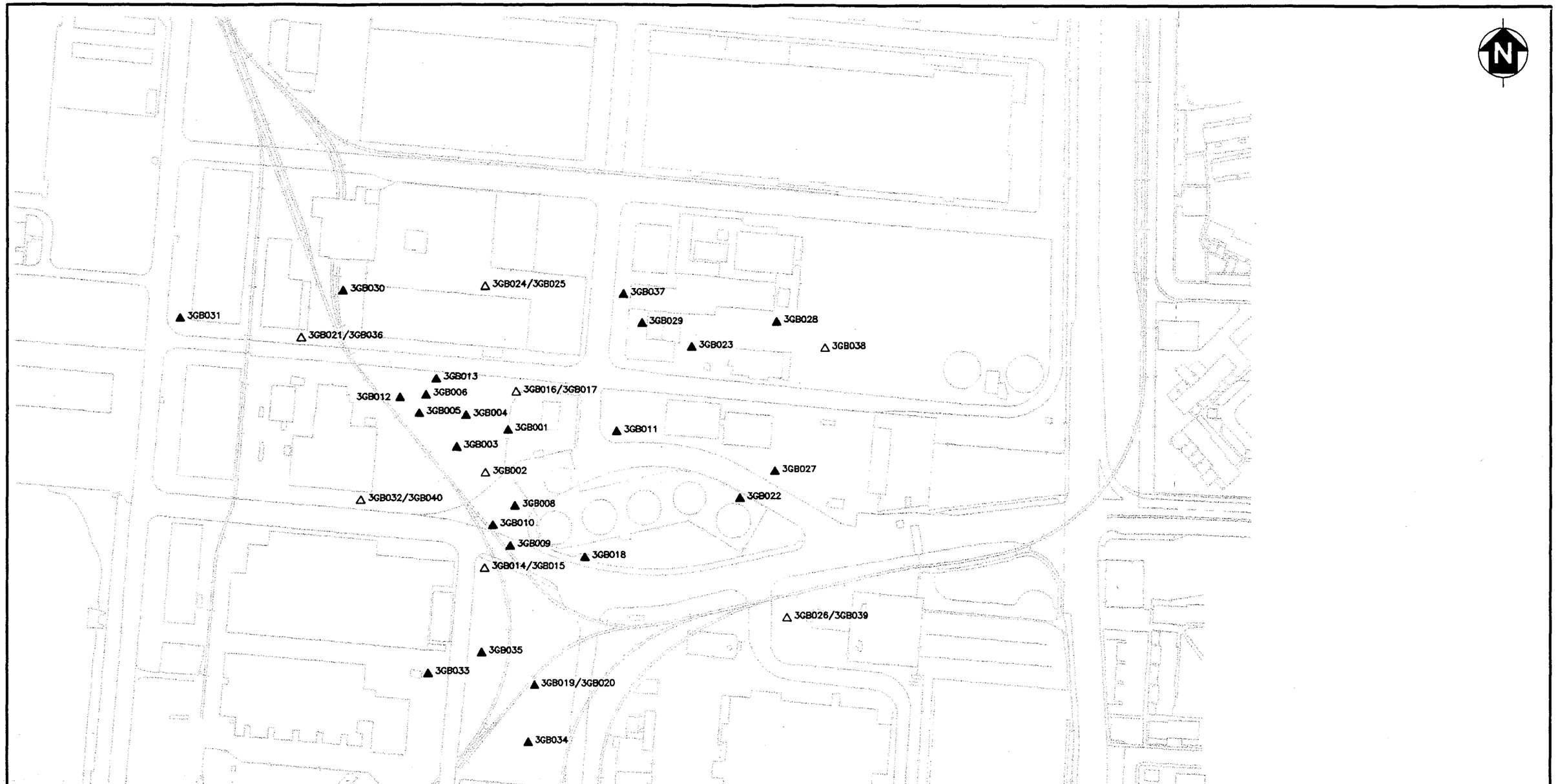
△ GEOPROBE FIELD SCREENING AND FIXED LABORATORY SAMPLING LOCATION

100 0 100 200

SCALE: FEET

FIGURE J-1
NAS ALAMEDA
SITE 3 GEOPROBE
SOIL SAMPLE LOCATIONS

DATE: 06/23/95 TWL DN FILE NAME: E:\ALAMEDA\GEOP_LOC.DWG




LEGEND

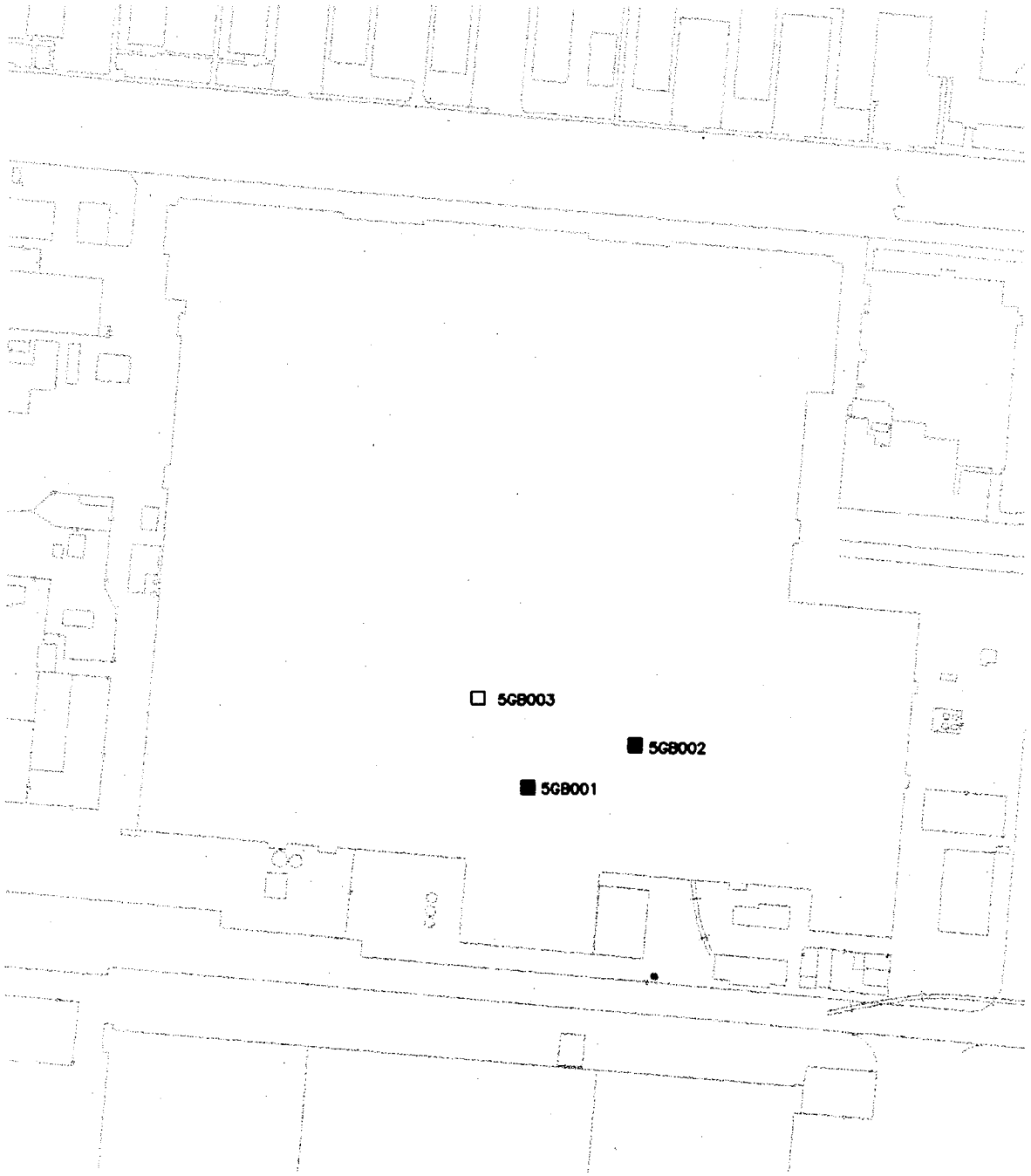
▲ GEOPROBE FIELD SCREENING SAMPLING LOCATION

△ GEOPROBE FIELD SCREENING AND FIXED LABORATORY SAMPLING LOCATION

100 0 100 200
SCALE: FEET

FIGURE J-2
NAS ALAMEDA
SITE 3 GEOPROBE
GROUNDWATER SAMPLE LOCATIONS

DATE: 07/12/95 TWL DN FILE NAME: E:\ALAMEDA\GEO_LOC2.DWG




LEGEND

■ GEOPROBE GROUNDWATER SAMPLING LOCATION

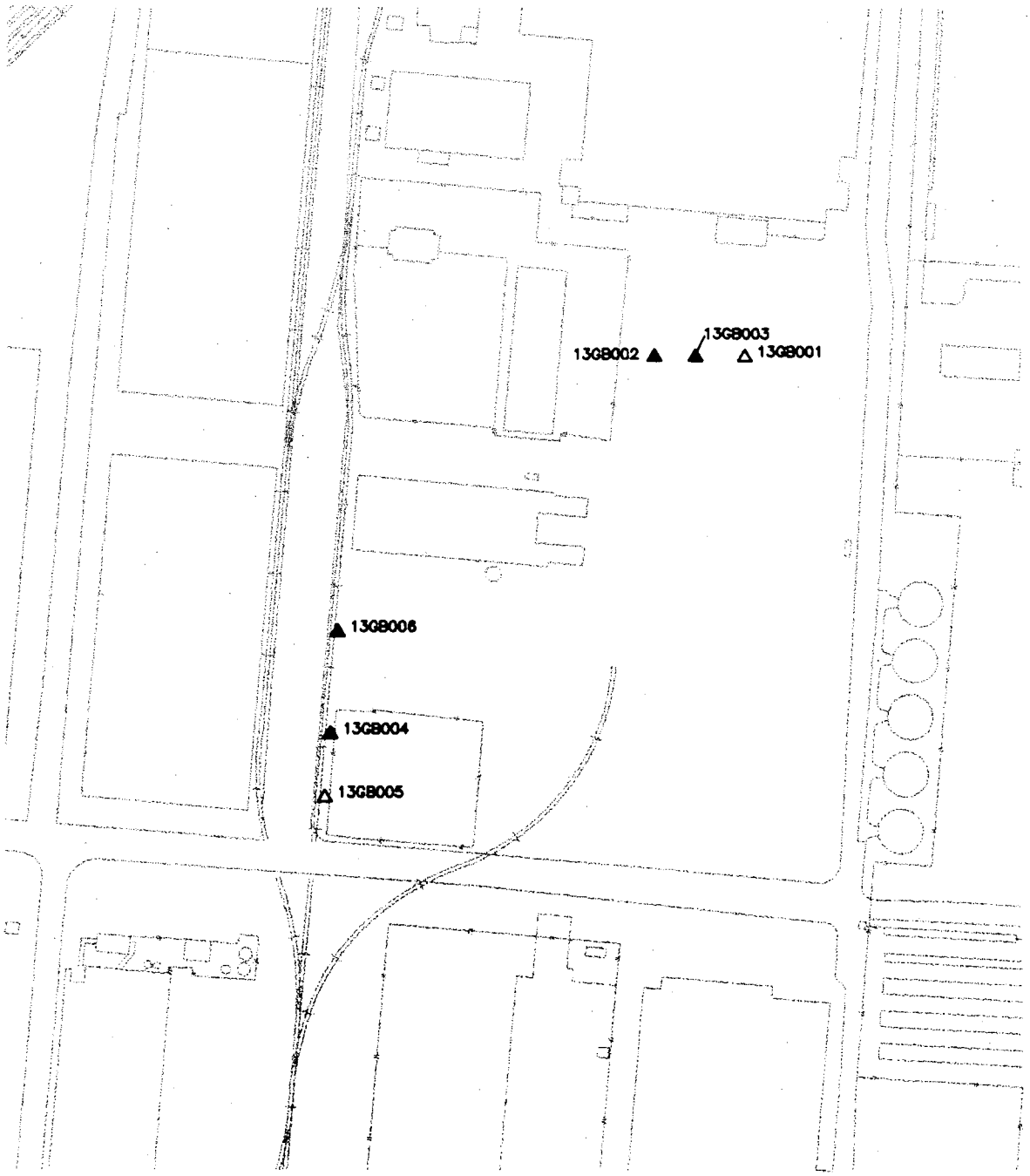
□ GEOPROBE GROUNDWATER AND SOIL SAMPLING LOCATION

100 0 100 200
SCALE: FEET

FIGURE J-3
NAS ALAMEDA
SITE 5 GEOPROBE
SAMPLE LOCATIONS

FILE NAME: E:\ALAMEDA\GEOP_LOC.DWG

DATE: 07/11/95 TWL, DN




100 0 100 200

SCALE: FEET

LEGEND

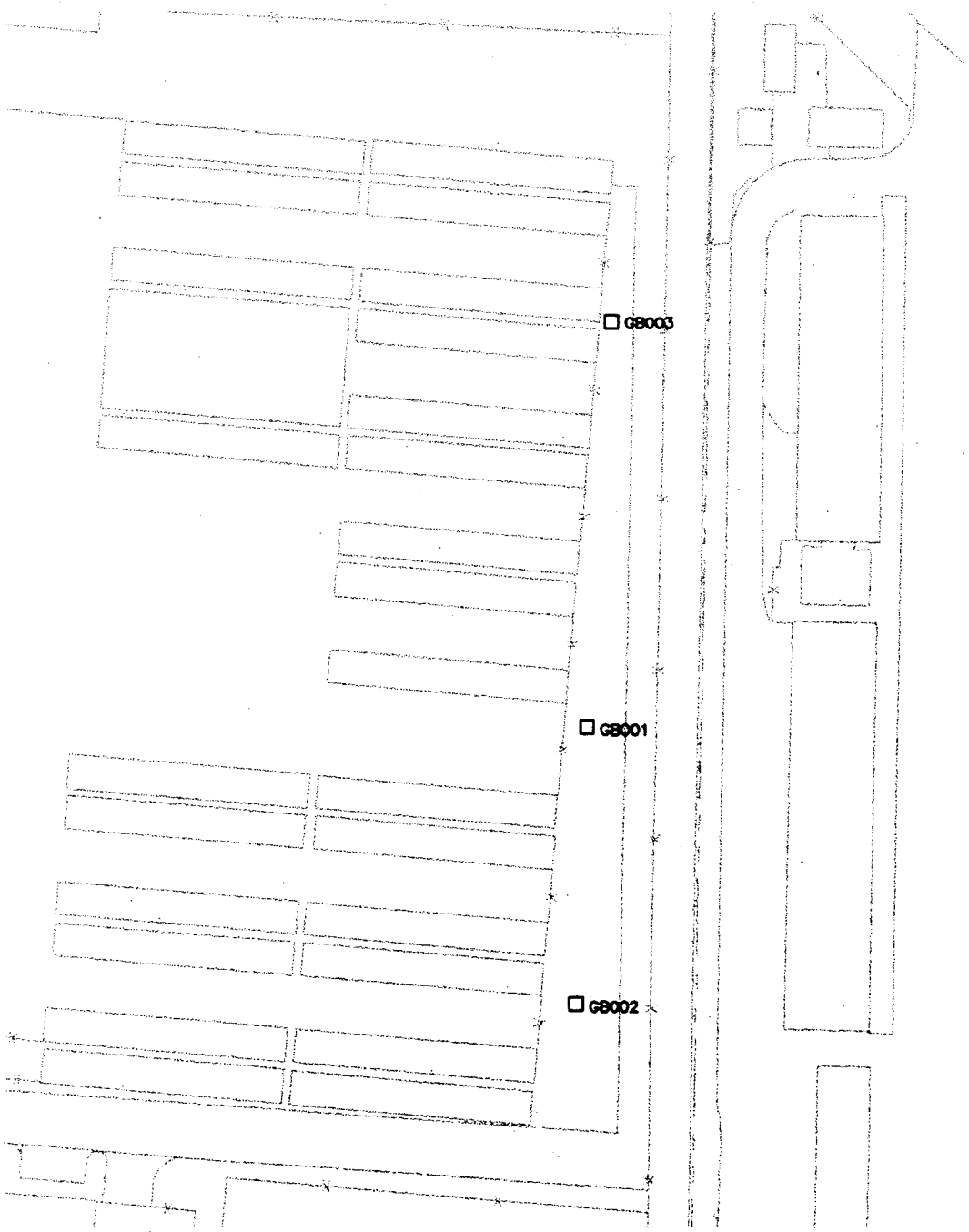
▲ GEOPROBE GROUNDWATER FIELD SCREENING SAMPLING LOCATION

△ GEOPROBE GROUNDWATER FIELD SCREENING AND FIXED LABORATORY SAMPLING LOCATION

FIGURE J-4
NAS ALAMEDA
SITE 13 GEOPROBE
SAMPLE LOCATIONS

FILE NAME: E:\ALAMEDA\GEOP_LOC.DWG

DATE: 06/28/95 BCM DN




LEGEND

☐ GEOPROBE GROUNDWATER AND SOIL SAMPLING LOCATION

50 0 50 100
SCALE: FEET

FIGURE J-5
NAS ALAMEDA
SITE 16 GEOPROBE
SAMPLE LOCATIONS

DATE: 07/11/95 TWL DN FILE NAME: E:\ALAMEDA\GEOP_LOC.DWG

# ATTACHMENT K

## RESULTS OF SOIL SAMPLES ANALYZED FOR GEOTECHNICAL PARAMETERS

CTL Cooper Testing Laboratory, Inc.
Independent Geotechnical Lab
1951 Colony, Unit X • Mountain View, CA 94043

(415) 968-947
Fax (415) 968-42

# LETTER OF TRANSMITTAL

TO: Montgomery Watson
365 Lennon Lane
Walnut Creek, CA 94598
Attn: Shelly Hill

DATE: 13 DEC 94

PROJECT: 2738.1236/8.1

CTL#: 153-004

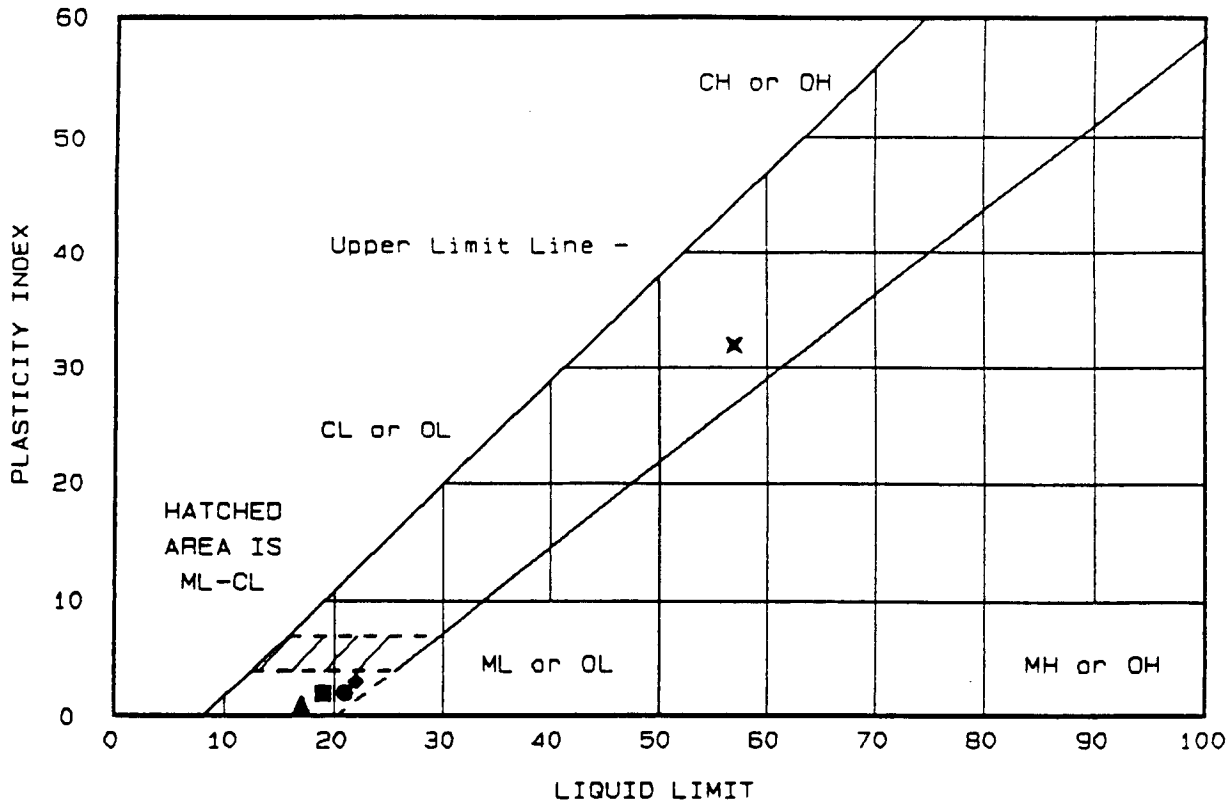
ENCLOSED: Laboratory soil test data.

REMARKS:

BY: David R. Cooper

David R. Cooper

# LIQUID AND PLASTIC LIMITS TEST REPORT




| | Location + Description | LL | PL | PI | -200 | ASTM D 2487-90 |
|---|---|---|---|---|---|---|
| ● | M-115-E @ 3.5-4.5'<br>grayish brown silty Sand | 21 | 19 | 2 | | |
| ▲ | M7C-09 @ 3.5-5'<br>gray silty Sand | 17 | 16 | 1 | | |
| ■ | M11-06 @ 10-11.5'<br>gray silty Sand | 19 | 17 | 2 | | |
| ◆ | M-115-E @ 10.5-12'<br>gray silty Sand | 22 | 19 | 3 | | |
| × | M-11-06 @ 10-11.5'<br>gray Clay | 57 | 25 | 32 | | |

Project No.: 153-04
Project: 2738.1405

Client: Montgomery-Watson
Location:

Date: 12/6/94

Remarks:

LIQUID AND PLASTIC LIMITS TEST REPORT

COOPER TESTING LABORATORY

Fig. No. _____

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/6/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 1

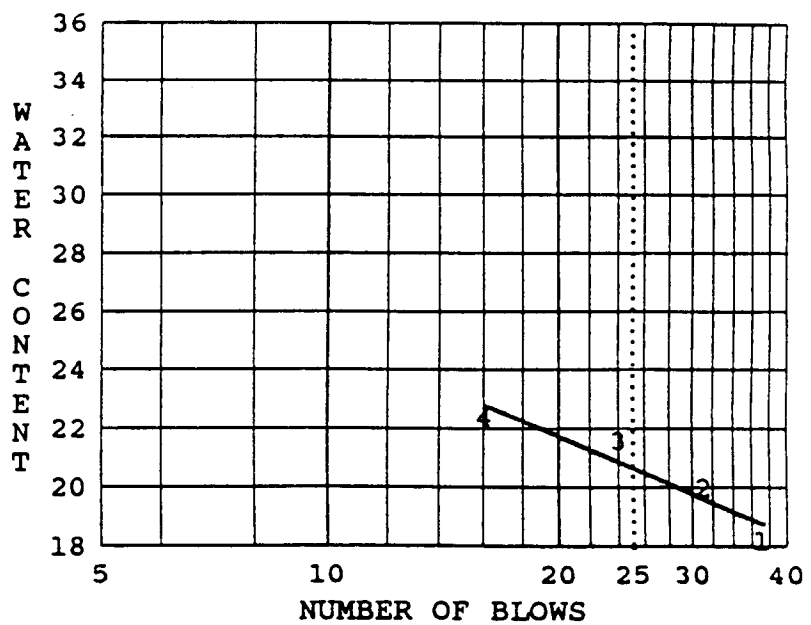
Location and description: M-115-E @ 3.5-4.5'
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 15.29 | 15.01 | 16.14 | 15.87 |
| WT d+t | 13.60 | 13.23 | 14.06 | 13.75 |
| WT tare | 4.31 | 4.32 | 4.42 | 4.3 |
| # Blows | 37 | 31 | 24 | 16 |
| Moisture | 18.2 | 20.0 | 21.6 | 22.4 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 27.78 | 27.09 | 29.41 |
| WT d+t | 25.26 | 24.69 | 26.58 |
| WT tare | 11.78 | 11.82 | 11.43 |
| Moisture | 18.7 | 18.6 | 18.7 |




Liquid Limit = 21
Plastic Limit = 19
Plasticity Index = 2

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 21 PL = 19 PI = 2 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/6/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 2

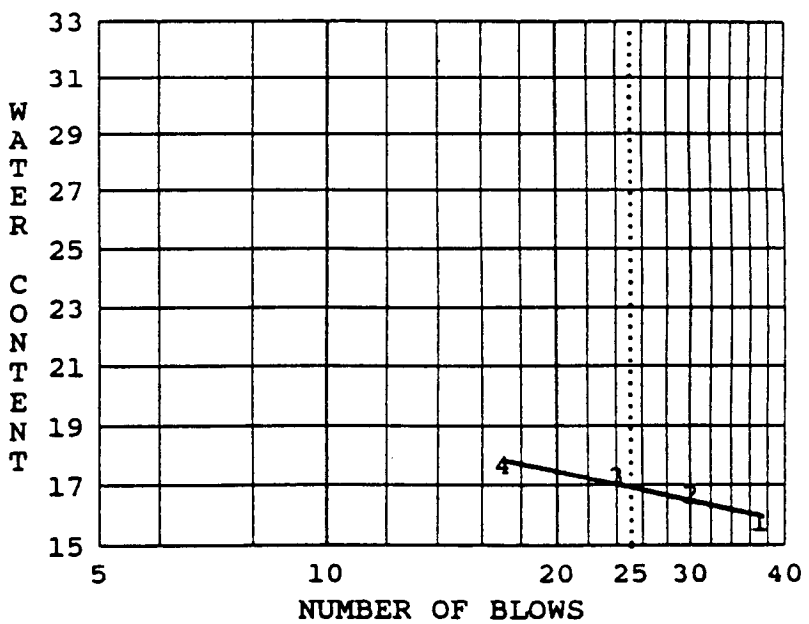
Location and description: M7C-09 @ 3.5-5'
gray silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 16.36 | 14.24 | 14.58 | 14.57 |
| WT d+t | 14.72 | 12.82 | 13.08 | 13.04 |
| WT tare | 4.34 | 4.3 | 4.43 | 4.42 |
| # Blows | 37 | 30 | 24 | 17 |
| Moisture | 15.8 | 16.7 | 17.3 | 17.7 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 29.95 | 27.35 | 26.64 |
| WT d+t | 27.44 | 25.14 | 24.7 |
| WT tare | 11.25 | 11.43 | 11.71 |
| Moisture | 15.5 | 16.1 | 14.9 |




Liquid Limit = 17
Plastic Limit = 16
Plasticity Index = 1

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 17 PL = 16 PI = 1 LL (oven dry) =
ASTM =
AASHTO =

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/6/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 3

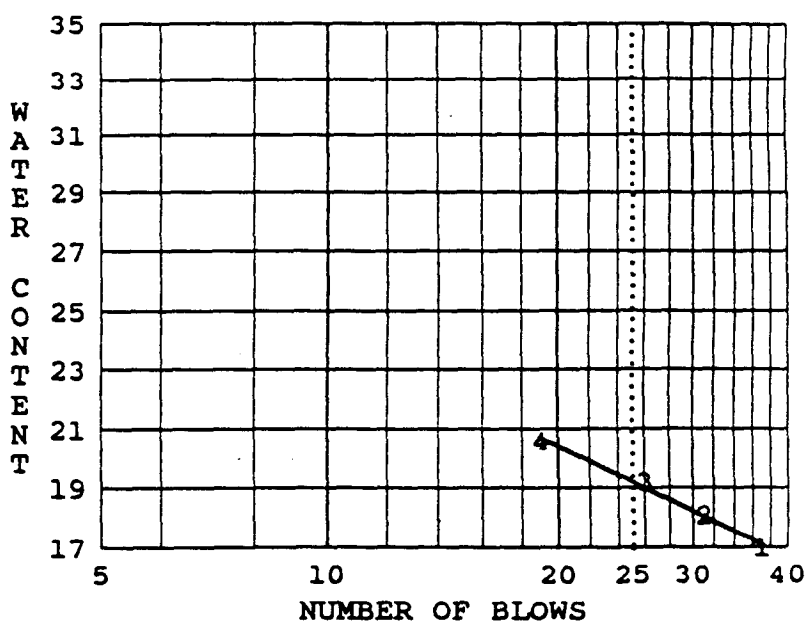
Location and description: M11-06 @ 10-11.5'
gray silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 15.52 | 14.94 | 14.27 | 16.25 |
| WT d+t | 13.90 | 13.31 | 12.66 | 14.21 |
| WT tare | 4.37 | 4.3 | 4.27 | 4.33 |
| # Blows | 37 | 31 | 26 | 19 |
| Moisture | 17.0 | 18.1 | 19.2 | 20.6 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 25.52 | 28.46 | 25.49 |
| WT d+t | 23.55 | 25.89 | 23.52 |
| WT tare | 11.83 | 11.2 | 11.81 |
| Moisture | 16.8 | 17.5 | 16.8 |




Liquid Limit = 19
Plastic Limit = 17
Plasticity Index = 2

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 19 PL = 17 PI = 2 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/6/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 4

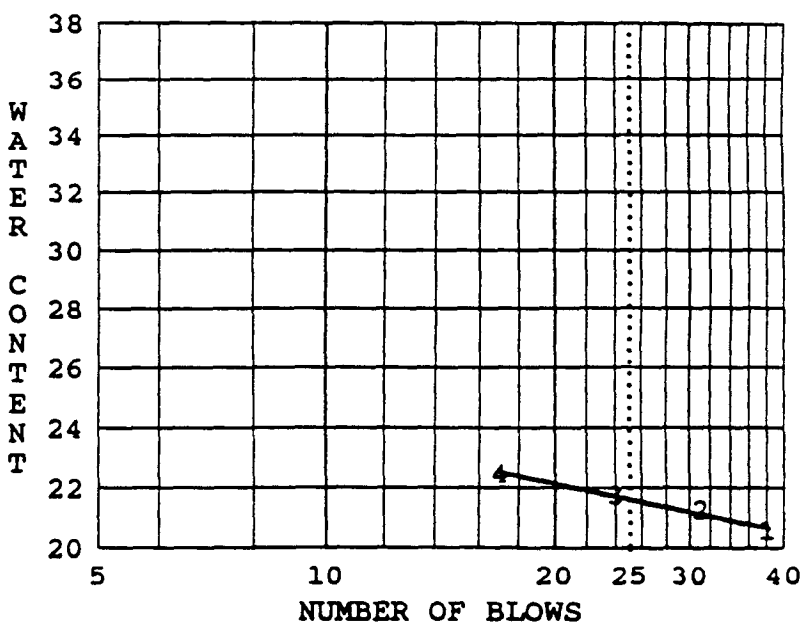
Location and description: M-115-E @ 10.5-12'
gray silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 15.69 | 18.3 | 17.12 | 14.69 |
| WT d+t | 13.77 | 16.28 | 15.26 | 12.80 |
| WT tare | 4.45 | 6.79 | 6.72 | 4.41 |
| # Blows | 38 | 31 | 24 | 17 |
| Moisture | 20.6 | 21.3 | 21.8 | 22.5 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 27.18 | 27.08 | 28.16 |
| WT d+t | 24.72 | 24.48 | 25.53 |
| WT tare | 11.73 | 11.51 | 11.73 |
| Moisture | 18.9 | 20.0 | 19.1 |




Liquid Limit = 22
Plastic Limit = 19
Plasticity Index = 3

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 22 PL = 19 PI = 3 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/6/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 5

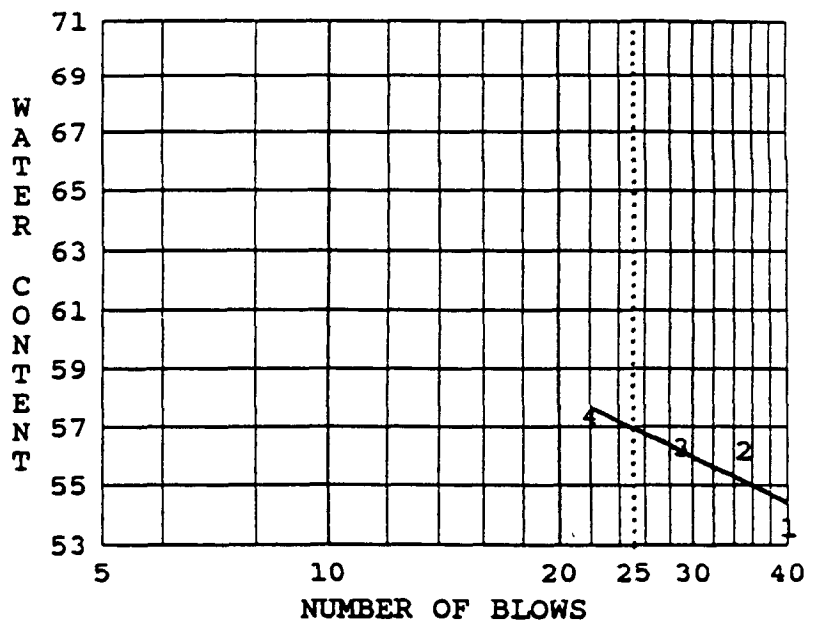
Location and description: M-11-06 @ 10-11.5'
gray Clay

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 10.09 | 13.84 | 13.14 | 11 |
| WT d+t | 8.03 | 11.26 | 10.83 | 8.57 |
| WT tare | 4.19 | 6.67 | 6.73 | 4.34 |
| # Blows | 40 | 35 | 29 | 22 |
| Moisture | 53.6 | 56.2 | 56.3 | 57.4 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 19.78 | 18.77 | 19.81 |
| WT d+t | 18.09 | 17.24 | 18.14 |
| WT tare | 11.45 | 11.22 | 11.48 |
| Moisture | 25.5 | 25.4 | 25.1 |



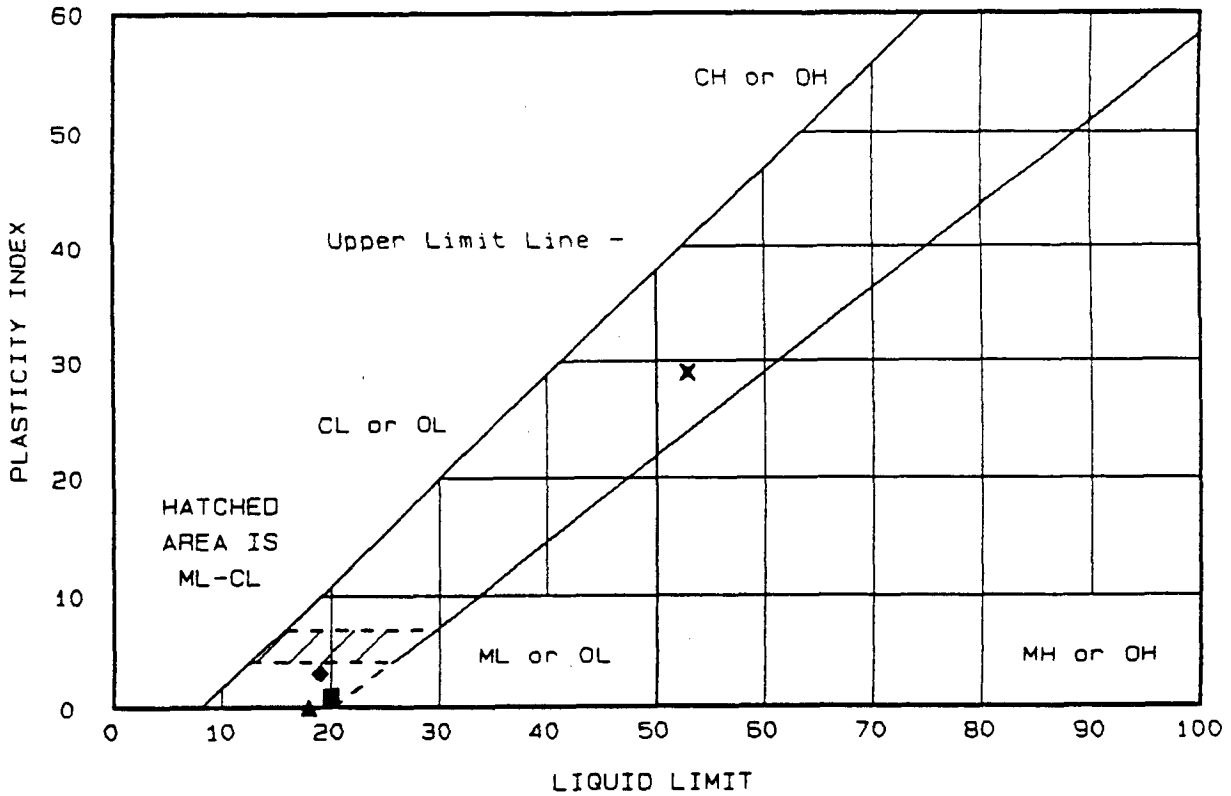

Liquid Limit = 57
Plastic Limit = 25
Plasticity Index = 32

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 57 PL = 25 PI = 32 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID AND PLASTIC LIMITS TEST REPORT




| | Location + Description | LL | PL | PI | -200 | ASTM D 2487-90 |
|---|---|---|---|---|---|---|
| ● | M-7C-09 @ 10.5-12'<br>brown silty Sand | 20 | 19 | 1 | | |
| ▲ | M-003-E @ 11.5-13'<br>grayish brown silty Sand | 18 | 18 | 0 | | |
| ■ | M016B @ 6.5-8'<br>grayish brown silty Sand | 20 | 19 | 1 | | |
| ◆ | M003-B @ 3.5-5'<br>grayish brown silty Sand | 19 | 16 | 3 | | |
| × | M030-C @ 4.5-5'<br>grayish brown sandy Clay | 53 | 24 | 29 | | |

Project No.: 153-04
Project: 2738.1405

Client: Montgomery Watson
Location:

Date: 12/1/94

Remarks:

LIQUID AND PLASTIC LIMITS TEST REPORT

COOPER TESTING LABORATORY

Fig. No. _____

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

'roject No.: 153-04 Date: 12/1/94
:lient: Montgomery Watson
'roject: 2738.1405

'roject location:

Remarks:

Figure Number:

## TEST DATA - Test number 1

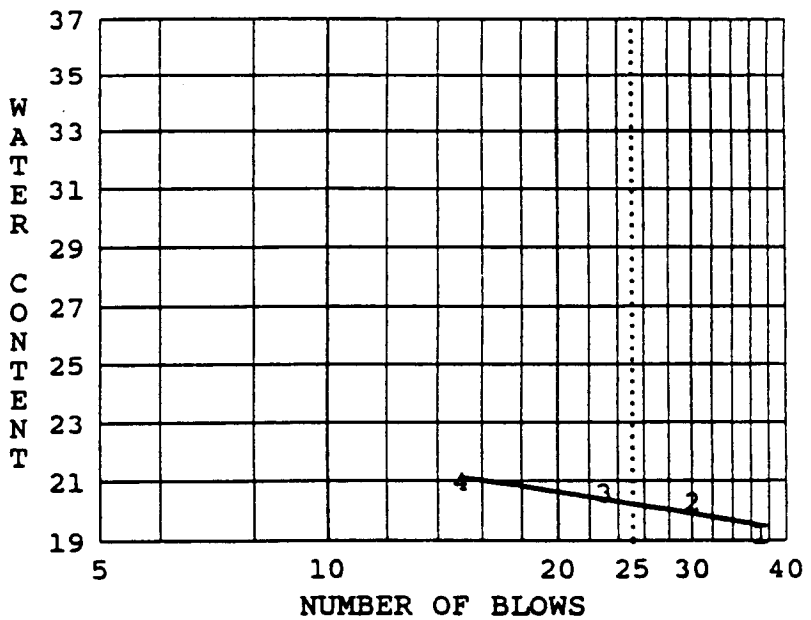
Location and description: M-7C-09
brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 15.36 | 13.39 | 12.74 | 14.56 |
| WT d+t | 13.61 | 11.86 | 11.3 | 12.78 |
| WT tare | 4.48 | 4.34 | 4.32 | 4.32 |
| # Blows | 37 | 30 | 23 | 15 |
| Moisture | 19.2 | 20.3 | 20.6 | 21.0 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 21.35 | 21.62 | 21.28 |
| WT d+t | 19.79 | 20.02 | 19.65 |
| WT tare | 11.76 | 11.22 | 11.46 |
| Moisture | 19.4 | 18.2 | 19.9 |




Liquid Limit = 20
Plastic Limit = 19
Plasticity Index = 1

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 20 PL = 19 PI = 1 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

'roject No.: 153-04 Date: 12/1/94
:lient: Montgomery Watson
'roject: 2738.1405

'roject location:

:emarks:

'igure Number:

## TEST DATA - Test number 2

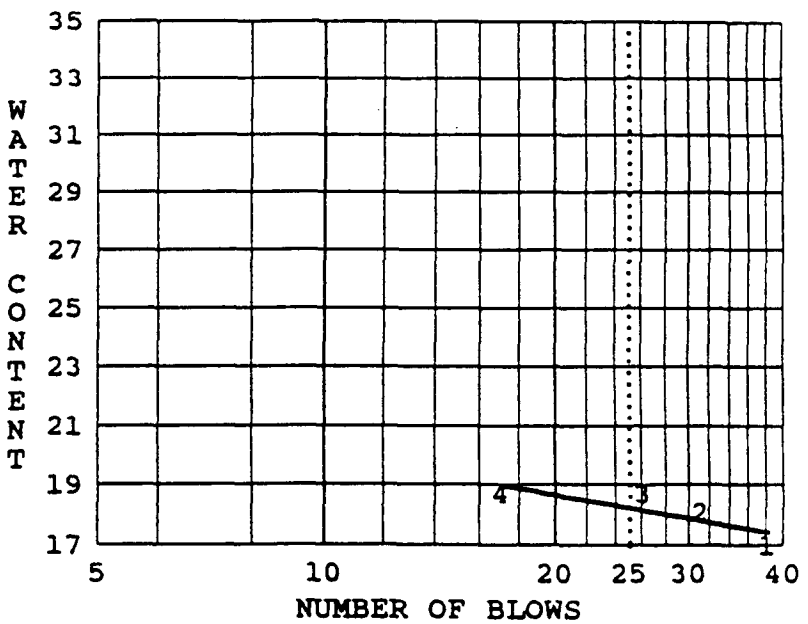
Location and description: M-003-E
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 16.32 | 19.9 | 18.56 | 18.36 |
| WT d+t | 14.93 | 17.52 | 16.34 | 16.15 |
| WT tare | 6.76 | 4.38 | 4.47 | 4.35 |
| # Blows | 38 | 31 | 26 | 17 |
| Moisture | 17.0 | 18.1 | 18.7 | 18.7 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 24.82 | 26.61 | 26.81 |
| WT d+t | 22.77 | 24.3 | 24.5 |
| WT tare | 11.25 | 11.7 | 11.37 |
| Moisture | 17.8 | 18.3 | 17.6 |




Liquid Limit = 18
Plastic Limit = 18
Plasticity Index = 0

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 18 PL = 18 PI = None LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/1/94
Client: Montgomery Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 3

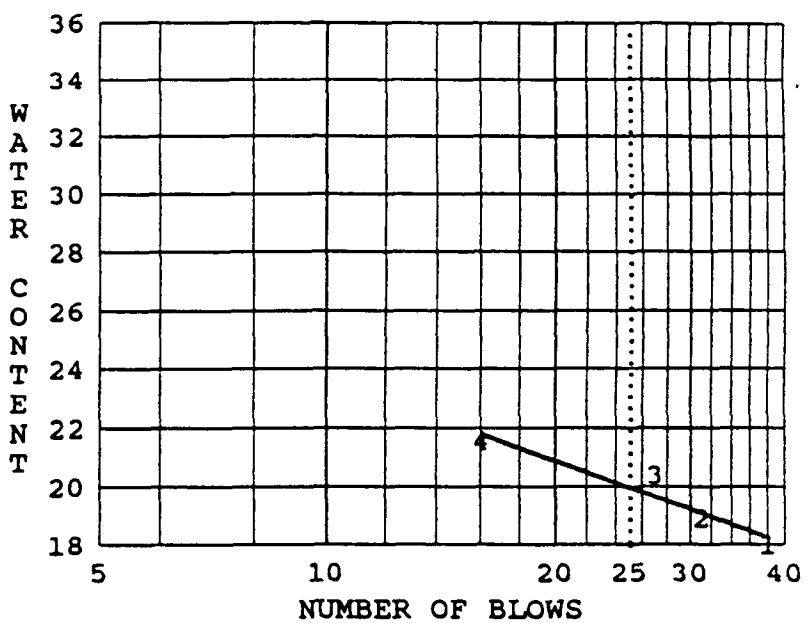
Location and description: MO16B @ 6.5-8'
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 16.56 | 15.5 | 17.32 | 17.4 |
| WT d+t | 15.08 | 13.74 | 15.12 | 15.5 |
| WT tare | 6.86 | 4.42 | 4.33 | 6.72 |
| # Blows | 38 | 31 | 27 | 16 |
| Moisture | 18.0 | 18.9 | 20.4 | 21.6 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 25.33 | 27.04 | 29.02 |
| WT d+t | 23.05 | 24.51 | 26.28 |
| WT tare | 11.42 | 11.46 | 11.79 |
| Moisture | 19.6 | 19.4 | 18.9 |




Liquid Limit = 20
Plastic Limit = 19
Plasticity Index = 1

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 20 PL = 19 PI = 1 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/1/94
Client: Montgomery Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 4

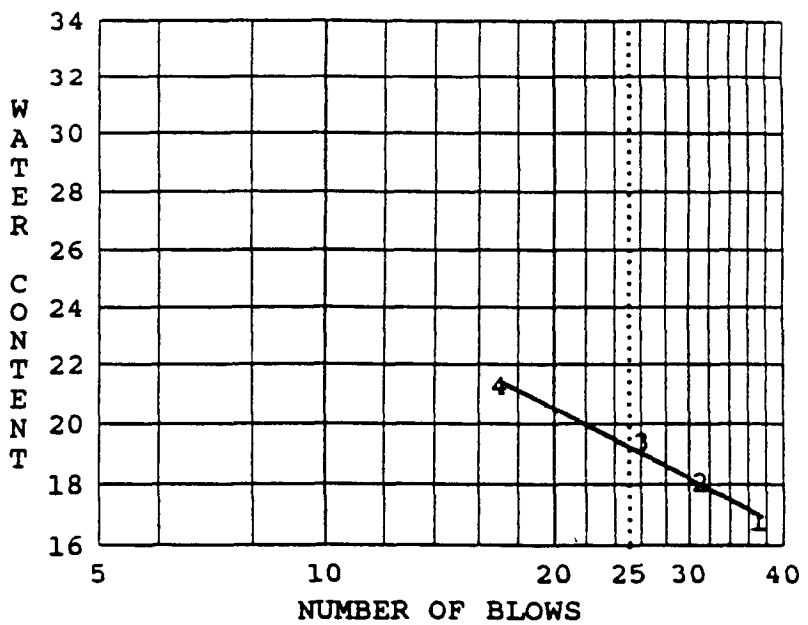
Location and description: M003-B @ 3.5-5'
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 16.57 | 13.45 | 14.58 | 15.31 |
| WT d+t | 15.16 | 12.07 | 12.92 | 13.38 |
| WT tare | 6.79 | 4.45 | 4.36 | 4.3 |
| # Blows | 37 | 31 | 26 | 17 |
| Moisture | 16.8 | 18.1 | 19.4 | 21.3 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 26.42 | 29.49 | 28.18 |
| WT d+t | 24.35 | 27.02 | 25.79 |
| WT tare | 11.35 | 11.56 | 11.89 |
| Moisture | 15.9 | 16.0 | 17.2 |




Liquid Limit = 19
Plastic Limit = 16
Plasticity Index = 3

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 19 PL = 16 PI = 3 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/1/94
Client: Montgomery Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 5

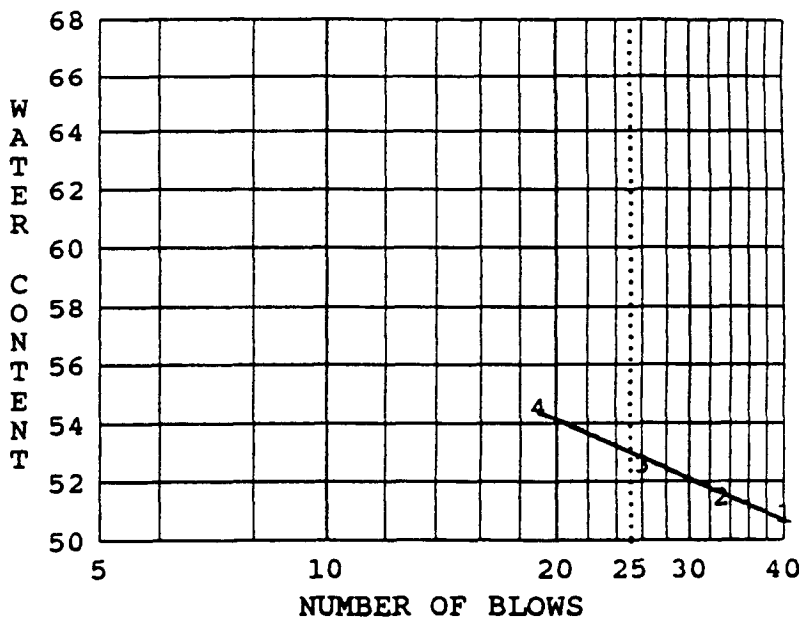
Location and description: M030-C @ 4.5-5'
grayish brown sandy Clay

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 12.47 | 9.76 | 10.83 | 11.19 |
| WT d+t | 10.54 | 7.91 | 8.64 | 8.78 |
| WT tare | 6.75 | 4.32 | 4.48 | 4.37 |
| # Blows | 40 | 33 | 26 | 19 |
| Moisture | 50.9 | 51.5 | 52.6 | 54.6 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 19.05 | 18.06 | 18.69 |
| WT d+t | 17.64 | 16.77 | 17.36 |
| WT tare | 11.83 | 11.45 | 11.82 |
| Moisture | 24.3 | 24.2 | 24.0 |



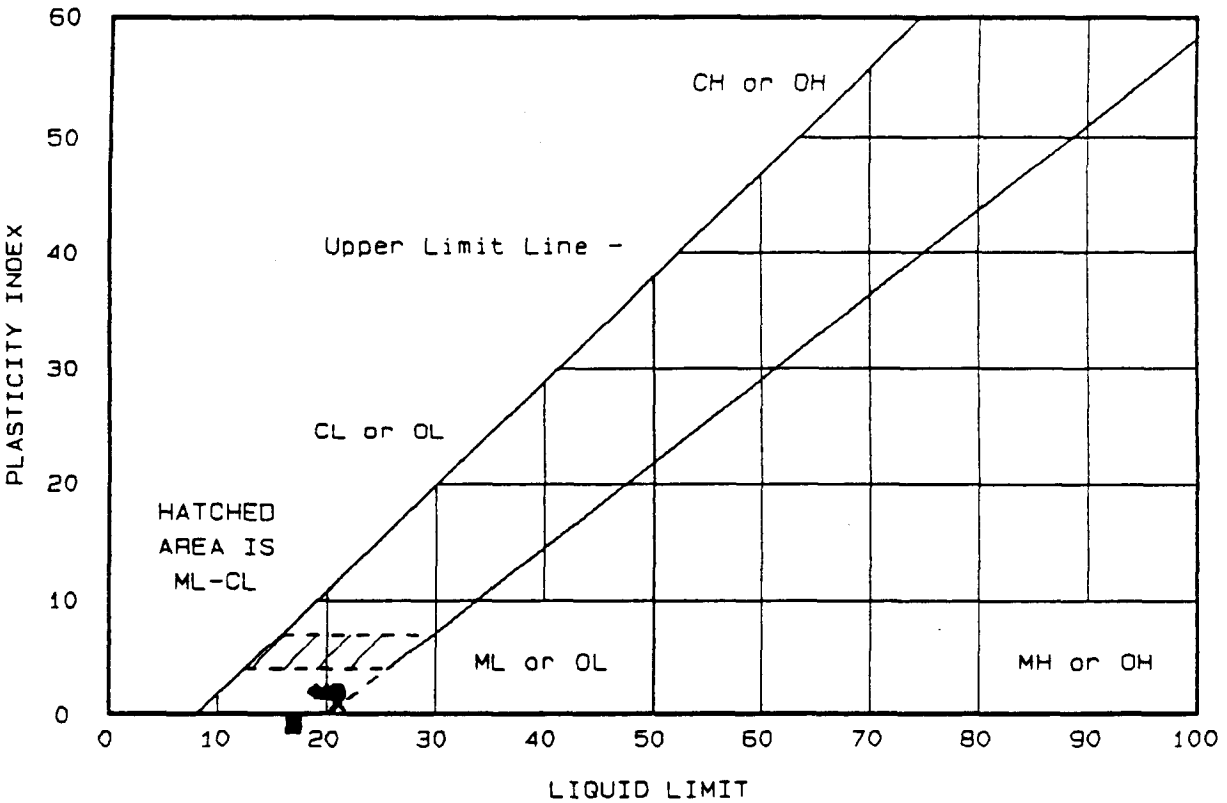

Liquid Limit = 53
Plastic Limit = 24
Plasticity Index = 29

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 53 PL = 24 PI = 29 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID AND PLASTIC LIMITS TEST REPORT




| | Location + Description | LL | PL | PI | -200 | ASTM D 2487-90 |
|---|---|---|---|---|---|---|
| ● | M11-06 @ 3.5-5'<br>brown Sand | 21 | 19 | 2 | | |
| ▲ | M030-A @ 8.5-10'<br>grayish brown silty Sand | 20 | 18 | 2 | | |
| ■ | M030-A @ 4-6.5'<br>grayish brown silty Sand | 17 | 18 | -1 | | |
| ◆ | M030-E @ 2.5-4'<br>grayish brown clayey Sand | 19 | 17 | 2 | | |
| ✕ | M112-A @ 10.5-12'<br>grayish brown silty Sand | 21 | 20 | 1 | | |

Project No.: 153-04
Project: 2738.1403

Client: Montgomery-Watson
Location:

Date: 12/3/94

Remarks:

LIQUID AND PLASTIC LIMITS TEST REPORT

COOPER TESTING LABORATORY

Fig. No. _____

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/3/94
Client: Montgomery-Watson
Project: 2738.1403

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 1

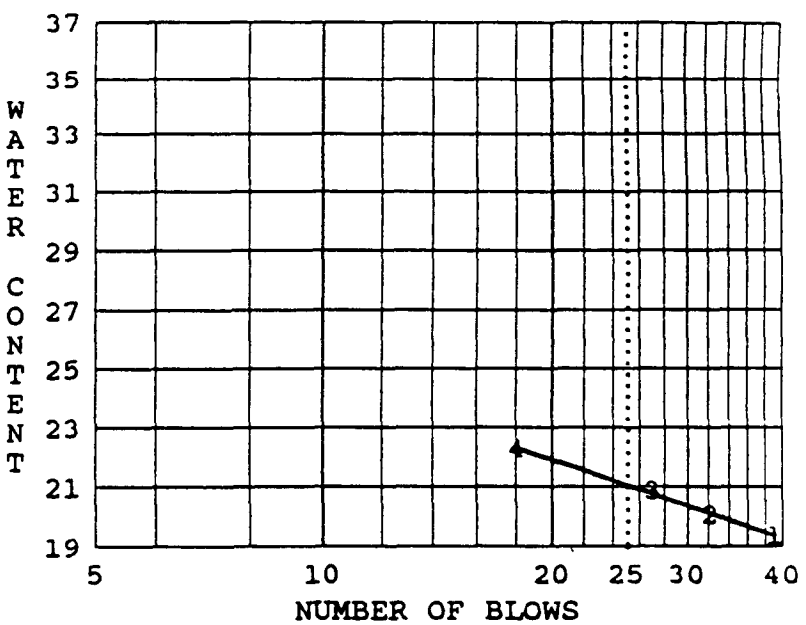
Location and description: M11-06 @ 3.5-5'
brown Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 13.08 | 13.02 | 15.68 | 14.42 |
| WT d+t | 11.68 | 11.57 | 14.14 | 12.58 |
| WT tare | 4.48 | 4.35 | 6.76 | 4.32 |
| # Blows | 39 | 32 | 27 | 18 |
| Moisture | 19.4 | 20.1 | 20.9 | 22.3 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 25.27 | 26.44 | 25.15 |
| WT d+t | 23.07 | 23.96 | 22.96 |
| WT tare | 11.25 | 11.22 | 11.37 |
| Moisture | 18.6 | 19.5 | 18.9 |




Liquid Limit = 21
Plastic Limit = 19
Plasticity Index = 2

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 21 PL = 19 PI = 2 LL (oven dry) =

ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/3/94
Client: Montgomery-Watson
Project: 2738.1403

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 2

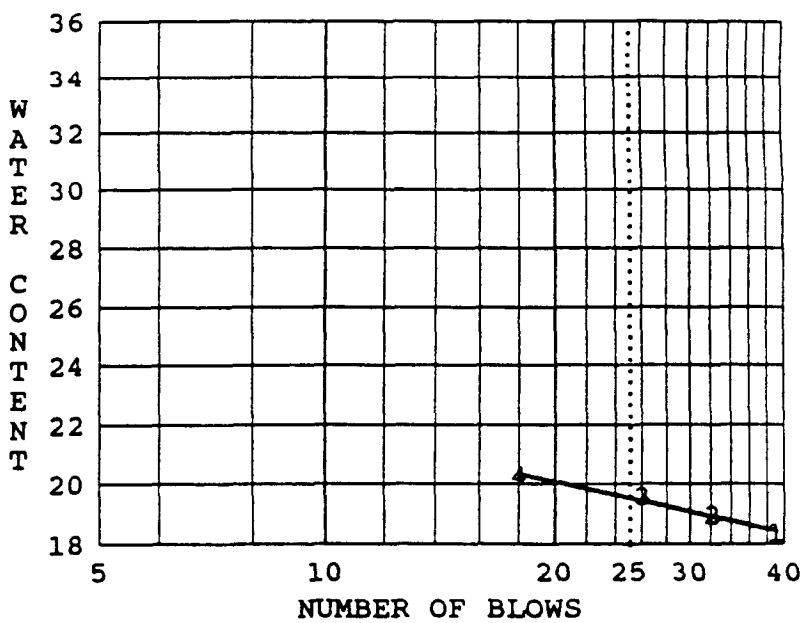
Location and description: M030-A @ 8.5-10'
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 15.36 | 13.06 | 14.21 | 12.93 |
| WT d+t | 14.02 | 11.67 | 12.6 | 11.48 |
| WT tare | 6.75 | 4.34 | 4.38 | 4.35 |
| # Blows | 39 | 32 | 26 | 18 |
| Moisture | 18.4 | 19.0 | 19.6 | 20.3 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 22.32 | 25.67 | 26.83 |
| WT d+t | 20.63 | 23.62 | 24.49 |
| WT tare | 11.43 | 11.73 | 11.76 |
| Moisture | 18.4 | 17.2 | 18.4 |




Liquid Limit = 20
Plastic Limit = 18
Plasticity Index = 2

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 20 PL = 18 PI = 2 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/3/94
Client: Montgomery-Watson
Project: 2738.1403

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 3

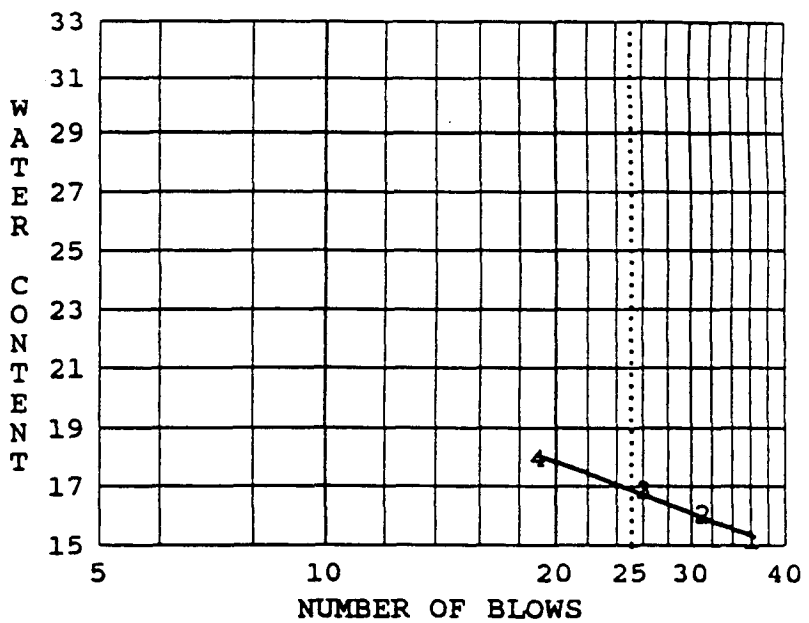
Location and description: M030-A @ 4-6.5'
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 14.89 | 14.98 | 15.64 | 16.68 |
| WT d+t | 13.51 | 13.51 | 14 | 14.79 |
| WT tare | 4.42 | 4.37 | 4.32 | 4.27 |
| # Blows | 36 | 31 | 26 | 19 |
| Moisture | 15.2 | 16.1 | 16.9 | 18.0 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 26.67 | 25.4 | 28.22 |
| WT d+t | 24.28 | 23.41 | 25.78 |
| WT tare | 11.5 | 11.84 | 11.86 |
| Moisture | 18.7 | 17.2 | 17.5 |




Liquid Limit = 17
Plastic Limit = 18
Plasticity Index = -1

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 17 PL = 18 PI = None LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/3/94
Client: Montgomery-Watson
Project: 2738.1403

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 4

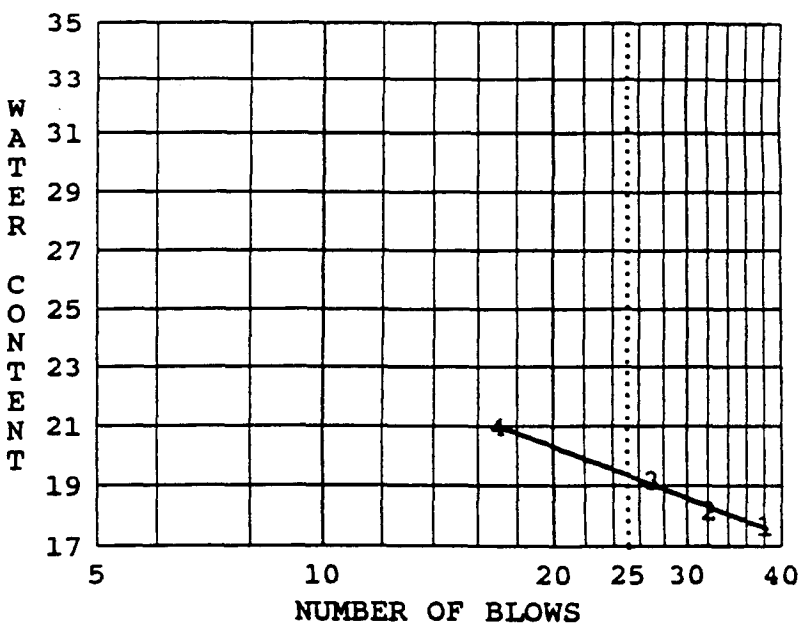
Location and description: M030-E @ 2.5-4'
grayish brown clayey Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 14.21 | 14.12 | 15.53 | 14.86 |
| WT d+t | 12.75 | 12.63 | 14.1 | 13.03 |
| WT tare | 4.49 | 4.43 | 6.64 | 4.31 |
| # Blows | 38 | 32 | 27 | 17 |
| Moisture | 17.7 | 18.2 | 19.2 | 21.0 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 24.78 | 25.7 | 25.33 |
| WT d+t | 22.84 | 23.59 | 23.32 |
| WT tare | 11.15 | 11.46 | 11.73 |
| Moisture | 16.6 | 17.4 | 17.3 |




Liquid Limit = 19
Plastic Limit = 17
Plasticity Index = 2

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 19 PL = 17 PI = 2 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/3/94
Client: Montgomery-Watson
Project: 2738.1403

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 5

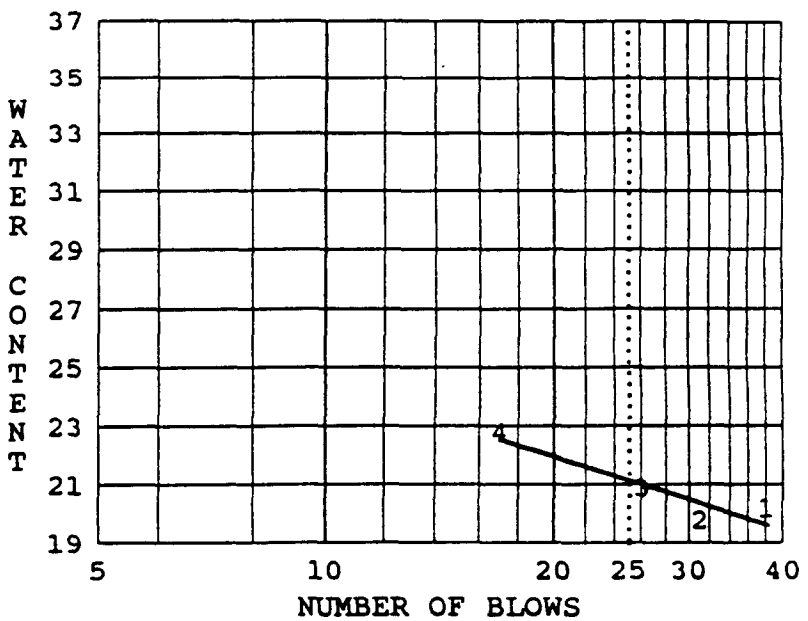
Location and description: M112-A @ 10.5-12'
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 15.23 | 13.99 | 14.64 | 14.86 |
| WT d+t | 13.79 | 12.37 | 12.85 | 12.90 |
| WT tare | 6.67 | 4.19 | 4.28 | 4.3 |
| # Blows | 38 | 31 | 26 | 17 |
| Moisture | 20.2 | 19.8 | 20.9 | 22.8 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 24.78 | 26.08 | 25.19 |
| WT d+t | 22.65 | 23.65 | 22.99 |
| WT tare | 11.48 | 11.66 | 11.63 |
| Moisture | 19.1 | 20.3 | 19.4 |

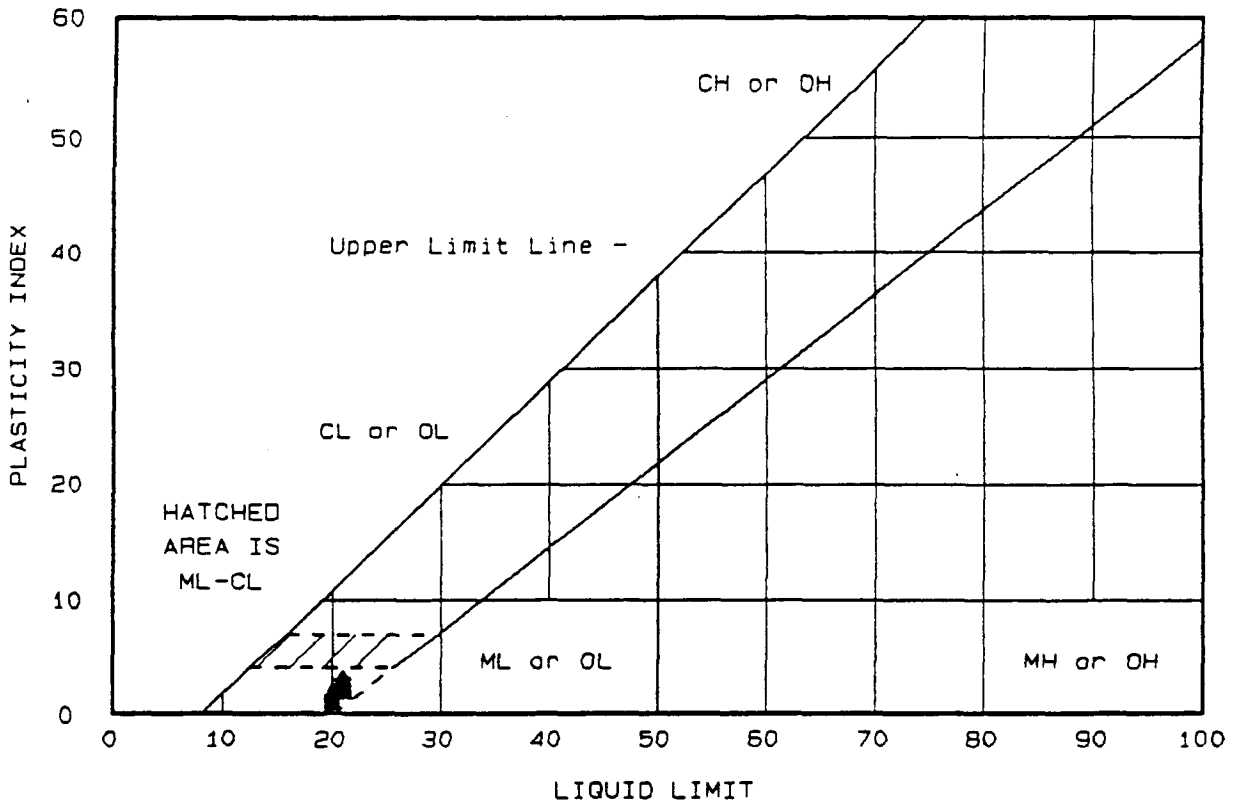



Liquid Limit = 21
Plastic Limit = 20
Plasticity Index = 1

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 21 PL = 20 PI = 1 LL (oven dry) =
ASTM =
AASHTO =

# LIQUID AND PLASTIC LIMITS TEST REPORT




| | Location + Description | LL | PL | PI | -200 | ASTM D 2487-90 |
|---|---|---|---|---|---|---|
| ● | M-016E @ 6.5-8'<br>yellowish gray silty Sand | 20 | 19 | 1 | | |
| ▲ | M-06-06 @ 3.5-5'<br>grayish brown silty Sand | 20 | 18 | 2 | | |
| ■ | M-016E @ 14.5-16<br>grayish brown silty Sand | 21 | 19 | 2 | | |
| ◆ | M-116E @ 3.5-4.5'<br>grayish brown silty Sand | 21 | 18 | 3 | | |
| ✕ | M030-E @ 14-15.5'<br>grayish brown silty Sand | 20 | 19 | 1 | | |

Project No.: 153-04
Project: 2738.1405

Client: Montgomery-Watson
Location:

Date: 12/3/94

Remarks:

LIQUID AND PLASTIC LIMITS TEST REPORT

COOPER TESTING LABORATORY

Fig. No. _____

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/3/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 1

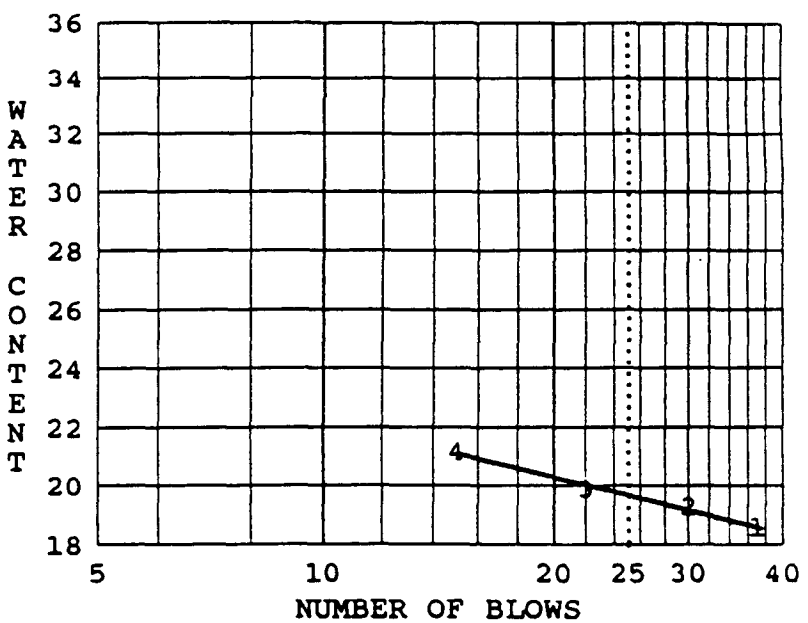
Location and description: M-016E @ 6.5-8'
yellowish gray silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 15.70 | 17.1 | 16.85 | 14.73 |
| WT d+t | 13.91 | 15.02 | 14.77 | 12.92 |
| WT tare | 4.27 | 4.26 | 4.34 | 4.37 |
| # Blows | 37 | 30 | 22 | 15 |
| Moisture | 18.6 | 19.3 | 19.9 | 21.2 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 26.03 | 25.5 | 25.71 |
| WT d+t | 23.61 | 23.28 | 23.42 |
| WT tare | 11.29 | 11.65 | 11.47 |
| Moisture | 19.6 | 19.1 | 19.2 |




Liquid Limit = 20
Plastic Limit = 19
Plasticity Index = 1

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 20 PL = 19 PI = 1 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/3/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 2

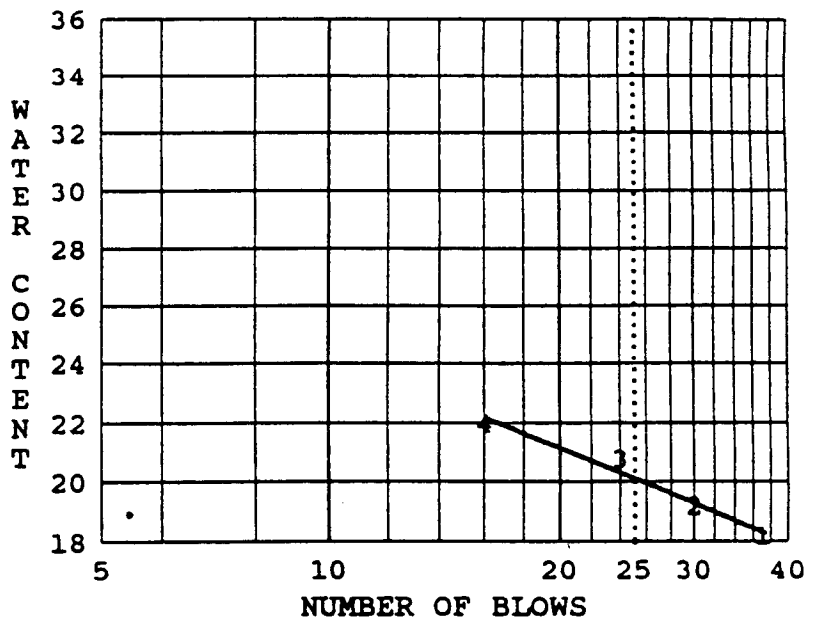
Location and description: M-06-06 @ 3.5-5'
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 14.63 | 14.85 | 14.64 | 17.52 |
| WT d+t | 13.04 | 13.17 | 12.95 | 15.58 |
| WT tare | 4.31 | 4.42 | 4.84 | 6.75 |
| # Blows | 37 | 30 | 24 | 16 |
| Moisture | 18.2 | 19.2 | 20.8 | 22.0 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 26.59 | 26.39 | 26.4 |
| WT d+t | 24.26 | 24.22 | 24.12 |
| WT tare | 11.43 | 11.83 | 11.69 |
| Moisture | 18.2 | 17.5 | 18.3 |




Liquid Limit = 20
Plastic Limit = 18
Plasticity Index = 2

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 20 PL = 18 PI = 2 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

roject No.: 153-04 Date: 12/3/94
lient: Montgomery-Watson
roject: 2738.1405

roject location:

emarks:

igure Number:

## TEST DATA - Test number 3

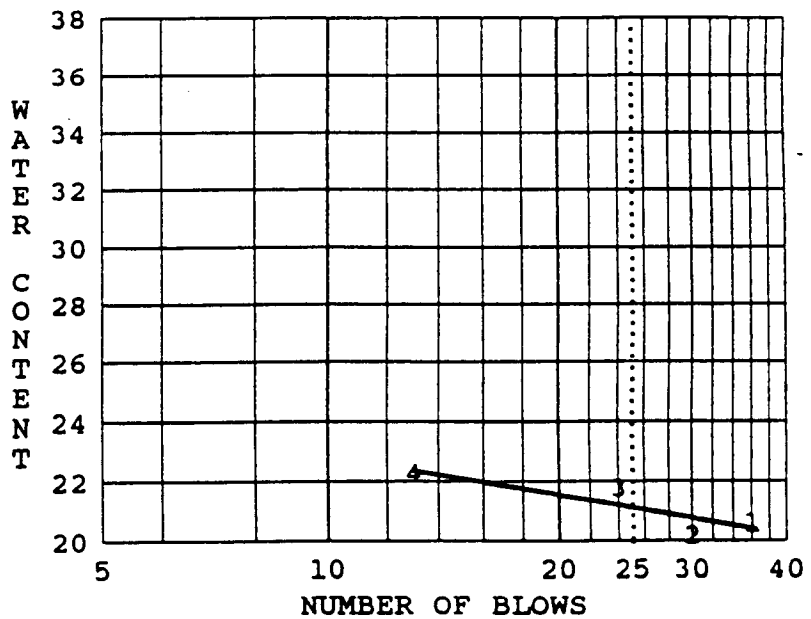
ocation and description: M-016E @ 14.5-16
grayish brown silty Sand

LIQUID LIMITS

| un No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| T w+t | 16.68 | 15.95 | 14.12 | 16.35 |
| T d+t | 14.99 | 13.99 | 12.38 | 14.16 |
| T tare | 6.77 | 4.3 | 4.39 | 4.32 |
| Blows | 36 | 30 | 24 | 13 |
| oisture | 20.6 | 20.2 | 21.8 | 22.3 |

PLASTIC LIMITS

| un No. | 1 | 2 | 3 |
|---|---|---|---|
| T w+t | 24.29 | 27.35 | 28.42 |
| T d+t | 22.26 | 24.87 | 25.74 |
| T tare | 11.78 | 11.42 | 11.47 |
| oisture | 19.4 | 18.4 | 18.8 |




iquid Limit = 21
lastic Limit = 19
lasticity Index = 2

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 21 PL = 19 PI = 2 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/3/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 4

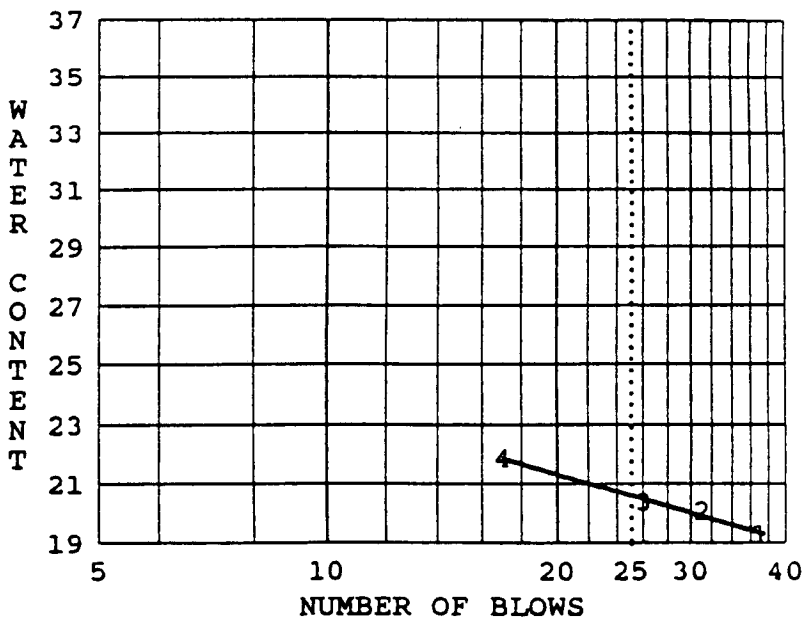
Location and description: M-116E @ 3.5-4.5'
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 18.01 | 13.33 | 14.35 | 15.67 |
| WT d+t | 16.19 | 11.84 | 12.65 | 13.63 |
| WT tare | 6.75 | 4.41 | 4.31 | 4.33 |
| # Blows | 37 | 31 | 26 | 17 |
| Moisture | 19.3 | 20.1 | 20.4 | 21.9 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 24.25 | 23.02 | 25.64 |
| WT d+t | 22.3 | 21.3 | 23.52 |
| WT tare | 11.46 | 11.47 | 11.69 |
| Moisture | 18.0 | 17.5 | 17.9 |




Liquid Limit = 21
Plastic Limit = 18
Plasticity Index = 3

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 21 PL = 18 PI = 3 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

'roject No.: 153-04 Date: 12/3/94
:lient: Montgomery-Watson
'roject: 2738.1405

'roject location:

:emarks:

'igure Number:

## TEST DATA - Test number 5

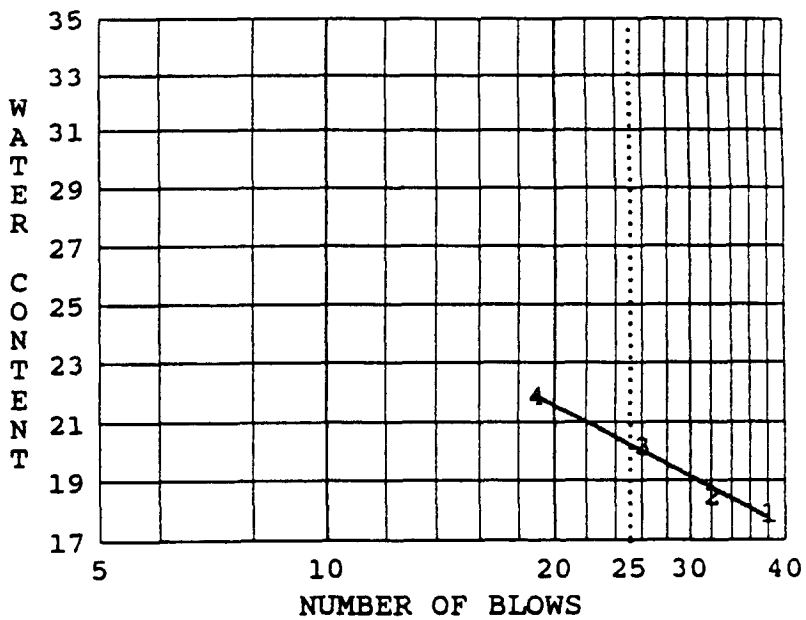
.ocation and description: M030-E @ 14-15.5'
grayish brown silty Sand

LIQUID LIMITS

| :un No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| /T w+t | 17.62 | 13.44 | 16.5 | 15.12 |
| /T d+t | 15.99 | 12.03 | 14.48 | 13.19 |
| /T tare | 6.86 | 4.42 | 4.48 | 4.37 |
| : Blows | 38 | 32 | 26 | 19 |
| Moisture | 17.9 | 18.5 | 20.2 | 21.9 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| /T w+t | 28.75 | 29.28 | 26.72 |
| /T d+t | 26.09 | 26.46 | 24.32 |
| /T tare | 11.83 | 11.42 | 11.65 |
| Moisture | 18.7 | 18.8 | 18.9 |



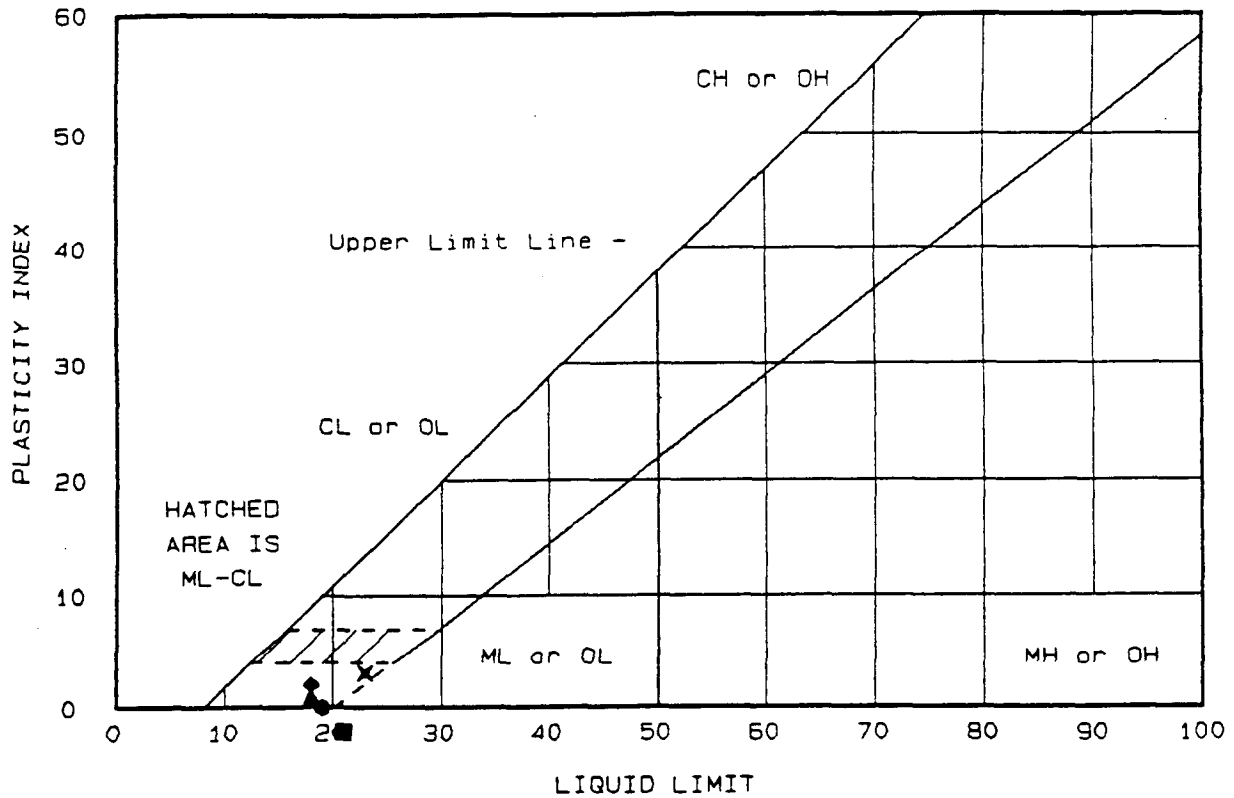

Liquid Limit = 20
Plastic Limit = 19
Plasticity Index = 1

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 20 PL = 19 PI = 1 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID AND PLASTIC LIMITS TEST REPORT




| | Location + Description | LL | PL | PI | -200 | ASTM D 2487-90 |
|---|---|---|---|---|---|---|
| ● | M-117-E @ 3.5-5'<br>brown silty Sand | 19 | 19 | 0 | | |
| ▲ | M023C @ 6-7.5'<br>gray clayey Sand w/debris<br>wood, paper etc. | 18 | 17 | 1 | | |
| ■ | M-116-E @ 10-11.5'<br>grayish brown silty Sand | 21 | 23 | -2 | | |
| ◆ | M-112-A @ 3.5-5'<br>brown clayey Sand | 18 | 16 | 2 | | |
| ✕ | M117-E @ 10-11.5'<br>brown silty sand | 23 | 20 | 3 | | |

Project No.: 153-04
Project: 2738.1405

Client: Montgomery-Watson
Location:

Date: 12/5/94

Remarks:

LIQUID AND PLASTIC LIMITS TEST REPORT

COOPER TESTING LABORATORY

Fig. No. _____

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/5/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 1

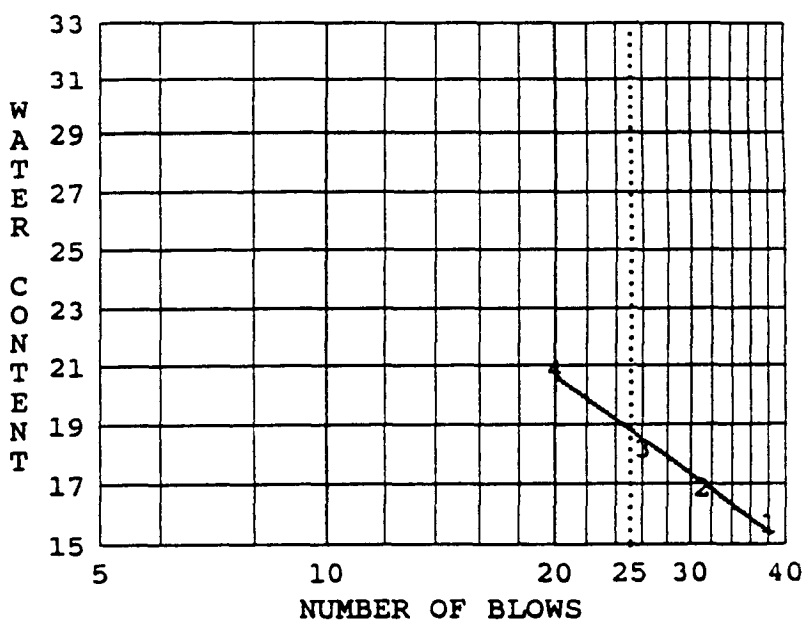
Location and description: M-117-E
brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 16.28 | 13.61 | 16.99 | 14.16 |
| WT d+t | 14.99 | 12.27 | 15.42 | 12.47 |
| WT tare | 6.75 | 4.32 | 6.78 | 4.37 |
| # Blows | 38 | 31 | 26 | 20 |
| Moisture | 15.7 | 16.9 | 18.2 | 20.9 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 23.21 | 26.51 | 23.04 |
| WT d+t | 21.36 | 24.13 | 21.29 |
| WT tare | 11.22 | 11.83 | 11.89 |
| Moisture | 18.2 | 19.3 | 18.6 |




Liquid Limit = 19
Plastic Limit = 19
Plasticity Index = 0

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 19 PL = 19 PI = None LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/5/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 2

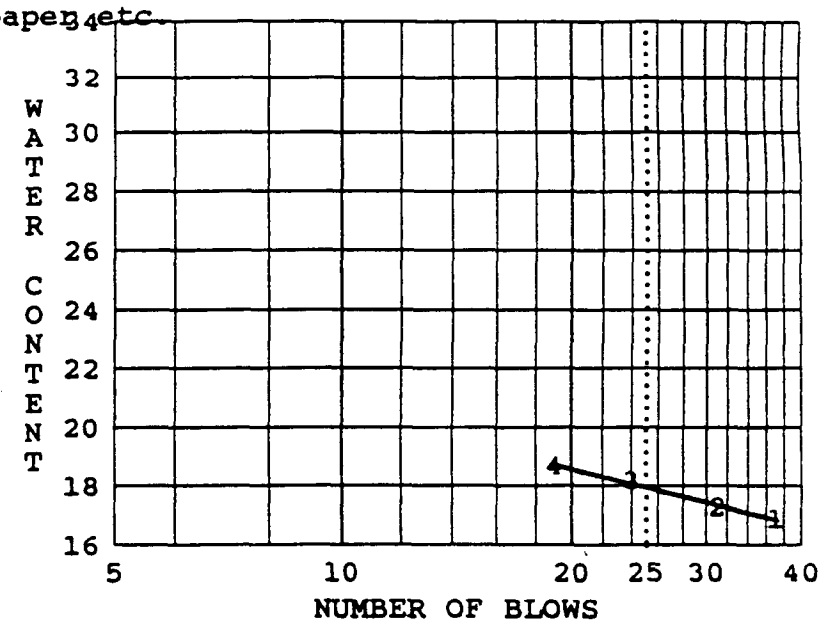
Location and description: M023C @ 6-7.5'
gray clayey Sand w/debris wood, paper etc.

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 13.72 | 14.38 | 13.74 | 14.51 |
| WT d+t | 12.37 | 12.89 | 12.3 | 12.9 |
| WT tare | 4.37 | 4.26 | 4.39 | 4.27 |
| # Blows | 37 | 31 | 24 | 19 |
| Moisture | 16.9 | 17.3 | 18.2 | 18.7 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 22.52 | 22.87 | 22.88 |
| WT d+t | 20.9 | 21.26 | 21.28 |
| WT tare | 11.35 | 11.46 | 11.56 |
| Moisture | 17.0 | 16.4 | 16.5 |




Liquid Limit = 18
Plastic Limit = 17
Plasticity Index = 1

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 18 PL = 17 PI = 1 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/5/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 3

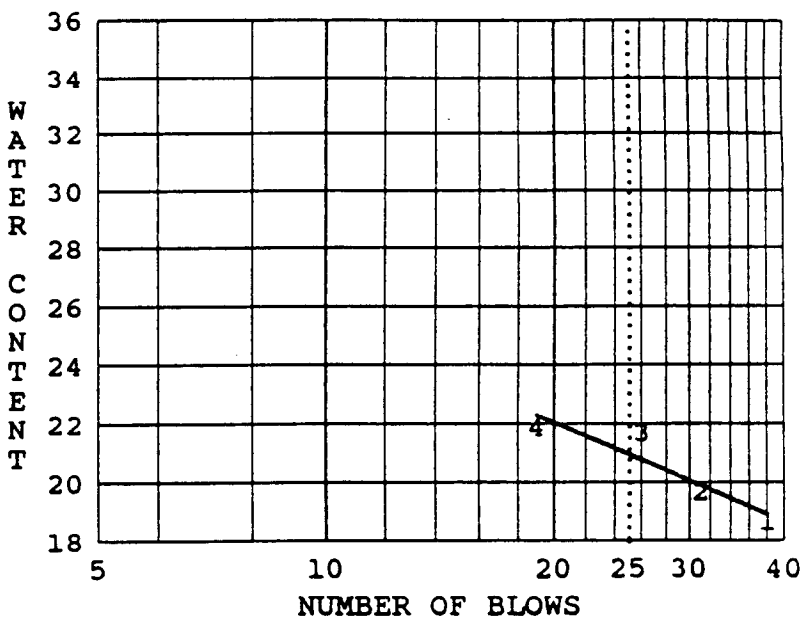
Location and description: M-116-E @ 10-11.5'
grayish brown silty Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 16.08 | 14.78 | 15.96 | 17.07 |
| WT d+t | 14.23 | 13.06 | 13.98 | 15.22 |
| WT tare | 4.36 | 4.32 | 4.84 | 6.76 |
| # Blows | 38 | 31 | 26 | 19 |
| Moisture | 18.7 | 19.7 | 21.7 | 21.9 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 26.80 | 27.51 | 27.2 |
| WT d+t | 23.38 | 24.88 | 24.66 |
| WT tare | 11.64 | 11.37 | 11.75 |
| Moisture | 29.1 | 19.5 | 19.7 |




Liquid Limit = 21
Plastic Limit = 23
Plasticity Index = -2

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 21 PL = 23 PI = None LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/5/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 4

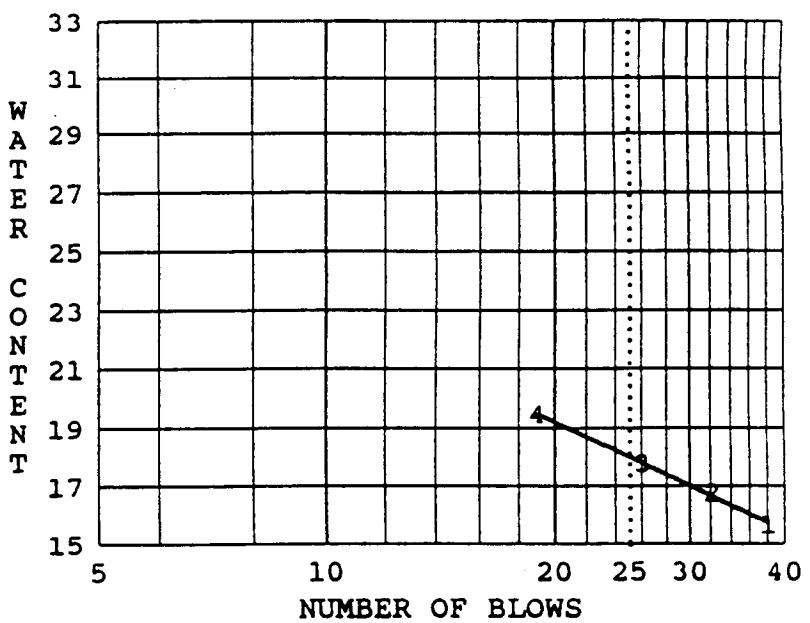
Location and description: M-112-A @ 3.5-5'
brown clayey Sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 14.81 | 15.20 | 13.70 | 16.52 |
| WT d+t | 13.39 | 13.63 | 12.31 | 14.53 |
| WT tare | 4.35 | 4.27 | 4.48 | 4.3 |
| # Blows | 38 | 32 | 26 | 19 |
| Moisture | 15.7 | 16.8 | 17.8 | 19.5 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 26.3 | 27.06 | 26.9 |
| WT d+t | 24.23 | 24.82 | 24.77 |
| WT tare | 11.46 | 11.66 | 11.6 |
| Moisture | 16.2 | 17.0 | 16.2 |




Liquid Limit = 18
Plastic Limit = 16
Plasticity Index = 2

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 18 PL = 16 PI = 2 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

Project No.: 153-04 Date: 12/5/94
Client: Montgomery-Watson
Project: 2738.1405

Project location:

Remarks:

Figure Number:

## TEST DATA - Test number 5

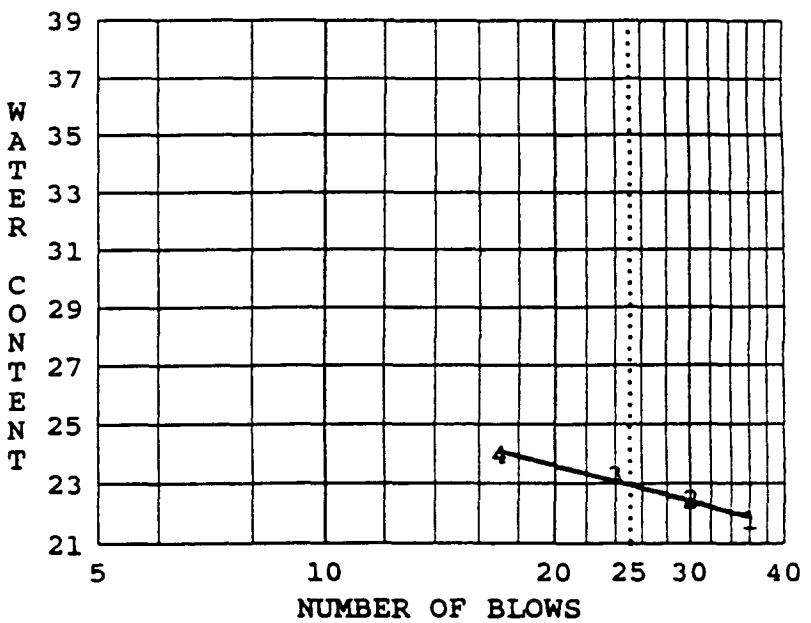
Location and description: M117-E @ 10-11.5'
brown silty sand

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| WT w+t | 17.41 | 15.65 | 13.37 | 17.47 |
| WT d+t | 15.51 | 13.58 | 11.69 | 14.92 |
| WT tare | 6.78 | 4.38 | 4.49 | 4.28 |
| # Blows | 36 | 30 | 24 | 17 |
| Moisture | 21.8 | 22.5 | 23.3 | 24.0 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| WT w+t | 28.67 | 27.78 | 28.82 |
| WT d+t | 25.84 | 25.16 | 25.94 |
| WT tare | 11.84 | 11.86 | 11.63 |
| Moisture | 20.2 | 19.7 | 20.1 |



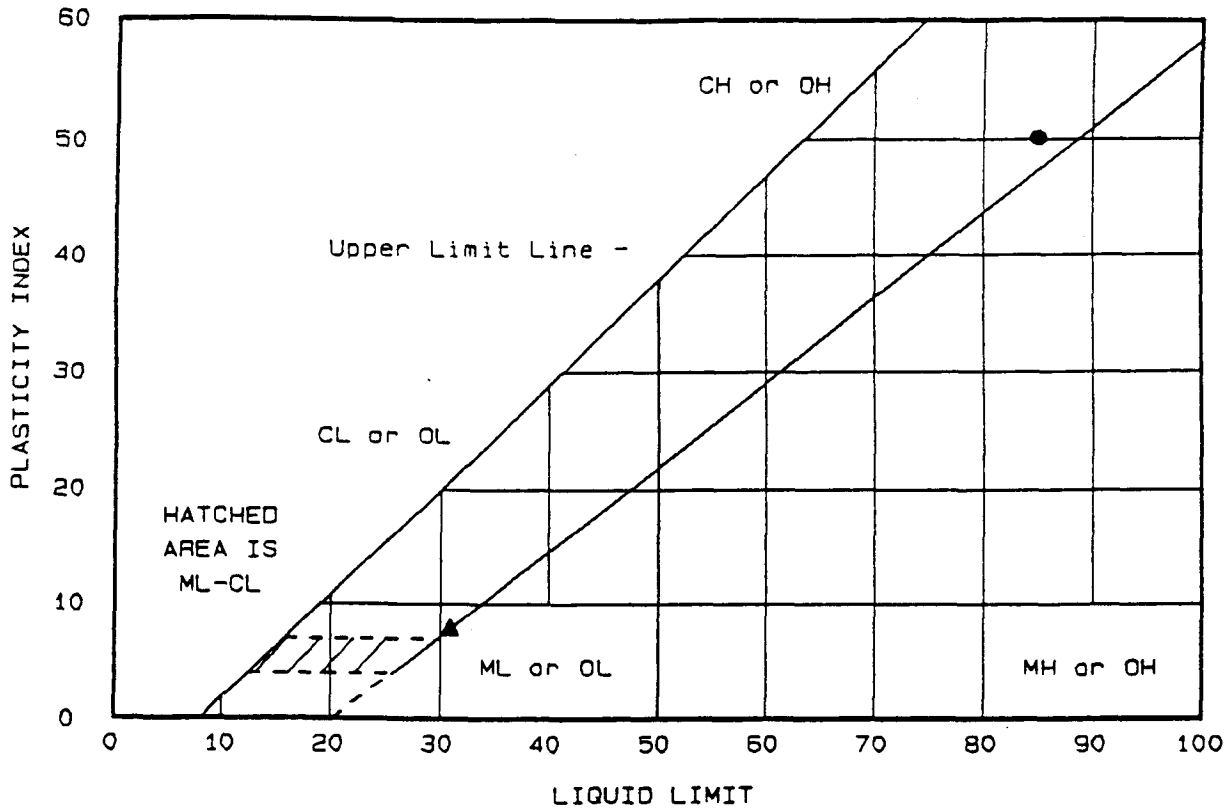

Liquid Limit = 23
Plastic Limit = 20
Plasticity Index = 3

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 23 PL = 20 PI = 3 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID AND PLASTIC LIMITS TEST REPORT




| | Location + Description | LL | PL | PI | -200 | ASTM D 2487-90 |
|---|---|---|---|---|---|---|
| ● | M-06-06 @ 11-12'<br>gray Clay | 85 | 35 | 50 | | |
| ▲ | M-115-E @ 10.5-12'<br>gray sandy Clay | 31 | 23 | 8 | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Project No.: 153-04
Project: 2738.1405

Client: Montgomer-Watson
Location:

Date: 12/9/94

Remarks:

LIQUID AND PLASTIC LIMITS TEST REPORT

**COOPER TESTING LABORATORY**

Fig. No. _____

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

'roject No.: 153-04 Date: 12/9/94
:lient: Montgomer-Watson
'roject: 2738.1405

'roject location:

Remarks:

'igure Number:

## TEST DATA - Test number 1

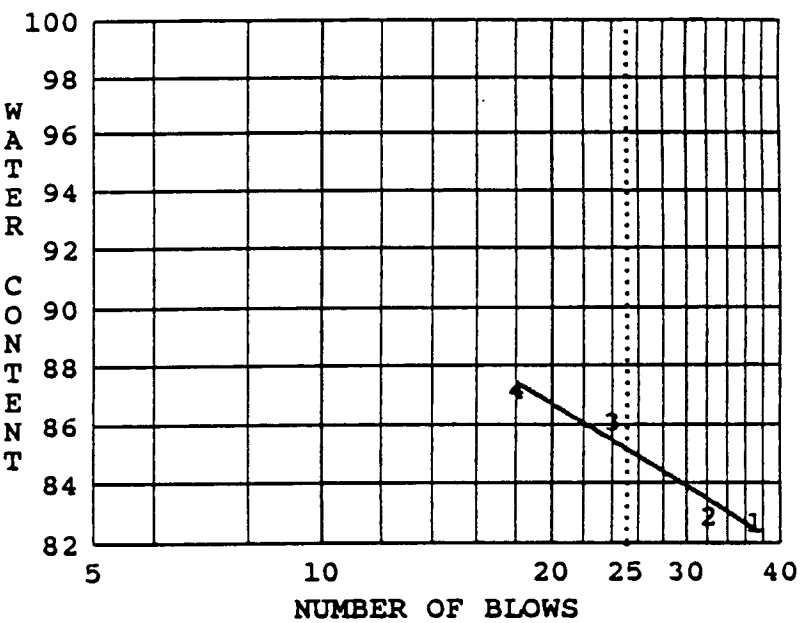
.ocation and description: M-06-06 @ 11-12'
gray Clay

LIQUID LIMITS

| Run No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| /T w+t | 10.57 | 13.5 | 10.32 | 10.64 |
| /T d+t | 7.79 | 10.44 | 7.54 | 7.72 |
| /T tare | 4.43 | 6.75 | 4.31 | 4.37 |
| lows | 37 | 32 | 24 | 18 |
| Moisture | 82.7 | 82.9 | 86.1 | 87.2 |

PLASTIC LIMITS

| Run No. | 1 | 2 | 3 |
|---|---|---|---|
| /T w+t | 19.42 | 18.72 | 18.83 |
| /T d+t | 17.29 | 16.81 | 16.94 |
| /T tare | 11.29 | 11.35 | 11.59 |
| Moisture | 35.5 | 35.0 | 35.3 |




Liquid Limit = 85
Plastic Limit = 35
Plasticity Index = 50

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 85 PL = 35 PI = 50 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

# LIQUID & PLASTIC LIMIT TEST DATA

## PROJECT DATA

'roject No.: 153-04 Date: 12/9/94
:lient: Montgomer-Watson
'roject: 2738.1405

'roject location:

:emarks:

'igure Number:

## TEST DATA - Test number 2

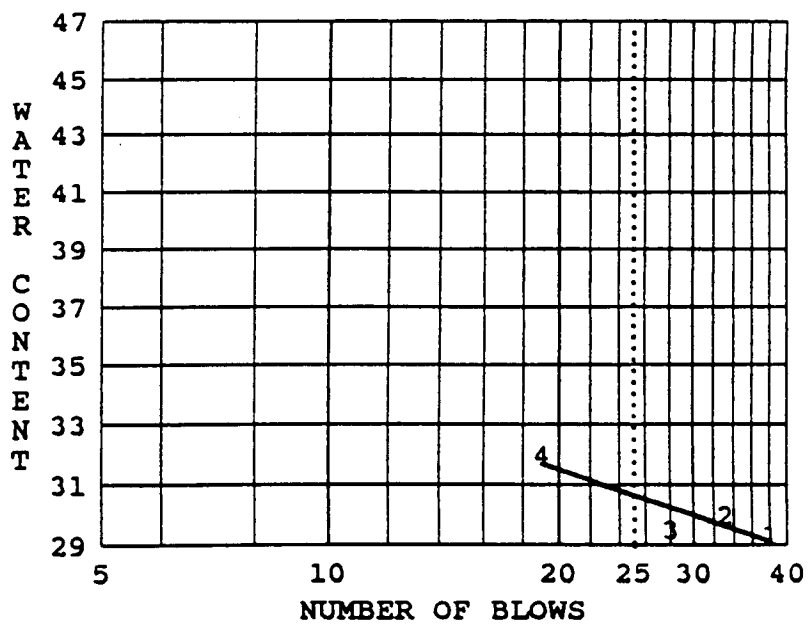
.ocation and description: M-115-E @ 10.5-12'
gray sandy Clay

LIQUID LIMITS

| :un No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| /T w+t | 10.57 | 11.93 | 9.42 | 11.01 |
| /T d+t | 9.17 | 10.71 | 8.26 | 9.4 |
| /T tare | 4.39 | 6.64 | 4.33 | 4.37 |
| lows | 38 | 33 | 28 | 19 |
| sture | 29.3 | 30.0 | 29.5 | 32.0 |

PLASTIC LIMITS

| :un No. | 1 | 2 | 3 |
|---|---|---|---|
| /T w+t | 18.24 | 17.33 | 18.62 |
| /T d+t | 17 | 16.19 | 17.37 |
| /T tare | 11.46 | 11.22 | 11.79 |
| foisture | 22.4 | 22.9 | 22.4 |




.iquid Limit = 31
'lastic Limit = 23
'lasticity Index = 8

## CLASSIFICATION DATA

%-4 = %-10 = %-40 = %-200 =
Uniformity Coefficient = Curvature Coefficient =
LL = 31 PL = 23 PI = 8 LL (oven dry) =
ASTM =
AASHTO =

COOPER TESTING LABORATORY

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04 | Boring: | | Date: | 11/29/94 |
| Client: | Montgomery-Watson | Sample: | M-06-06 | By: | DC |
| Project: | 27381405 | Depth: | 3.5-5.0 | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 4 | Start of Test |
| 1 | | 1.5 X 10E-3 |
| 2 | | 1.2 X 10E-3 |
| 3 | | 1.1 X 10E-3 |
| 4 | | 1.0 X 10E-3 |
| 5 | | 1.0 X 10E-3 |

Average Permeability: 1 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.01 | 2.01 |
| Diameter, in.: | 1.94 | 1.94 |
| Area, in2: | 2.96 | 2.96 |
| Volume, in3: | 5.94 | 5.94 |
| Total Volume, cc: | 97.36 | 97.36 |
| Vol. of Solids, cc: | 61.35 | 61.35 |
| Vol. of Voids, cc: | 36.01 | 36.01 |
| Void Ratio: | 0.59 | 0.59 |
| Porosity, %: | 36.99 | 36.99 |
| Saturation, % | 74.97 | 99.96 |
| Sp. Gravity: | 2.67 | 2.67 |
| Wet Weight: | 190.8 | 199.8 |
| Dry Weight: | 163.8 | 163.8 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 16.5 | 22.0 |
| Density, pcf: | 105.0 | 105.0 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04v | Boring: | | Date: | 12/6/94 |
| Client: | Montgomery-Watson | Sample: | M-11-06 | By: | DC |
| Project: | 2738.1405 | Depth: | 10-11.5' | | |
| Soil: | gray silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 8 | | 1.0 X 10E-4 |
| 19 | | 1.1 X 10E-4 |
| 30 | | 1.0 X 10E-4 |
| 40 | | 1.0 X 10E-4 |
| 50 | | 1.0 X 10E-4 |
| 60 | | 1.0 X 10E-4 |

Average Permeability: 1 X 10E-4

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.99 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.82 |
| Total Volume, cc: | 95.88 | 95.40 |
| Vol. of Solids, cc: | 61.61 | 61.61 |
| Vol. of Voids, cc: | 34.27 | 33.79 |
| Void Ratio: | 0.56 | 0.55 |
| Porosity, %: | 35.74 | 35.42 |
| Saturation, % | 96.00 | 101.21 |
| Sp. Gravity: | 2.67 | 2.67 |
| Wet Weight: | 197.4 | 198.7 |
| Dry Weight: | 164.5 | 164.5 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 20.0 | 20.8 |
| Density, pcf: | 107.1 | 107.6 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04b | Boring: | | Date: | 11/29/94 |
| Client: | Montgomery-Watson | Sample: | M-11-06 | By: | DC |
| Project: | 2738.1405 | Depth: | 3.5-5' | | |
| Soil: | brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 1.7 X 10E-3 |
| 2 | | 1.8 X 10E-3 |
| 4 | | 1.8 X 10E-3 |
| 6 | | 1.8 X 10E-3 |
| 8 | | 1.8 X 10E-3 |

Average Permeability: 2 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.98 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.79 |
| Total Volume, cc: | 95.88 | 94.92 |
| Vol. of Solids, cc: | 53.72 | 53.72 |
| Vol. of Voids, cc: | 42.16 | 41.20 |
| Void Ratio: | 0.78 | 0.77 |
| Porosity, %: | 43.97 | 43.40 |
| Saturation, % | 29.18 | 63.59 |
| Sp. Gravity: | 2.74 | 2.74 |
| Wet Weight: | 159.5 | 173.4 |
| Dry Weight: | 147.2 | 147.2 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 8.4 | 17.8 |
| Density, pcf: | 95.8 | 96.8 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04n | Boring: | | Date: | 12/2/94 |
| Client: | Montgomery-Watson | Sample: | M-030-E | By: | DC |
| Project: | 2738.1405 | Depth: | 14-15.5' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 2 | | 1.1 X 10E-3 |
| 3 | | 1.1 X 10E-3 |
| 4 | | 1.1 X 10E-3 |
| 5 | | 1.2 X 10E-3 |

Average Permeability: 1 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 2.00 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.85 |
| Total Volume, cc: | 95.88 | 95.88 |
| Vol. of Solids, cc: | 60.56 | 60.56 |
| Vol. of Voids, cc: | 35.32 | 35.32 |
| Void Ratio: | 0.58 | 0.58 |
| Porosity, %: | 36.84 | 36.84 |
| Saturation, % | 86.07 | 96.26 |
| Sp. Gravity: | 2.67 | 2.67 |
| Wet Weight: | 192.1 | 195.7 |
| Dry Weight: | 161.7 | 161.7 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 18.8 | 21.0 |
| Density, pcf: | 105.2 | 105.2 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04g | Boring: | | Date: | 12/1/94 |
| Client: | Montgomery-Watson | Sample: | M030-A | By: | DC |
| Project: | 2738.1405 | Depth: | 8.5-10' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 2 | | 1.0 X 10E-3 |
| 3 | | 1.0 X 10E-3 |
| 4 | | 1.0 X 10E-3 |
| 5 | | 1.1 X 10E-3 |
| 6 | | 1.2 X 10E-3 |
| 7 | | 1.1 X 10E-3 |

Average Permeability: 1 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 2.00 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.85 |
| Total Volume, cc: | 95.88 | 95.88 |
| Vol. of Solids, cc: | 58.11 | 58.11 |
| Vol. of Voids, cc: | 37.77 | 37.77 |
| Void Ratio: | 0.65 | 0.65 |
| Porosity, %: | 39.39 | 39.39 |
| Saturation, % | 83.13 | 89.75 |
| Sp. Gravity: | 2.70 | 2.70 |
| Wet Weight: | 188.3 | 190.8 |
| Dry Weight: | 156.9 | 156.9 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 20.0 | 21.6 |
| Density, pcf: | 102.1 | 102.1 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04i | Boring: | | Date: | 12/2/94 |
| Client: | Montgomery-Watson | Sample: | M-030-A | By: | DC |
| Project: | 2738.1405 | Depth: | 4.5-6.0' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 3.6 X 10E-3 |
| 2 | | 3.7 X 10E-3 |
| 3 | | 3.7 X 10E-3 |
| 4 | | 3.6 X 10E-3 |
| 5 | | 3.7 X 10E-3 |
| 6 | | 3.6 X 10E-3 |

Average Permeability: 4 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 2.00 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.85 |
| Total Volume, cc: | 95.88 | 95.88 |
| Vol. of Solids, cc: | 61.32 | 61.32 |
| Vol. of Voids, cc: | 34.57 | 34.57 |
| Void Ratio: | 0.56 | 0.56 |
| Porosity, %: | 36.05 | 36.05 |
| Saturation, % | 86.50 | 90.84 |
| Sp. Gravity: | 2.66 | 2.66 |
| Wet Weight: | 193.0 | 194.5 |
| Dry Weight: | 163.1 | 163.1 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 18.3 | 19.3 |
| Density, pcf: | 106.1 | 106.1 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04p | Boring: | | Date: | 12/3/94 |
| Client: | Montgomery-Watson | Sample: | M117-E | By: | DC |
| Project: | 2738.141 | Depth: | 10-11.5' | | |
| Soil: | brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 2.9 X 10E-3 |
| 2 | | 3.1 X 10E-3 |
| 3 | | 3.2 X 10E-3 |
| 4 | | 3.2 X 10E-3 |
| 5 | | 3.3 X 10E-3 |
| 6 | | 3.4 X 10E-3 |
| 7 | | 3.3 X 10E-3 |

Average Permeability: 3 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.99 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.82 |
| Total Volume, cc: | 95.88 | 95.40 |
| Vol. of Solids, cc: | 58.92 | 58.92 |
| Vol. of Voids, cc: | 36.96 | 36.48 |
| Void Ratio: | 0.63 | 0.62 |
| Porosity, %: | 38.55 | 38.24 |
| Saturation, % | 80.63 | 84.16 |
| Sp. Gravity: | 2.69 | 2.69 |
| Wet Weight: | 188.3 | 189.2 |
| Dry Weight: | 158.5 | 158.5 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 18.8 | 19.4 |
| Density, pcf: | 103.2 | 103.7 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04r | Boring: | | Date: | 12/3/94 |
| Client: | Montgomery-Watson | Sample: | M-117-E | By: | DC |
| Project: | 2738.141 | Depth: | 3.5-5' | | |
| Soil: | brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 4.5 X 10E-3 |
| 2 | | 4.5 X 10E-3 |
| 3 | | 4.6 X 10E-3 |
| 4 | | 4.7 X 10E-3 |
| 5 | | 4.7 X 10E-3 |
| 6 | | 4.6 X 10E-3 |

Average Permeability: 5 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.98 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.79 |
| Total Volume, cc: | 95.88 | 94.92 |
| Vol. of Solids, cc: | 55.32 | 55.32 |
| Vol. of Voids, cc: | 40.57 | 39.61 |
| Void Ratio: | 0.73 | 0.72 |
| Porosity, %: | 42.31 | 41.73 |
| Saturation, % | 37.47 | 71.20 |
| Sp. Gravity: | 2.69 | 2.69 |
| Wet Weight: | 164.0 | 177.0 |
| Dry Weight: | 148.8 | 148.8 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 10.2 | 19.0 |
| Density, pcf: | 96.8 | 97.8 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04s | Boring: | | Date: | 12/5/94 |
| Client: | Montgomery-Watson | Sample: | M-116-E | By: | DC |
| Project: | 2738.141 | Depth: | 10-11.5' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 3.0 X 10E-3 |
| 2 | | 3.2 X 10E-3 |
| 3 | | 3.2 X 10E-3 |
| 4 | | 3.2 X 10E-3 |
| 5 | | 3.3 X 10E-3 |

Average Permeability: 3 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 2.00 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.85 |
| Total Volume, cc: | 95.88 | 95.88 |
| Vol. of Solids, cc: | 59.14 | 59.14 |
| Vol. of Voids, cc: | 36.74 | 36.74 |
| Void Ratio: | 0.62 | 0.62 |
| Porosity, %: | 38.32 | 38.32 |
| Saturation, % | 87.91 | 93.35 |
| Sp. Gravity: | 2.67 | 2.67 |
| Wet Weight: | 190.2 | 192.2 |
| Dry Weight: | 157.9 | 157.9 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 20.5 | 21.7 |
| Density, pcf: | 102.8 | 102.8 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04q | Boring: | | Date: | 12/3/94 |
| Client: | Montgomery-Watson | Sample: | M-116-E | By: | DC |
| Project: | M-116-E | Depth: | 3.5-4.5' | | |
| Soil: | gray-brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 5 | | 1.2 X 10E-3 |
| 6 | | 1.5 X 10E-3 |
| 7 | | 1.7 X 10E-3 |
| 8 | | 1.8 X 10E-3 |
| 9 | | 1.9 X 10E-7 |
| 10 | | 2.0 X 10E-7 |

Average Permeability: 2 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 2.00 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.85 |
| Total Volume, cc: | 95.88 | 95.88 |
| Vol. of Solids, cc: | 58.54 | 58.54 |
| Vol. of Voids, cc: | 37.34 | 37.34 |
| Void Ratio: | 0.64 | 0.64 |
| Porosity, %: | 38.95 | 38.95 |
| Saturation, % | 85.16 | 88.64 |
| Sp. Gravity: | 2.67 | 2.67 |
| Wet Weight: | 188.1 | 189.4 |
| Dry Weight: | 156.3 | 156.3 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 20.3 | 21.2 |
| Density, pcf: | 101.7 | 101.7 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04F | Boring: | | Date: | 11/30/94 |
| Client: | Montgomery-Watson | Sample: | M-016B | By: | DC |
| Project: | 2738.1405 | Depth: | 6.5-8' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 7.8 X 10E-3 |
| 2 | | 7.9 X 10E-3 |
| 3 | | 7.8 X 10E-3 |
| 0 | 5 | |
| 1 | | 8.0 X 10E-3 |
| 2 | | 7.9 X 10E-3 |
| 3 | | 7.9 X 10E-3 |

Average Permeability: 8 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.98 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.79 |
| Total Volume, cc: | 95.88 | 94.92 |
| Vol. of Solids, cc: | 54.72 | 54.72 |
| Vol. of Voids, cc: | 41.16 | 40.20 |
| Void Ratio: | 0.75 | 0.73 |
| Porosity, %: | 42.93 | 42.35 |
| Saturation, % | 21.38 | 85.57 |
| Sp. Gravity: | 2.69 | 2.69 |
| Wet Weight: | 156.0 | 181.6 |
| Dry Weight: | 147.2 | 147.2 |
| Tare: | | |
| Moisture, %: | 6.0 | 23.4 |
| Density, pcf: | 95.8 | 96.8 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04E | Boring: | | Date: | 11/30/94 |
| Client: | Montgomery-Watson | Sample: | M-016E | By: | DC |
| Project: | 2738.1405 | Depth: | 14.5-16' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 2.1 X 10E-3 |
| 2 | | 2.2 X 10E-3 |
| 4 | | 2.1 X 10E-3 |
| 5 | | 2.2 X 10E-3 |
| 6 | | 2.2 X 10E-3 |

Average Permeability: 2 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.99 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.82 |
| Total Volume, cc: | 95.88 | 95.40 |
| Vol. of Solids, cc: | 58.28 | 58.28 |
| Vol. of Voids, cc: | 37.60 | 37.12 |
| Void Ratio: | 0.65 | 0.64 |
| Porosity, %: | 39.21 | 38.91 |
| Saturation, % | 86.18 | 90.79 |
| Sp. Gravity: | 2.68 | 2.68 |
| Wet Weight: | 188.6 | 189.9 |
| Dry Weight: | 156.2 | 156.2 |
| Tare: | | |
| Moisture, %: | 20.7 | 21.6 |
| Density, pcf: | 101.7 | 102.2 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04d | Boring: | | Date: | 11/30/94 |
| Client: | Montgomery-Watson | Sample: | M-016E | By: | DC |
| Project: | 2738.1405 | Depth: | 6.5-8' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 3.9 X 10E-3 |
| 2 | | 4.1 X 10E-3 |
| 3 | | 4.0 X 10E-3 |
| 4 | | 4.0 X 10E-3 |
| 5 | | 4.0 X 10E-3 |
| 6 | | 4.0 X 10E-3 |

Average Permeability: 4 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 2.00 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.85 |
| Total Volume, cc: | 95.88 | 95.88 |
| Vol. of Solids, cc: | 53.48 | 53.48 |
| Vol. of Voids, cc: | 42.40 | 42.40 |
| Void Ratio: | 0.79 | 0.79 |
| Porosity, %: | 44.22 | 44.22 |
| Saturation, % | 23.35 | 81.60 |
| Sp. Gravity: | 2.70 | 2.70 |
| Wet Weight: | 154.3 | 179.0 |
| Dry Weight: | 144.4 | 144.4 |
| Tare: | | |
| Moisture, %: | 6.9 | 24.0 |
| Density, pcf: | 94.0 | 94.0 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04u2 | Boring: | | Date: | 12/6/94 |
| Client: | Montgomery-Watson | Sample: | M-115E | By: | DC |
| Project: | 2738.141 | Depth: | 10.5-12' | | |
| Soil: | gray silty Sand to sandy Clay, (cange)-sand tested | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 7.0 X 10E-3 |
| 2 | | 6.3 X 10E-3 |
| 3 | | 5.4 X 10E-3 |
| 4 | | 5.0 X10E-3 |
| 5 | | 4.8 X 10E-3 |
| 0 | 5 | |
| 2 | | 7.8 X 10E-3 |
| 3 | | 7.5 X 10E-3 |
| | Average Permeability: | 6 X 10E-3 |

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.98 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.79 |
| Total Volume, cc: | 95.88 | 94.92 |
| Vol. of Solids, cc: | 60.53 | 60.53 |
| Vol. of Voids, cc: | 35.35 | 34.40 |
| Void Ratio: | 0.58 | 0.57 |
| Porosity, %: | 36.87 | 36.24 |
| Saturation, % | 86.55 | 94.20 |
| Sp. Gravity: | 2.66 | 2.66 |
| Wet Weight: | 191.6 | 193.4 |
| Dry Weight: | 161.0 | 161.0 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 19.0 | 20.1 |
| Density, pcf: | 104.8 | 105.8 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04t | Boring: | | Date: | 12/5/94 |
| Client: | Montgomery-Watson | Sample: | M115-E | By: | DC |
| Project: | 2738.141 | Depth: | 3.5-4.5' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 2 | | 5.9 X 10E-4 |
| 3 | | 6.0 X 10E-4 |
| 4 | | 6.1 X 10E-4 |
| 5 | | 6.2 X 10E-4 |
| 6 | | 6.0 X 10E-4 |
| 7 | | 6.0 X 10E-4 |

Average Permeability: 6 X 10E-4

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 2.00 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.85 |
| Total Volume, cc: | 95.88 | 95.88 |
| Vol. of Solids, cc: | 62.13 | 62.13 |
| Vol. of Voids, cc: | 33.75 | 33.75 |
| Void Ratio: | 0.54 | 0.54 |
| Porosity, %: | 35.20 | 35.20 |
| Saturation, % | 85.05 | 90.08 |
| Sp. Gravity: | 2.67 | 2.67 |
| Wet Weight: | 194.6 | 196.3 |
| Dry Weight: | 165.9 | 165.9 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 17.3 | 18.3 |
| Density, pcf: | 108.0 | 108.0 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04h | Boring: | | Date: | 12/1/94 |
| Client: | Montgomery Watson | Sample: | M112-A | By: | DC |
| Project: | 2738.1405 | Depth: | 10.5-12' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 1.6 X 10E-3 |
| 2 | | 1.7 X 10E-3 |
| 3 | | 1.7 X 10E-3 |
| 4 | | 1.7 X 10E-3 |
| 5 | | 1.7 X 10E-3 |

Average Permeability: 2 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 2.00 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.85 |
| Total Volume, cc: | 95.88 | 95.88 |
| Vol. of Solids, cc: | 57.93 | 57.93 |
| Vol. of Voids, cc: | 37.96 | 37.96 |
| Void Ratio: | 0.66 | 0.66 |
| Porosity, %: | 39.59 | 39.59 |
| Saturation, % | 90.90 | 93.79 |
| Sp. Gravity: | 2.70 | 2.70 |
| Wet Weight: | 190.9 | 192.0 |
| Dry Weight: | 156.4 | 156.4 |
| Tare: | | |
| Moisture, %: | 22.1 | 22.8 |
| Density, pcf: | 101.8 | 101.8 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04a | Boring: | | Date: | 11/29/94 |
| Client: | Montgomery-Watson | Sample: | M-003-E | By: | DC |
| Project: | 2738.1405 | Depth: | 11.5-13' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 2.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 5 | Start of Test |
| 1 | | 2.7 X 10E-3 |
| 2 | | 3.0 X 10E-3 |
| 5 | | 2.9 X 10E-3 |
| 6 | | 2.9 X 10E-3 |
| 7 | | 2.8 X 10E-3 |
| 9 | | 2.8 X 10E-3 |

Average Permeability: 3 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 2.00 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.85 |
| Total Volume, cc: | 95.88 | 95.88 |
| Vol. of Solids, cc: | 59.73 | 59.73 |
| Vol. of Voids, cc: | 36.15 | 36.15 |
| Void Ratio: | 0.61 | 0.61 |
| Porosity, %: | 37.70 | 37.70 |
| Saturation, % | 83.83 | 91.02 |
| Sp. Gravity: | 2.64 | 2.64 |
| Wet Weight: | 188.0 | 190.6 |
| Dry Weight: | 157.7 | 157.7 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 19.2 | 20.9 |
| Density, pcf: | 102.6 | 102.6 |

Constant Head Permeability
ASTM D 2434
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04c | Boring: | | Date: | 11/29/94 |
| Client: | Montgomery-Watson | Sample: | M-003-B | By: | DC |
| Project: | 2738.1405 | Depth: | 3.5-5' | | |
| Soil: | grayish brown silty Sand | | | | |

Hydraulic Gradient: 1.5

| Elapsed Time (min) | Head (in.) | Permeability cm/sec |
|---|---|---|
| 0 | 3 | Start of Test |
| 4 | | 6.5 X 10E-3 |
| 6 | | 6.4 X 10E-3 |
| 7 | | 6.4 X 10E-3 |
| 8 | | 6.3 X 10E-3 |
| 0 | 3 | |
| 2 | | 6.9 X 10E-3 |
| 4 | | 6.5 X 10E-3 |

Average Permeability: 7 X 10E-3

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.95 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.70 |
| Total Volume, cc: | 95.88 | 93.48 |
| Vol. of Solids, cc: | 51.65 | 51.65 |
| Vol. of Voids, cc: | 44.23 | 41.83 |
| Void Ratio: | 0.86 | 0.81 |
| Porosity, %: | 46.13 | 44.75 |
| Saturation, % | 14.24 | 75.78 |
| Sp. Gravity: | 2.66 | 2.66 |
| Wet Weight: | 143.7 | 169.1 |
| Dry Weight: | 137.4 | 137.4 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 4.6 | 23.1 |
| Density, pcf: | 89.4 | 91.7 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04v2 | Boring: | | Date: | 12/6/94 |
| Client: | Montgomery-Watson | Sample: | M-11-06 | By: | DC |
| Project: | 2738.1405 | Depth: | 10-11.5' | | |
| Soil: | gray Clay to silty Sand, (change) | | | | |

Sample Pressures:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cell: | 30 psi | Bot. Cap: | 27 psi | Top Cap: | 25 psi | Hydraulic Gradient: | 28 |

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 71.38 | Start of Test |
| 1123 | 70.37 | 3.9 X 10E-8 |
| 2378 | 69.26 | 4.1 X 10E-8 |
| 2614 | 69.12 | 3.6 X 10E-8 |
| 2806 | 69.00 | 3.5 X 10E-8 |

Average Permeability: 4 X 10E-8 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.02 | 1.94 |
| Diameter, in.: | 1.94 | 1.92 |
| Area, in2: | 2.96 | 2.90 |
| Volume, in3: | 5.97 | 5.62 |
| Total Volume, cc: | 97.85 | 92.04 |
| Vol. of Solids, cc: | 31.49 | 31.49 |
| Vol. of Voids, cc: | 66.35 | 60.55 |
| Void Ratio: | 2.11 | 1.92 |
| Porosity, %: | 67.81 | 65.78 |
| Saturation, % | 99.62 | 99.59 |
| Sp. Gravity: | 2.61 | 2.61 |
| Wet Weight: | 148.3 | 142.5 |
| Dry Weight: | 82.2 | 82.2 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 80.4 | 73.4 |
| Dry Density, pcf: | 52.4 | 55.7 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04w | Boring: | | Date: | 12/6/94 |
| Client: | Montgomery-Watson | Sample: | M-7c-09 | By: | DC |
| Project: | 2738.1405 | Depth: | 3.5-5' | | |
| Soil: | gray silty Sand | | | | |

Sample Pressures:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cell: | 70 psi | Bot. Cap: | 67 psi | Top Cap: | 66 psi | Hydraulic Gradient: | 11 |

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 98.33 | Start of Test |
| 21 | 96.53 | 2.3 X 10E-6 |
| 44 | 94.33 | 2.4 X 10E-6 |
| 148 | 84.93 | 2.5 X 10E-6 |
| 215 | 79.63 | 2.5 X 10E-6 |
| 247 | 77.33 | 2.5 X 10E-6 |

Average Permeability: 2 X 10E-6 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.41 | 2.39 |
| Diameter, in.: | 1.93 | 1.91 |
| Area, in2: | 2.93 | 2.87 |
| Volume, in3: | 7.05 | 6.85 |
| Total Volume, cc: | 115.54 | 112.22 |
| Vol. of Solids, cc: | 79.89 | 79.89 |
| Vol. of Voids, cc: | 35.65 | 32.33 |
| Void Ratio: | 0.45 | 0.40 |
| Porosity, %: | 30.86 | 28.81 |
| Saturation, % | 96.49 | 99.91 |
| Sp. Gravity: | 2.66 | 2.66 |
| Wet Weight: | 246.9 | 244.8 |
| Dry Weight: | 212.5 | 212.5 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 16.2 | 15.2 |
| Dry Density, pcf: | 114.8 | 118.2 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04k | Boring: | | Date: | 12/1/94 |
| Client: | Montgomery-Watson | Sample: | M7C-09 | By: | DC |
| Project: | 2738.1405 | Depth: | 10.5-12.0' | | |
| Soil: | brown silty Sand | | | | |

Sample Pressures:

Cell: 60 psi Bot. Cap: 57 psi Top Cap: 55 psi Hydraulic Gradient: 20.9

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 168.67 | Start of Test |
| 90 | 167.37 | 2.8 X 10E-7 |
| 131 | 166.77 | 2.8 X 10E-7 |
| 202 | 165.77 | 2.8 X 10E-7 |
| 299 | 164.37 | 2.8 X 10E-7 |
| 1199 | 153.17 | 2.9 X 10E-7 |

Average Permeability: 3 X 10E-7 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 3.17 | 3.04 |
| Diameter, in.: | 1.90 | 1.90 |
| Area, in2: | 2.84 | 2.84 |
| Volume, in3: | 8.99 | 8.62 |
| Total Volume, cc: | 147.33 | 141.24 |
| Vol. of Solids, cc: | 100.91 | 100.91 |
| Vol. of Voids, cc: | 46.42 | 40.33 |
| Void Ratio: | 0.46 | 0.40 |
| Porosity, %: | 31.51 | 28.55 |
| Saturation, % | 111.38 | 118.52 |
| Sp. Gravity: | 2.63 | 2.63 |
| Wet Weight: | 317.1 | 313.2 |
| Dry Weight: | 265.4 | 265.4 |
| Tare: | | |
| Moisture, %: | 19.5 | 18.0 |
| Dry Density, pcf: | 112.4 | 117.3 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04J | Boring: | | Date: | 12/1/94 |
| Client: | Montgomer-Watson | Sample: | M-023C | By: | DC |
| Project: | 2738.1405 | Depth: | 6-7.5' | | |
| Soil: | dark gray clayey Sand | | | | |

Sample Pressures:

Cell: 30 psi Bot. Cap: 27 psi Top Cap: 26 psi Hydraulic Gradient: _____

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 110.33 | Start of Test |
| 4 | 100.83 | 7.2 X 10E-5 |
| 9 | 90.83 | 6.9 X 10E-5 |
| 18 | 76.33 | 6.6 X 10E-5 |
| 0 | 109.33 | |
| 3 | 102.13 | 7.3 X 10E-5 |
| 17 | 79.03 | 6.1 X 10E-5 |

Average Permeability: 7 X 10E-5 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 4.08 | 3.99 |
| Diameter, in.: | 1.93 | 1.91 |
| Area, in2: | 2.93 | 2.87 |
| Volume, in3: | 11.94 | 11.43 |
| Total Volume, cc: | 195.60 | 187.34 |
| Vol. of Solids, cc: | 130.15 | 130.15 |
| Vol. of Voids, cc: | 65.45 | 57.19 |
| Void Ratio: | 0.50 | 0.44 |
| Porosity, %: | 33.46 | 30.53 |
| Saturation, % | 94.58 | 104.74 |
| Sp. Gravity: | 2.66 | 2.66 |
| Wet Weight: | 408.1 | 406.1 |
| Dry Weight: | 346.2 | 346.2 |
| Tare: | | |
| Moisture, %: | 17.9 | 17.3 |
| Dry Density, pcf: | 110.4 | 115.3 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04y | Boring: | | Date: | 12/9/94 |
| Client: | Montgomery-Watson | Sample: | M-06-06 | By: | DC |
| Project: | 2738.1405 | Depth: | 11-12' | | |
| Soil: | gray Clay | | | | |

Sample Pressures:

Cell: 30 psi Bot. Cap: 27 psi Top Cap: 25 psi Hydraulic Gradient: 28

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 167.67 | Start of Test |
| 73 | 166.77 | 1.5 X 10E-7 |
| 128 | 166.07 | 1.6 X 10E-7 |
| 184 | 165.27 | 1.6 X 10E-7 |
| 278 | 164.27 | 1.5 X 10E-7 |
| 1107 | 156.07 | 1.4 X 10E-7 |

Average Permeability: 2 X 10E-7 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.94 |
| Diameter, in.: | 1.93 | 1.90 |
| Area, in2: | 2.93 | 2.84 |
| Volume, in3: | 5.85 | 5.50 |
| Total Volume, cc: | 95.88 | 90.14 |
| Vol. of Solids, cc: | 31.86 | 31.86 |
| Vol. of Voids, cc: | 64.03 | 58.28 |
| Void Ratio: | 2.01 | 1.83 |
| Porosity, %: | 66.78 | 64.66 |
| Saturation, % | 97.62 | 97.98 |
| Sp. Gravity: | 2.64 | 2.64 |
| Wet Weight: | 146.6 | 141.2 |
| Dry Weight: | 84.1 | 84.1 |
| Tare: | 0.00 | |
| Moisture, %: | 74.3 | 67.9 |
| Dry Density, pcf: | 54.7 | 58.2 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04x | Boring: | | Date: | 12/7/94 |
| Client: | Montgomery-Watson | Sample: | M06-06 | By: | DC |
| Project: | 2738.1405 | Depth: | 11-12' | | |
| Soil: | gray sandy Clay | | | | |

Sample Pressures:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cell: | 40 psi | Bot. Cap: | 37 psi | Top Cap: | 35 psi | Hydraulic Gradient: | 33 |

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 166.67 | Start of Test |
| 54 | 165.67 | 2.3 X 10E-7 |
| 112 | 164.67 | 2.3 X 10E-7 |
| 206 | 162.97 | 2.3 X 10E-7 |
| 1034 | 151.17 | 2.1 X 10E-7 |

Average Permeability: 2 X 10E-7 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.02 | 1.95 |
| Diameter, in.: | 1.94 | 1.90 |
| Area, in2: | 2.94 | 2.84 |
| Volume, in3: | 5.94 | 5.53 |
| Total Volume, cc: | 97.34 | 90.60 |
| Vol. of Solids, cc: | 50.61 | 50.61 |
| Vol. of Voids, cc: | 46.73 | 39.99 |
| Void Ratio: | 0.92 | 0.79 |
| Porosity, %: | 48.01 | 44.14 |
| Saturation, % | 99.71 | 99.77 |
| Sp. Gravity: | 2.63 | 2.63 |
| Wet Weight: | 179.7 | 173.0 |
| Dry Weight: | 133.1 | 133.1 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 35.0 | 30.0 |
| Dry Density, pcf: | 85.3 | 91.7 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04m | Boring: | | Date: | 12/2/94 |
| Client: | Montgomery-Watson | Sample: | M030-E | By: | DC |
| Project: | 2738.1405 | Depth: | 2.5-4' | | |
| Soil: | grayish brown clayey Sand | | | | |

Sample Pressures:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cell: | 50 psi | Bot. Cap: | 47 psi | Top Cap: | 46 psi | Hydraulic Gradient: | 5 |

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 28.0 | Start of Test |
| 3 | 20.0 | 2.6 X 10E-4 |
| 9 | 10.5 | 2.5 X 10E-4 |
| 15 | 5.7 | 2.4 X 10E-4 |
| 0 | 28.0 | |
| 5 | 16.2 | 2.5 X 10E-4 |
| 17 | 4.8 | 2.4 X 10E-4 |

Average Permeability: 2 X 10E-4 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.00 | 1.94 |
| Diameter, in.: | 1.93 | 1.93 |
| Area, in2: | 2.93 | 2.93 |
| Volume, in3: | 5.85 | 5.68 |
| Total Volume, cc: | 95.88 | 93.00 |
| Vol. of Solids, cc: | 61.24 | 61.24 |
| Vol. of Voids, cc: | 34.65 | 31.77 |
| Void Ratio: | 0.57 | 0.52 |
| Porosity, %: | 36.13 | 34.16 |
| Saturation, % | 70.43 | 100.10 |
| Sp. Gravity: | 2.67 | 2.67 |
| Wet Weight: | 187.9 | 195.3 |
| Dry Weight: | 163.5 | 163.5 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 14.9 | 19.4 |
| Dry Density, pcf: | 106.4 | 109.7 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04j | Boring: | | Date: | 12/2/94 |
| Client: | Montgomery-Watson | Sample: | M-030-C | By: | DC |
| Project: | 2738.1405 | Depth: | 4-4.5' | | |
| Soil: | grayish brown sandy Clay | | | | |

Sample Pressures:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cell: | 70 psi | Bot. Cap: | 67 psi | Top Cap: | 64 psi | Hydraulic Gradient: | 24 |

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 251.0 | Start of Test |
| 66 | 250.4 | 1.2 X 10E-7 |
| 255 | 248.9 | 1.1 X 10E-7 |
| 350 | 248.2 | 1.0 X 10E-7 |
| 1197 | 241.4 | 1.2 X 10E-7 |

Average Permeability: 1 X 10E-7 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 4.08 | 3.87 |
| Diameter, in.: | 1.93 | 1.89 |
| Area, in2: | 2.93 | 2.81 |
| Volume, in3: | 11.94 | 10.87 |
| Total Volume, cc: | 195.60 | 178.10 |
| Vol. of Solids, cc: | 76.89 | 76.89 |
| Vol. of Voids, cc: | 118.70 | 101.21 |
| Void Ratio: | 1.54 | 1.32 |
| Porosity, %: | 60.69 | 56.83 |
| Saturation, % | 83.74 | 99.50 |
| Sp. Gravity: | 2.64 | 2.64 |
| Wet Weight: | 302.4 | 303.7 |
| Dry Weight: | 203.0 | 203.0 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 49.0 | 49.6 |
| Dry Density, pcf: | 64.8 | 71.1 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04u | Boring: | | Date: | 12/6/94 |
| Client: | Montgomery-Watson | Sample: | M-115-E | By: | DC |
| Project: | 2738.1405 | Depth: | 10.5-12' | | |
| Soil: | gray sandy Clay to clayey Sand, (change)-sand tested | | | | |

Sample Pressures:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cell: | 50 psi | Bot. Cap: | 47 psi | Top Cap: | 45 psi | Hydraulic Gradient: | 28 |

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 180.67 | Start of Test |
| 16 | 179.47 | 6.4 X 10E-7 |
| 1110 | 111.57 | 6.7 X 10E-7 |
| 0 | 110.33 | |
| 1244 | 63.93 | 7.2 X 10E-7 |
| 1430 | 58.83 | 6.5 X 10E-7 |

Average Permeability: 7 X10E-7 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 2.02 | 1.87 |
| Diameter, in.: | 1.93 | 1.85 |
| Area, in2: | 2.93 | 2.69 |
| Volume, in3: | 5.91 | 5.03 |
| Total Volume, cc: | 96.84 | 82.37 |
| Vol. of Solids, cc: | 46.84 | 46.84 |
| Vol. of Voids, cc: | 50.00 | 35.53 |
| Void Ratio: | 1.07 | 0.76 |
| Porosity, %: | 51.63 | 43.13 |
| Saturation, % | 99.80 | 100.76 |
| Sp. Gravity: | 2.66 | 2.66 |
| Wet Weight: | 174.5 | 160.4 |
| Dry Weight: | 124.6 | 124.6 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 40.0 | 28.7 |
| Dry Density, pcf: | 80.3 | 94.4 |

Falling Head Permeability
ASTM D 5084
Cooper Testing Lab, Inc.

| | | | | | |
|---|---|---|---|---|---|
| Job No: | 153-04o | Boring: | | Date: | 12/3/94 |
| Client: | Montgomery-Watson | Sample: | M112-A | By: | DC |
| Project: | 2738.1405 | Depth: | 3.5-5' | | |
| Soil: | brown clayey Sand | | | | |

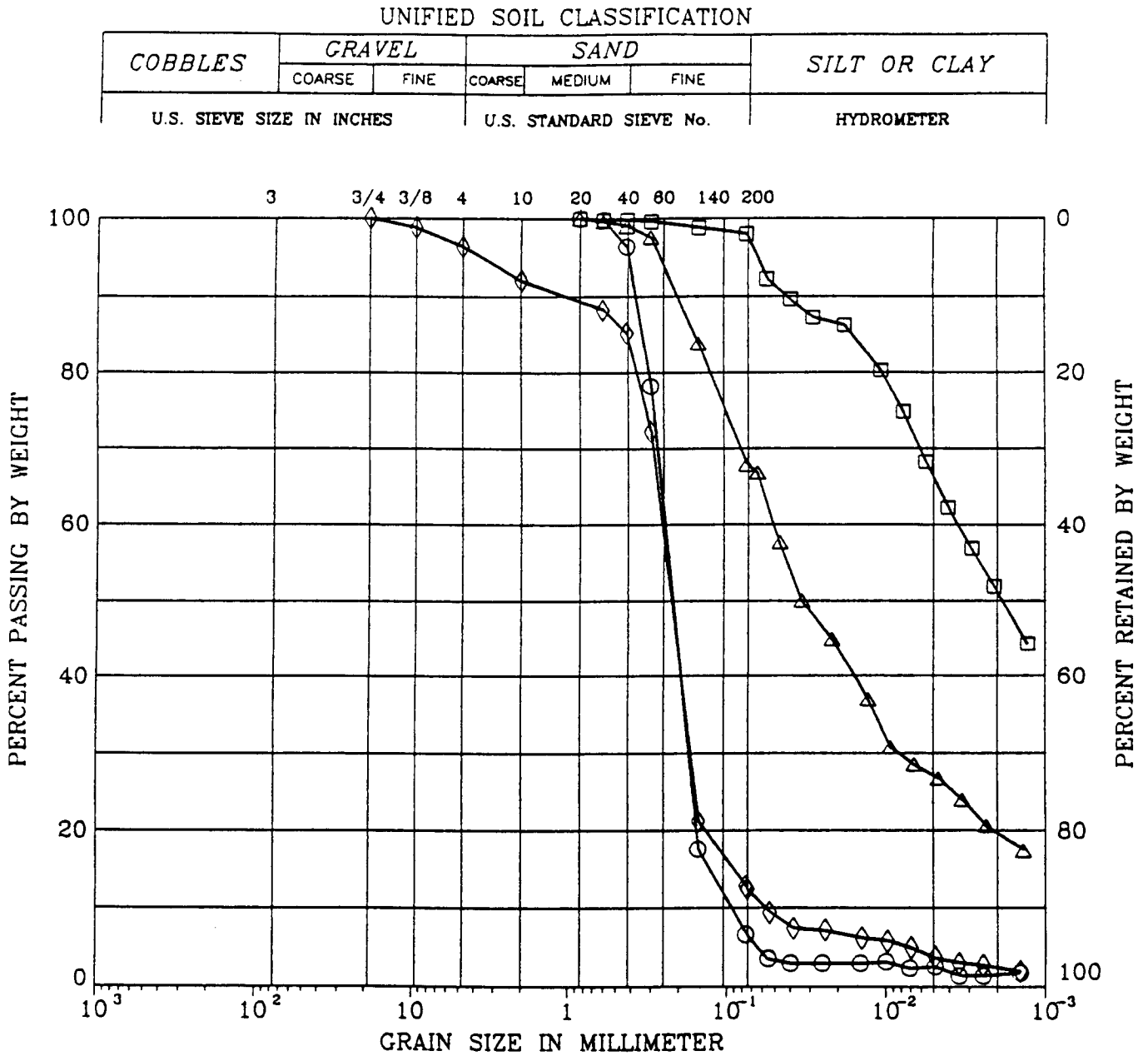
Sample Pressures:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cell: | 60 psi | Bot. Cap: | 57 psi | Top Cap: | 56 psi | Hydraulic Gradient: | 9 |

| Elapsed Time (min) | Head | Permeability cm/sec |
|---|---|---|
| 0 | 110.33 | Start of Test |
| 2 | 81.93 | 3.6 X 10E-4 |
| 3 | 74.73 | 3.1 X 10E-4 |
| 4 | 64.73 | 3.2 X 10E-4 |
| 0 | 107.33 | |
| 1 | 94.73 | 3.0 X 10E-4 |
| 3 | 72.93 | 3.1 X 10E-4 |
| 4 | 63.93 | 3.1 X 10E-4 |

Average Permeability: 3 X 10E-4 cm/sec

| Sample Data: | Initial | Final |
|---|---|---|
| Height, in.: | 3.14 | 3.10 |
| Diameter, in.: | 1.93 | 1.92 |
| Area, in2: | 2.93 | 2.90 |
| Volume, in3: | 9.18 | 8.98 |
| Total Volume, cc: | 150.49 | 147.08 |
| Vol. of Solids, cc: | 95.61 | 95.61 |
| Vol. of Voids, cc: | 54.87 | 51.47 |
| Void Ratio: | 0.57 | 0.54 |
| Porosity, %: | 36.46 | 34.99 |
| Saturation, % | 71.62 | 92.68 |
| Sp. Gravity: | 2.69 | 2.69 |
| Wet Weight: | 296.5 | 304.9 |
| Dry Weight: | 257.2 | 257.2 |
| Tare: | 0.00 | 0.00 |
| Moisture, %: | 15.3 | 18.5 |
| Dry Density, pcf: | 106.6 | 109.1 |




| SYMBOL | BORING | DEPTH (ft) | LL (%) | PI (%) | DESCRIPTION |
|---|---|---|---|---|---|
| ○ | M-06-06 | 3.5-5 | 20 | 2 | grayish brown SAnd w/silt (SP-SM) |
| □ | M-06-06 | 11-12 | 85 | 50 | gray Clay (CH) |
| △ | M-06-06 | 11-12 | | | gray sandy Clay |
| ◊ | M-023-C | 6-7.5 | 18 | 1 | gray silty Sand (SM) w/debris: wood, paper, etc. |

Remark :

| | |
|---|---|
| Project No.153-04f | Montgomery-Watson 2738.1405 |
| Cooper Testing Labs Mountain View CA | GRAIN SIZE DISTRIBUTION Figure No. |

Cooper Testing Laboratories

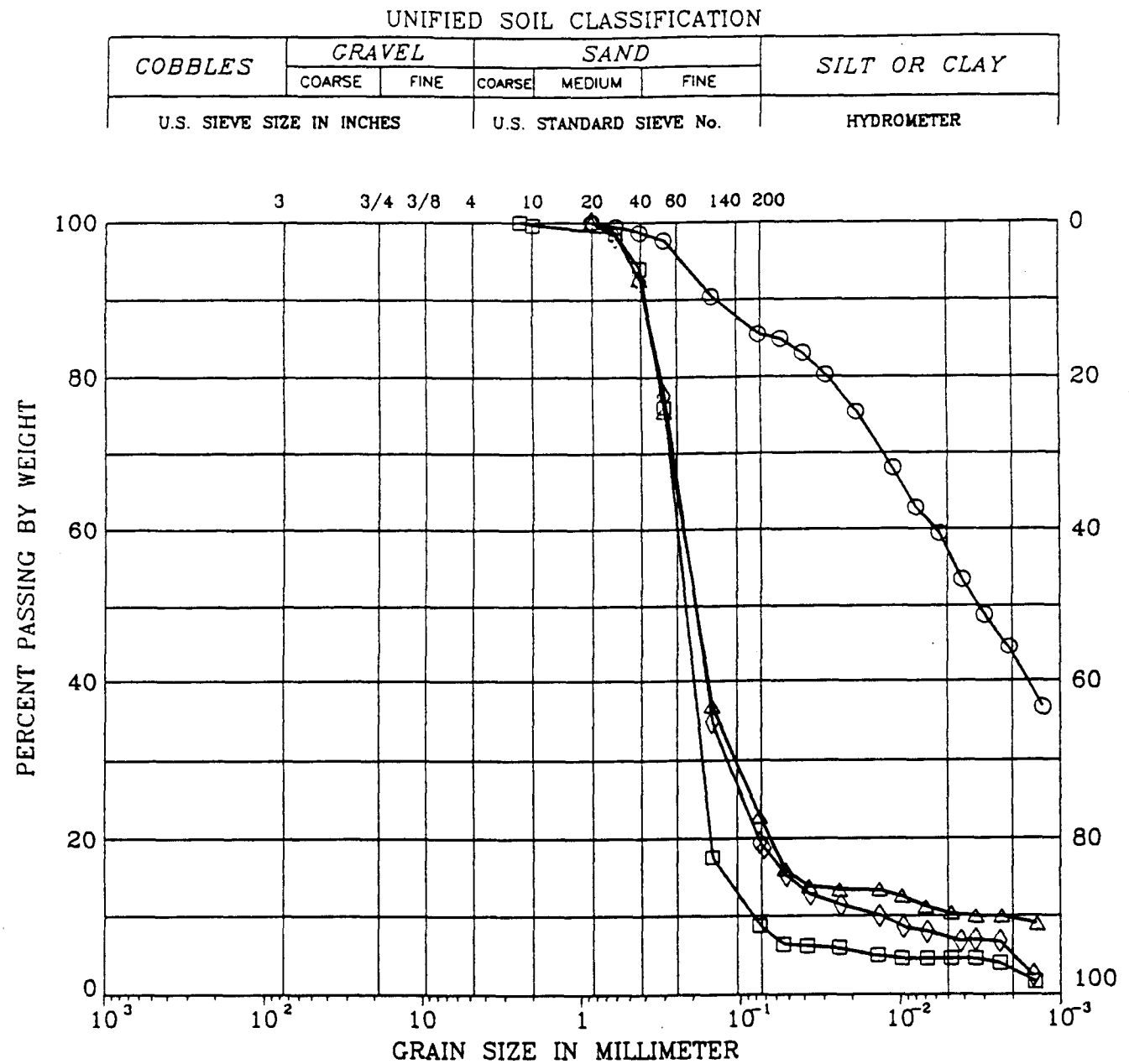
Project No.153-04f

Montgomery-Watson 2738.1405

Figure No.

| BORING | DEPTH | % COBBLES | % GRAVEL | % SAND | % FINE | % SILT | % CLAY | Cu | Cc |
|---|---|---|---|---|---|---|---|---|---|
| [-06-06 | 3.5-5 | 0.00 | 0.00 | 93.39 | | 4.04 | 2.56 | 2.6 | 1.3 |
| [-06-06 | 11-12 | 0.00 | 0.00 | 1.97 | | 32.09 | 65.94 | | |
| [-06-06 | 11-12 | 0.00 | 0.00 | 32.14 | | 40.73 | 27.13 | | |
| [-023-C | 6-7.5 | 0.00 | 3.59 | 83.57 | | 9.06 | 3.78 | 4.5 | 2.0 |

| M-06-06 3.5-5 | | M-06-06 11-12 | | M-06-06 11-12 | | M-023-C 6-7.5 | |
|---|---|---|---|---|---|---|---|
| Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer |
| .0015 | 1.79 | 0.0013 | 44.34 | 0.0014 | 17.48 | 0.0014 | 1.96 |
| 0.0024 | 1.49 | 0.0021 | 51.82 | 0.0023 | 20.54 | 0.0025 | 2.79 |
| 0.0035 | 1.49 | 0.0029 | 56.80 | 0.0033 | 23.96 | 0.0035 | 3.10 |
| 0.0049 | 2.57 | 0.0041 | 62.28 | 0.0046 | 26.81 | 0.0049 | 3.72 |
| 0.0071 | 2.38 | 0.0056 | 68.26 | 0.0066 | 28.53 | 0.0070 | 4.96 |
| 0.0100 | 3.17 | 0.0078 | 74.73 | 0.0094 | 30.81 | 0.0098 | 5.89 |
| 0.0144 | 2.98 | 0.0108 | 80.21 | 0.0130 | 37.08 | 0.0140 | 6.20 |
| 0.0249 | 2.98 | 0.0181 | 86.19 | 0.0220 | 45.07 | 0.0241 | 7.13 |
| 0.0394 | 2.98 | 0.0285 | 87.19 | 0.0342 | 50.00 | 0.0380 | 7.44 |
| 0.0556 | 3.57 | 0.0399 | 89.50 | 0.0473 | 57.62 | 0.0533 | 9.49 |
| 0.0750 | 6.61 | 0.0556 | 92.17 | 0.0648 | 66.75 | 0.0743 | 12.39 |
| 0.1500 | 17.54 | 0.0750 | 98.03 | 0.0750 | 67.86 | 0.0750 | 12.84 |
| 0.3000 | 78.26 | 0.1500 | 98.82 | 0.1500 | 83.70 | 0.1500 | 21.24 |
| 0.4250 | 96.32 | 0.3000 | 99.61 | 0.3000 | 97.51 | 0.3000 | 72.11 |
| 0.6000 | 99.76 | 0.4250 | 99.80 | 0.4250 | 99.09 | 0.4250 | 85.19 |
| 0.8500 | 100.00 | 0.6000 | 99.80 | 0.6000 | 99.55 | 0.6000 | 88.28 |
| | | 0.8500 | 100.00 | 0.8500 | 100.00 | 2.0000 | 91.98 |
| | | | | | | 4.7500 | 96.41 |
| | | | | | | 9.5250 | 98.80 |
| | | | | | | 19.0500 | 100.00 |




| SYMBOL | BORING | DEPTH (ft) | LL (%) | PI (%) | DESCRIPTION |
|---|---|---|---|---|---|
| ○ | M-11-06 | 10-11.5 | 57 | 32 | gray Clay w/sand (CH) |
| □ | M-11-06 | 10-11.5 | 19 | 2 | gray Sand w/silt (SP-SM) |
| △ | M-7C-09 | 10.5-12 | 20 | 1 | brown silty Sand (SM) |
| ◊ | M-7C-09 | 3.5-5 | 17 | 1 | gray silty Sand (SM) |

Remark :

| | |
|---|---|
| Project No.153-04e | Montgomery-Watson 2738.1405 |
| Cooper Testing Labs Mountain View CA | GRAIN SIZE DISTRIBUTION Figure No. |

Cooper Testing Laboratories

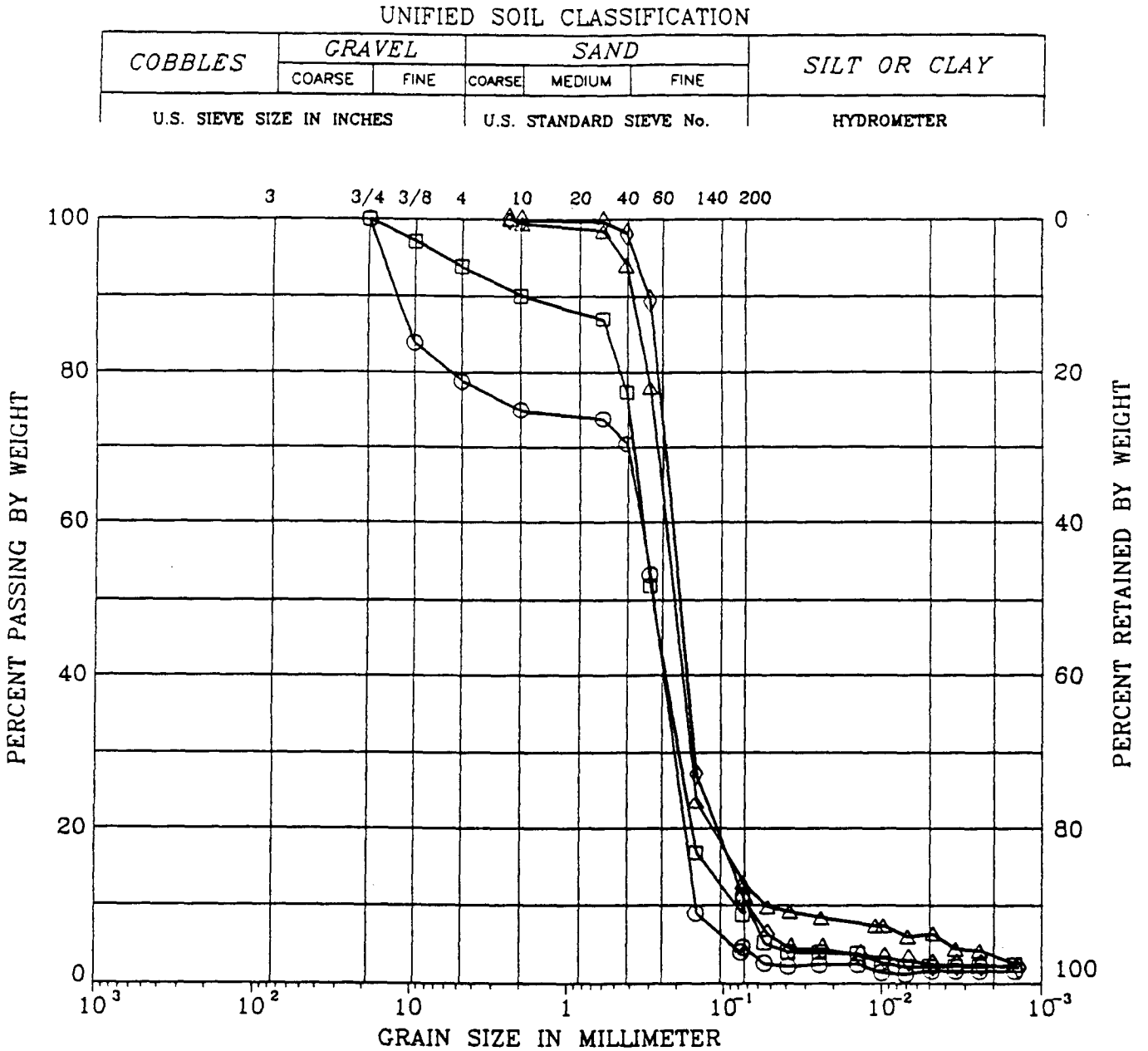
Project No.153-04e

Montgomery-Watson 2738.1405

Figure No.

| BORING | DEPTH | % COBBLES | % GRAVEL | % SAND | % FINE | % SILT | % CLAY | Cu | Cc |
|---|---|---|---|---|---|---|---|---|---|
| -11-06 | 10-11.5 | 0.00 | 0.00 | 14.59 | | 28.47 | 56.94 | | |
| -11-06 | 10-11.5 | 0.00 | 0.00 | 91.30 | | 4.08 | 4.62 | 3.0 | 1.5 |
| -7C-09 | 10.5-12 | 0.00 | 0.00 | 77.21 | | 12.39 | 10.40 | 97.5 | 21.6 |
| -7C-09 | 3.5-5 | 0.00 | 0.00 | 80.56 | | 12.21 | 7.22 | 17.1 | 4.9 |

| M-11-06 10-11.5 | | M-11-06 10-11.5 | | M-7C-09 10.5-12 | | M-7C-09 3.5-5 | |
|---|---|---|---|---|---|---|---|
| Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer |
| .0013 | 36.69 | 0.0015 | 1.65 | 0.0014 | 9.08 | 0.0015 | 2.35 |
| 0.0021 | 44.51 | 0.0024 | 3.96 | 0.0024 | 10.02 | 0.0024 | 6.73 |
| 0.0029 | 48.72 | 0.0034 | 4.62 | 0.0034 | 10.02 | 0.0034 | 7.06 |
| 0.0041 | 53.41 | 0.0048 | 4.62 | 0.0048 | 10.33 | 0.0042 | 6.84 |
| 0.0057 | 59.50 | 0.0068 | 4.62 | 0.0069 | 11.27 | 0.0068 | 8.07 |
| 0.0079 | 62.78 | 0.0098 | 4.62 | 0.0097 | 12.52 | 0.0095 | 8.63 |
| 0.0111 | 67.93 | 0.0139 | 4.95 | 0.0136 | 13.35 | 0.0135 | 10.09 |
| 0.0185 | 75.42 | 0.0240 | 5.94 | 0.0238 | 13.46 | 0.0233 | 11.44 |
| 0.0285 | 80.11 | 0.0379 | 6.27 | 0.0375 | 13.87 | 0.0366 | 12.78 |
| 0.0397 | 82.92 | 0.0535 | 6.48 | 0.0525 | 15.97 | 0.0512 | 15.14 |
| 0.0556 | 84.79 | 0.0750 | 8.70 | 0.0750 | 22.79 | 0.0711 | 18.84 |
| 0.0750 | 85.41 | 0.1500 | 17.53 | 0.1500 | 36.80 | 0.0750 | 19.44 |
| 0.1500 | 90.46 | 0.3000 | 75.93 | 0.3000 | 75.34 | 0.1500 | 34.72 |
| 0.3000 | 97.57 | 0.4250 | 93.99 | 0.4250 | 92.56 | 0.3000 | 77.61 |
| 0.4250 | 98.69 | 0.6000 | 98.48 | 0.6000 | 98.64 | 0.4250 | 92.49 |
| 0.6000 | 99.44 | 2.0000 | 99.66 | 0.8500 | 100.00 | 0.6000 | 97.99 |
| 0.8500 | 100.00 | 2.3800 | 100.00 | | | 0.8500 | 100.00 |




| SYMBOL | BORING | DEPTH (ft) | LL (%) | PI (%) | DESCRIPTION |
|---|---|---|---|---|---|
| ○ | M-003-B | 3.5-5 | 19 | 3 | grayish brown Sand (SP) |
| □ | M-003-E | 11.5-13 | 18 | 0 | grayish brown Sand w/silt (SP-SM) |
| △ | M-112-A | 3.5-5 | 18 | 2 | brown silty Sand (SM) |
| ◇ | M-112-A | 10.5-12 | 21 | 1 | grayish brown Sand w/silt (SP-SM) |

Remark :

| | |
|---|---|
| Project No.153-04 | Montgomery-Watson 2738.1405 |
| Cooper Testing Labs Mountain View CA | GRAIN SIZE DISTRIBUTION Figure No. |

Cooper Testing Laboratories

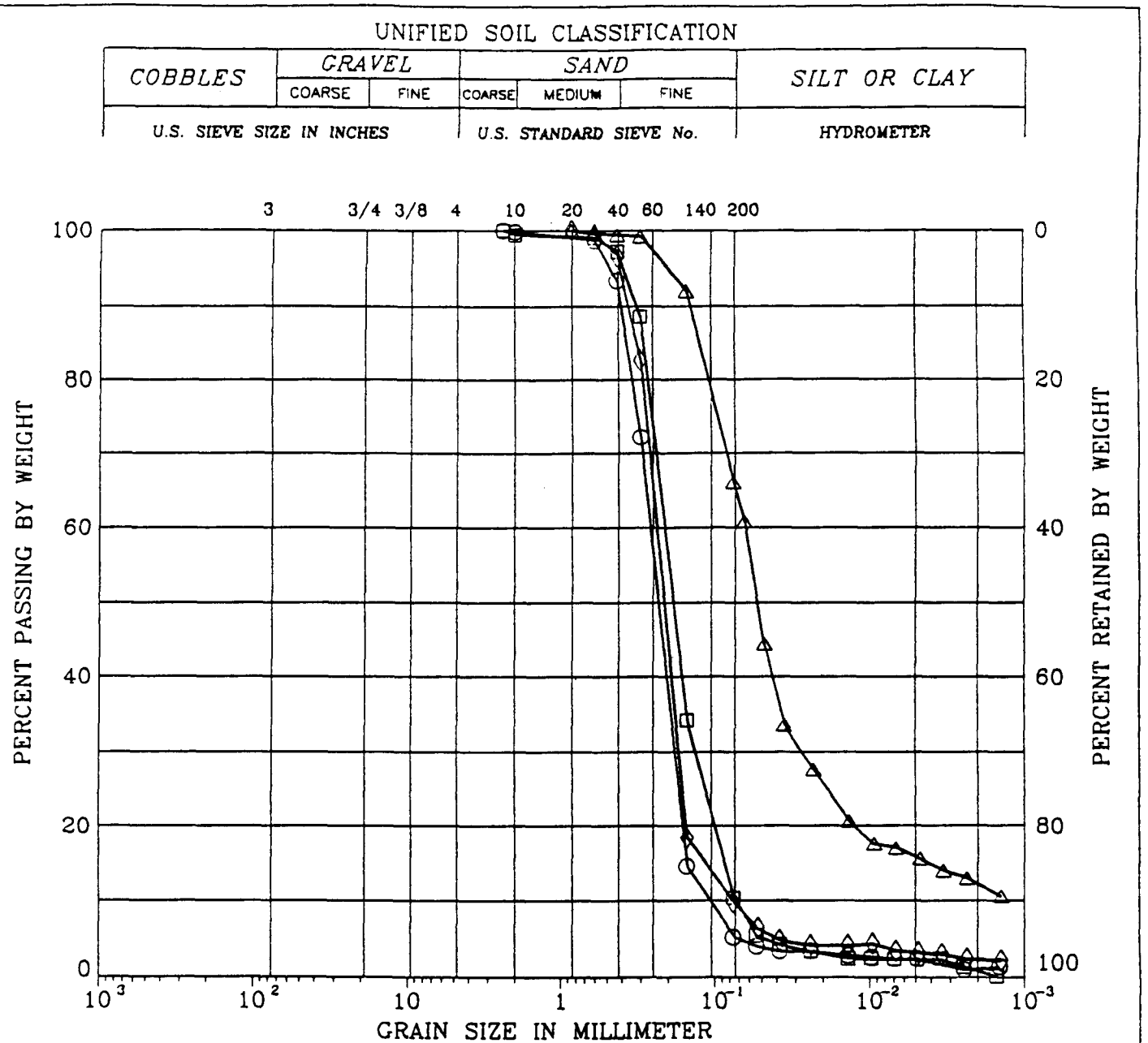
Project No.153-04

Montgomery-Watson 2738.1405

Figure No.

| BORING | DEPTH | % COBBLES | % GRAVEL | % SAND | % FINE | % SILT | % CLAY | Cu | Cc |
|---|---|---|---|---|---|---|---|---|---|
| -003-B | 3.5-5 | 0.00 | 21.10 | 74.21 | | 3.01 | 1.67 | 2.3 | 0.8 |
| -003-E | 11.5-13 | 0.00 | 6.30 | 82.63 | | 8.93 | 2.15 | 4.7 | 1.6 |
| -112-A | 3.5-5 | 0.00 | 0.00 | 86.99 | | 6.69 | 6.31 | 4.4 | 2.1 |
| -112-A | 10.5-12 | 0.00 | 0.00 | 89.00 | | 8.57 | 2.42 | 3.1 | 1.6 |

| M-003-B 3.5-5 | | M-003-E 11.5-13 | | M-112-A 3.5-5 | | M-112-A 10.5-12 | |
|---|---|---|---|---|---|---|---|
| Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer |
| .0015 | 1.61 | 0.0015 | 2.42 | 0.0014 | 2.47 | 0.0014 | 2.06 |
| .0024 | 1.61 | 0.0024 | 2.15 | 0.0024 | 4.23 | 0.0024 | 2.36 |
| 0.0035 | 1.61 | 0.0035 | 2.23 | 0.0034 | 4.46 | 0.0034 | 2.36 |
| 0.0049 | 1.68 | 0.0050 | 2.15 | 0.0048 | 6.34 | 0.0048 | 2.36 |
| 0.0071 | 1.22 | 0.0071 | 2.15 | 0.0069 | 5.99 | 0.0068 | 2.95 |
| 0.0101 | 1.38 | 0.0101 | 2.68 | 0.0097 | 7.40 | 0.0096 | 3.24 |
| 0.0142 | 2.45 | 0.0142 | 3.76 | 0.0111 | 7.40 | 0.0136 | 3.63 |
| 0.0245 | 2.45 | 0.0245 | 3.93 | 0.0239 | 8.46 | 0.0234 | 4.42 |
| 0.0392 | 2.22 | 0.0391 | 4.03 | 0.0376 | 9.16 | 0.0370 | 4.42 |
| 0.0553 | 2.53 | 0.0550 | 5.10 | 0.0530 | 9.87 | 0.0519 | 6.19 |
| 0.0750 | 4.68 | 0.0750 | 11.08 | 0.0741 | 12.69 | 0.0720 | 10.32 |
| 0.0775 | 3.91 | 0.0762 | 8.86 | 0.0750 | 13.01 | 0.0750 | 11.00 |
| 0.1500 | 8.99 | 0.1500 | 16.83 | 0.1500 | 23.61 | 0.1500 | 27.11 |
| 0.3000 | 53.27 | 0.3000 | 51.86 | 0.3000 | 77.91 | 0.3000 | 89.32 |
| 0.4250 | 70.42 | 0.4250 | 77.32 | 0.4250 | 94.03 | 0.4250 | 98.09 |
| 0.6000 | 73.72 | 0.6000 | 86.90 | 0.6000 | 98.41 | 0.6000 | 99.63 |
| 2.0000 | 74.91 | 2.0000 | 90.10 | 2.0000 | 99.40 | 2.0000 | 99.86 |
| 4.7500 | 78.90 | 4.7500 | 93.70 | 2.3800 | 100.00 | 2.3800 | 100.00 |
| 9.5250 | 83.78 | 9.5250 | 97.08 | | | | |
| 19.0500 | 100.00 | 19.0500 | 100.00 | | | | |




| SYMBOL | BORING | DEPTH (ft) | LL (%) | PI (%) | DESCRIPTION |
|---|---|---|---|---|---|
| ○ | M-115-E | 3.5-4.5 | 21 | 2 | grayish brown Sand w/silt (SP-SM) |
| □ | M-115-E | 10-12.5 | 22 | 3 | gray Sand w/silt (SP-SM) |
| △ | M-115-E | 10-12.5 | 31 | 8 | gray sandy Silt (ML) |
| ◇ | M-016-E | 6.5-8 | 20 | 1 | grayish brown Sand w/silt (SP-SM) |

Remark :

| | |
|---|---|
| Project No.153-04a | Montgomery-Watson 27.8.1405 |
| Cooper Testing Labs Mountain View CA | GRAIN SIZE DISTRIBUTION Figure No. |

Cooper Testing Laboratories

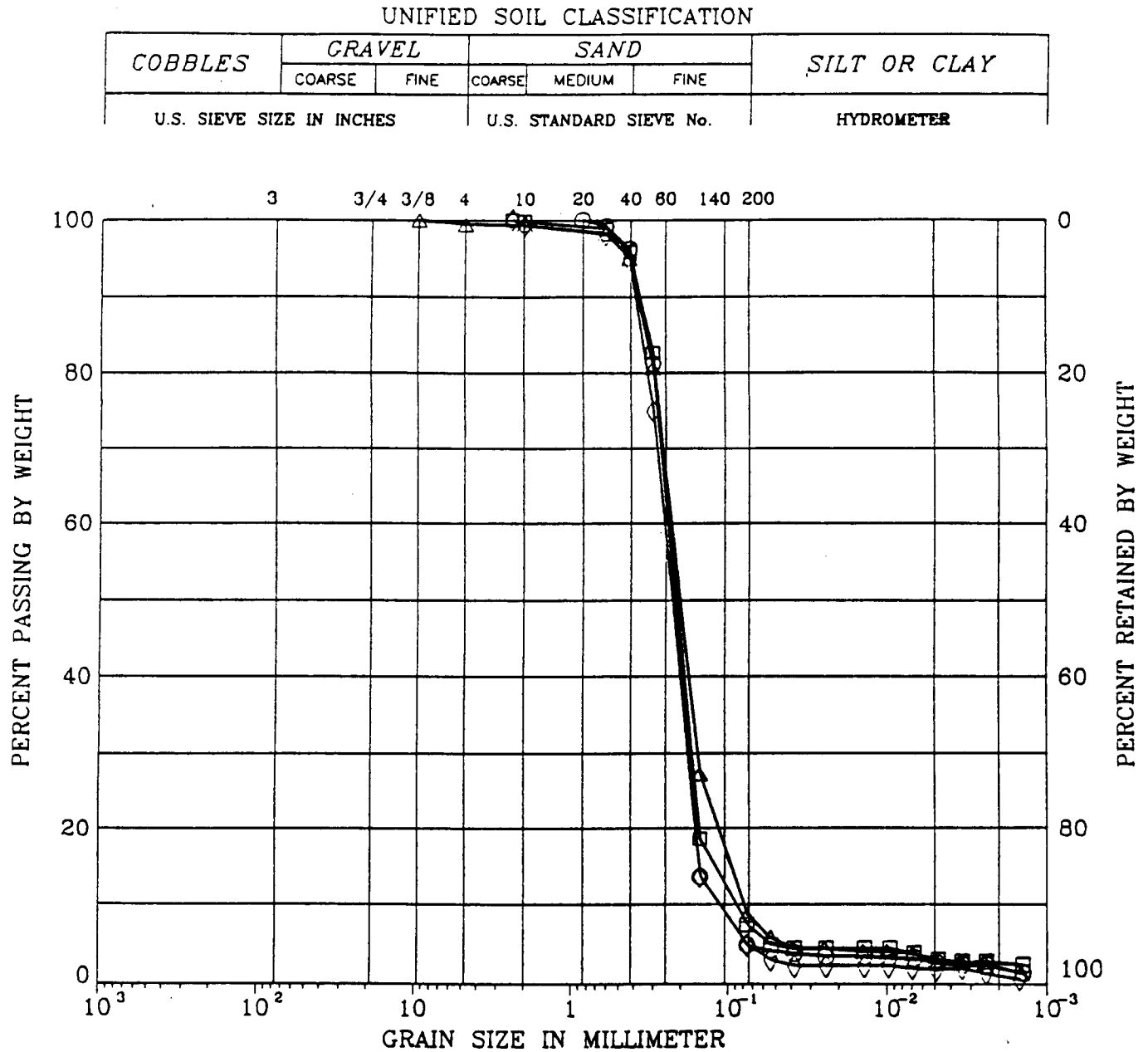
Project No.153-04a

Montgomery-Watson 27.8.1405

Figure No.

| BORING | DEPTH | % COBBLES | % GRAVEL | % SAND | % FINE | % SILT | % CLAY | Cu | Cc |
|---|---|---|---|---|---|---|---|---|---|
| :-115-E | 3.5-4.5 | 0.00 | 0.00 | 94.71 | | 2.97 | 2.32 | 2.4 | 1.2 |
| [-115-E | 10-12.5 | 0.00 | 0.00 | 89.55 | | 8.13 | 2.32 | 2.9 | 1.2 |
| [-115-E | 10-12.5 | 0.00 | 0.00 | 33.97 | | 50.27 | 15.77 | | |
| [-016-E | 6.5-8 | 0.00 | 0.00 | 90.25 | | 6.55 | 3.20 | 3.1 | 1.6 |

| M-115-E 3.5-4.5 | | M-115-E 10-12.5 | | M-115-E 10-12.5 | | M-016-E 6.5-8 | |
|---|---|---|---|---|---|---|---|
| Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer |
| .0015 | 1.32 | 0.0015 | 0.11 | 0.0014 | 10.54 | 0.0014 | 2.22 |
| .0025 | 0.99 | 0.0024 | 1.33 | 0.0024 | 13.05 | 0.0024 | 2.41 |
| 0.0049 | 2.32 | 0.0035 | 2.32 | 0.0033 | 14.05 | 0.0034 | 2.96 |
| 0.0069 | 2.32 | 0.0049 | 2.32 | 0.0047 | 15.56 | 0.0048 | 3.17 |
| 0.0097 | 2.65 | 0.0069 | 2.32 | 0.0067 | 17.06 | 0.0068 | 3.49 |
| 0.0139 | 2.86 | 0.0098 | 2.32 | 0.0094 | 17.57 | 0.0096 | 4.32 |
| 0.0240 | 3.31 | 0.0140 | 2.43 | 0.0134 | 20.58 | 0.0137 | 4.12 |
| 0.0380 | 3.31 | 0.0241 | 3.32 | 0.0227 | 27.60 | 0.0239 | 4.12 |
| 0.0536 | 3.97 | 0.0379 | 4.20 | 0.0353 | 33.63 | 0.0378 | 4.76 |
| 0.0750 | 5.29 | 0.0534 | 5.31 | 0.0480 | 44.67 | 0.0530 | 6.34 |
| 0.1500 | 14.54 | 0.0750 | 10.45 | 0.0640 | 60.73 | 0.0750 | 9.75 |
| 0.3000 | 72.16 | 0.1500 | 34.14 | 0.0750 | 66.03 | 0.1500 | 18.42 |
| 0.4250 | 93.31 | 0.3000 | 88.53 | 0.1500 | 92.01 | 0.3000 | 82.66 |
| 0.6000 | 98.59 | 0.4250 | 97.26 | 0.3000 | 99.20 | 0.4250 | 96.69 |
| 2.0000 | 99.78 | 0.6000 | 98.98 | 0.4250 | 99.40 | 0.6000 | 99.49 |
| 2.3800 | 100.00 | 2.0000 | 99.38 | 0.6000 | 99.60 | 0.8500 | 100.00 |
| | | 2.3800 | 100.00 | 0.8500 | 100.00 | | |




| SYMBOL | BORING | DEPTH (ft) | LL (%) | PI (%) | DESCRIPTION |
|---|---|---|---|---|---|
| ○ | M-016-E | 14.5-16 | 21 | 2 | grayish brown Sand (SP) |
| □ | M-016-B | 6.5-8 | 20 | 1 | grayish brown Sand w/silt (SP) |
| △ | M-116-E | 3.5-5 | 21 | 3 | grayish brown Sand w/silt (SP-SM) |
| ◇ | M-116-E | 10-11.5 | 21 | 2 | grayish brown SAnd (SP) |

Remark :

| | |
|---|---|
| Project No.153-04b | Montgomery-Watson 2738.1405 |
| Cooper Testing Labs Mountain View CA | GRAIN SIZE DISTRIBUTION Figure No. |

Cooper Testing Laboratories

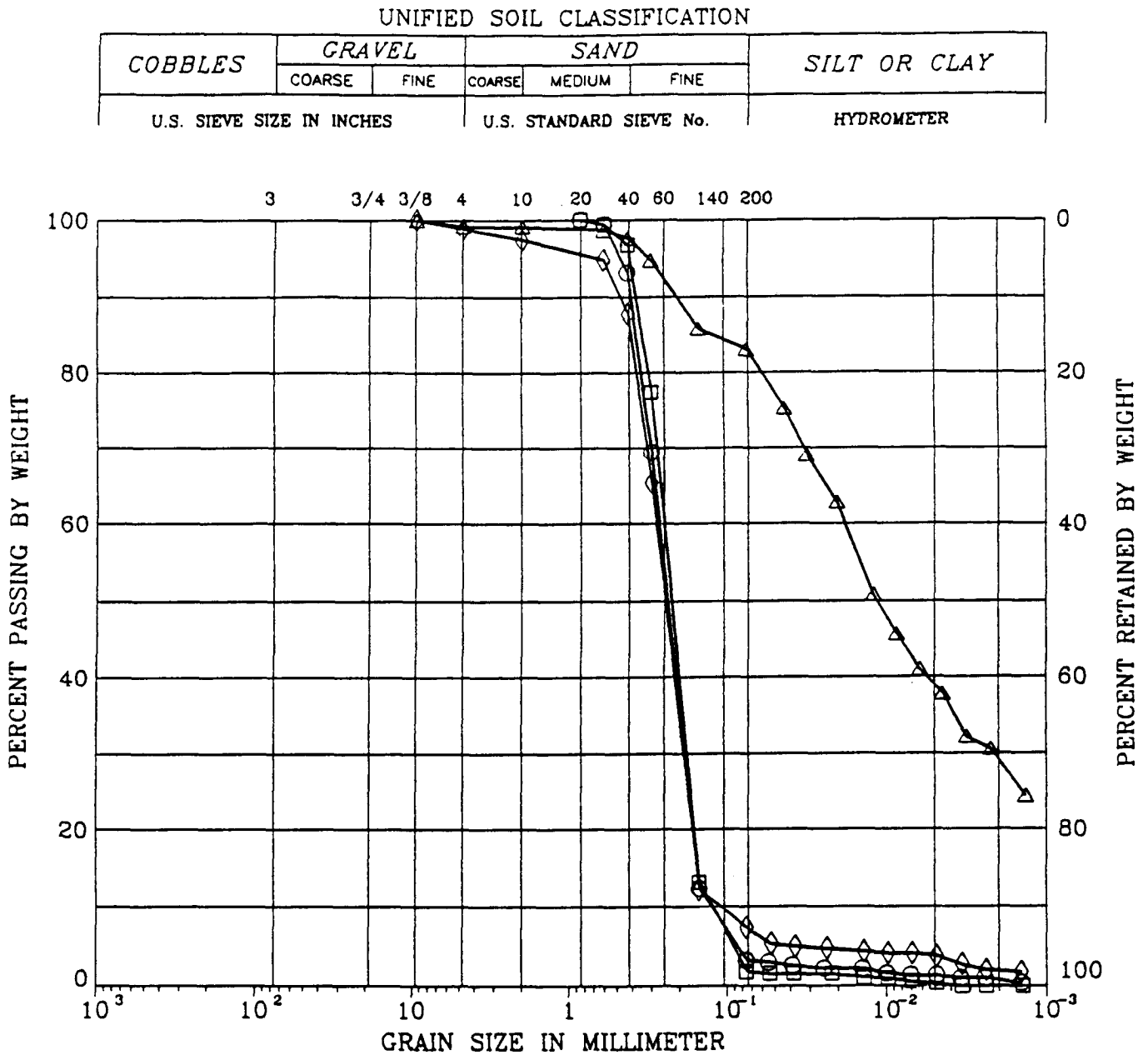
Project No.153-04b

Montgomery-Watson 2738.1405

Figure No.

| BORING | DEPTH | % COBBLES | % GRAVEL | % SAND | % FINE | % SILT | % CLAY | Cu | Cc |
|---|---|---|---|---|---|---|---|---|---|
| -016-E | 14.5-16 | 0.00 | 0.00 | 95.27 | | 2.09 | 2.65 | 2.1 | 1.2 |
| -016-B | 6.5-8 | 0.00 | 0.00 | 92.65 | | 4.24 | 3.11 | 2.7 | 1.4 |
| -116-E | 3.5-5 | 0.00 | 0.52 | 90.81 | | 5.95 | 2.72 | 2.9 | 1.3 |
| -116-E | 10-11.5 | 0.00 | 0.00 | 95.16 | | 2.99 | 1.85 | 2.2 | 1.1 |

| M-016-E 14.5-16 | | M-016-B 6.5-8 | | M-116-E 3.5-5 | | M-116-E 10-11.5 | |
|---|---|---|---|---|---|---|---|
| Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer |
| 0014 | 1.45 | 0.0014 | 2.38 | 0.0014 | 1.34 | 0.0015 | 0.66 |
| .0024 | 2.31 | 0.0024 | 2.80 | 0.0025 | 2.67 | 0.0024 | 1.31 |
| 0.0034 | 2.31 | 0.0034 | 2.72 | 0.0035 | 2.67 | 0.0034 | 1.97 |
| 0.0048 | 2.60 | 0.0048 | 3.06 | 0.0049 | 2.67 | 0.0049 | 1.85 |
| 0.0068 | 3.18 | 0.0068 | 3.73 | 0.0070 | 3.89 | 0.0069 | 1.97 |
| 0.0097 | 3.18 | 0.0096 | 4.41 | 0.0100 | 4.01 | 0.0098 | 2.29 |
| 0.0138 | 3.47 | 0.0137 | 4.41 | 0.0141 | 4.01 | 0.0138 | 2.29 |
| 0.0241 | 3.47 | 0.0240 | 4.41 | 0.0244 | 4.45 | 0.0239 | 2.29 |
| 0.0381 | 3.76 | 0.0380 | 4.41 | 0.0385 | 4.45 | 0.0378 | 2.29 |
| 0.0537 | 4.14 | 0.0536 | 4.86 | 0.0542 | 5.78 | 0.0533 | 2.95 |
| 0.0750 | 4.73 | 0.0750 | 7.35 | 0.0750 | 8.67 | 0.0750 | 4.84 |
| 0.1500 | 13.65 | 0.1500 | 18.52 | 0.1500 | 27.21 | 0.1500 | 13.60 |
| 0.3000 | 81.25 | 0.3000 | 82.66 | 0.3000 | 80.55 | 0.3000 | 74.95 |
| 0.4250 | 96.18 | 0.4250 | 95.73 | 0.4250 | 95.09 | 0.4250 | 94.83 |
| 0.6000 | 99.19 | 0.6000 | 98.86 | 0.6000 | 98.29 | 0.6000 | 97.97 |
| 0.8500 | 100.00 | 2.0000 | 99.81 | 2.0000 | 99.36 | 2.0000 | 99.28 |
| | | 2.3800 | 100.00 | 4.7500 | 99.48 | 2.3800 | 100.00 |
| | | | | 9.5250 | 100.00 | | |




| SYMBOL | BORING | DEPTH (ft) | LL (%) | PI (%) | DESCRIPTION |
|---|---|---|---|---|---|
| ○ | M-117-E | 3.5-5 | 19 | | brown Sand (SP) |
| □ | M-117-E | 10-11.5 | 23 | 3 | brown Sand (SP) |
| △ | M-030-C | 4-5.5 | 53 | 29 | gray Clay w/sand (CH) |
| ◇ | M-030-A | 4.5-6 | 17 | | grayish brown Sand w/silt (SP-SM) |

Remark :

| | |
|---|---|
| Project No.153-04c | Montgomery-Watson 2738.1405 |
| Cooper Testing Labs Mountain View CA | GRAIN SIZE DISTRIBUTION Figure No. |

Cooper Testing Laboratories

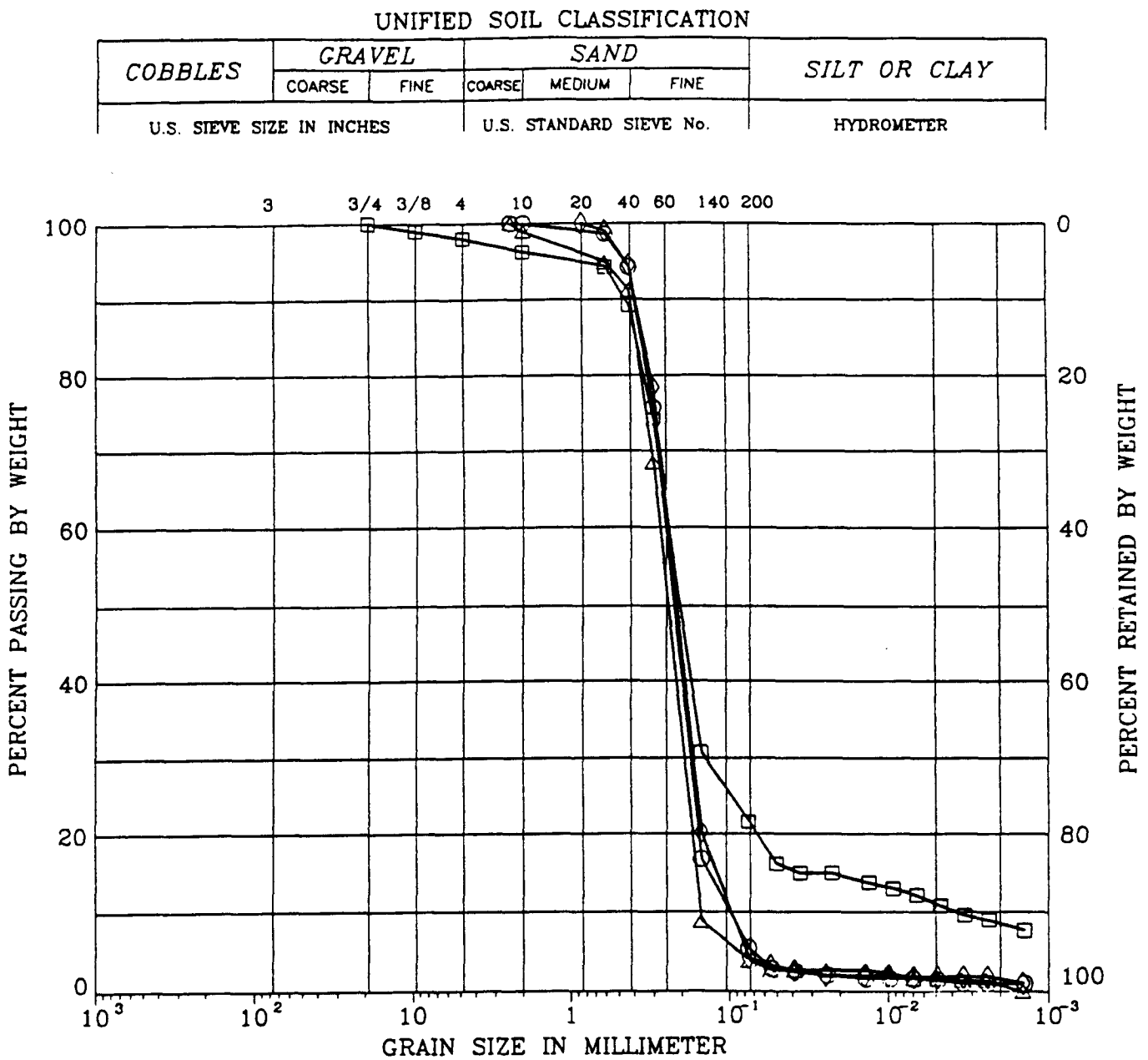
Project No.153-04c

Montgomery-Watson 2738.1405

Figure No.

| BORING | DEPTH | % COBBLES | % GRAVEL | % SAND | % FINE | % SILT | % CLAY | Cu | Cc |
|---|---|---|---|---|---|---|---|---|---|
| -117-E | 3.5-5 | 0.00 | 0.00 | 96.73 | | 1.97 | 1.31 | 2.1 | 1.0 |
| -117-E | 10-11.5 | 0.00 | 0.00 | 98.15 | | 1.51 | 0.34 | 2.0 | 1.1 |
| -030-C | 4-5.5 | 0.00 | 0.84 | 16.10 | | 44.24 | 38.82 | | |
| -030-A | 4.5-6 | 0.00 | 1.11 | 91.58 | | 3.45 | 3.85 | 2.6 | 1.2 |

| M-117-E 3.5-5 | | M-117-E 10-11.5 | | M-030-C 4-5.5 | | M-030-A 4.5-6 | |
|---|---|---|---|---|---|---|---|
| Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer |
| .0014 | 0.33 | 0.0014 | 0.00 | 0.0014 | 24.37 | 0.0015 | 1.77 |
| .0025 | 1.08 | 0.0024 | 0.00 | 0.0022 | 30.56 | 0.0024 | 2.06 |
| 0.0035 | 1.08 | 0.0034 | 0.00 | 0.0032 | 32.15 | 0.0034 | 2.75 |
| 0.0049 | 1.31 | 0.0049 | 0.33 | 0.0045 | 37.86 | 0.0048 | 3.83 |
| 0.0070 | 1.31 | 0.0069 | 0.54 | 0.0062 | 40.97 | 0.0068 | 4.13 |
| 0.0099 | 1.63 | 0.0098 | 0.99 | 0.0087 | 45.80 | 0.0097 | 4.13 |
| 0.0140 | 2.28 | 0.0139 | 1.09 | 0.0122 | 50.82 | 0.0137 | 4.42 |
| 0.0244 | 2.28 | 0.0220 | 1.53 | 0.0203 | 62.75 | 0.0237 | 4.72 |
| 0.0386 | 2.61 | 0.0380 | 1.53 | 0.0314 | 68.97 | 0.0374 | 5.01 |
| 0.0545 | 3.04 | 0.0538 | 1.53 | 0.0432 | 75.19 | 0.0528 | 5.30 |
| 0.0750 | 3.27 | 0.0750 | 1.85 | 0.0750 | 83.06 | 0.0750 | 7.30 |
| 0.1500 | 12.30 | 0.1500 | 13.19 | 0.1500 | 85.73 | 0.1500 | 12.24 |
| 0.3000 | 69.37 | 0.3000 | 77.31 | 0.3000 | 94.79 | 0.3000 | 65.32 |
| 0.4250 | 93.19 | 0.4250 | 96.70 | 0.4250 | 97.67 | 0.4250 | 87.87 |
| 0.6000 | 99.35 | 0.6000 | 99.34 | 0.6000 | 98.70 | 0.6000 | 94.80 |
| 0.8500 | 100.00 | 0.8500 | 100.00 | 2.0000 | 99.11 | 2.0000 | 97.50 |
| | | | | 4.7500 | 99.16 | 4.7500 | 98.89 |
| | | | | 9.5250 | 100.00 | 9.5250 | 100.00 |




| SYMBOL | BORING | DEPTH (ft) | LL (%) | PI (%) | DESCRIPTION |
|---|---|---|---|---|---|
| ○ | M-030-A | 8.5-10 | 20 | 2 | grayish brown Sand w/silt (SP-SM) |
| □ | M-030-E | 2.5-4 | 19 | 2 | grayish brown silty Sand (SM) |
| △ | M-030-E | 14.15.5 | 20 | 1 | grayish brown Sand (SP) |
| ◊ | M-11-06 | 3.5-5 | 21 | 2 | brown Sand (SP) |

Remark :

| | |
|---|---|
| Project No.153-04d | Montgomery-Watson 2738.1405 |
| Cooper Testing Labs Mountain View CA | GRAIN SIZE DISTRIBUTION Figure No. |

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Cooper Testing Labs, Inc.
1951-X Colony Street
Mountain View, CA 94043
Attention: Dave Cooper

Client Project ID: Montgomery-Watson 2738.1405
Matrix: Solid
Work Order #: 9411G88 -01-23
Reported: Dec 9, 1994

# QUALITY CONTROL DATA REPORT

| | | |
|---|---|---|
| Analyte: | Cation Exchange Capacity | Cation Exchange Capacity |
| QC Batch: | | |
| Analy. Method: | SW-846, Method 9081 | SW-846, Method 9081 |
| Prep Method: | N/A | N/A |
| Analyst: | C. Medefesser | C. Medefesser |
| Duplicate Sample #: | 9411G8801 | 9411G8813 |
| Prepared Date: | 12/9/94 | 12/9/94 |
| Analyzed Date: | 12/9/94 | 12/9/94 |
| Instrument I.D.#: | MTJA2 | MTJA2 |
| Sample Concentration: | 38 | 49 |
| Dup. Sample Concentration: | 41 | 49 |
| RPD: | 19 | 0.0 |
| RPD Limit: | ≤20% | ≤20% |

SEQUOIA ANALYTICAL

Suzanne Chin
Project Manager

** RPD = Relative % Difference

9411G88.CCC <1>

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Cooper Testing Labs, Inc.
1951-X Colony Street
Mountain View, CA 94043

Attention: Dave Cooper

Client Proj. ID: Montgomery Watson 2738.1405

Lab Proj. ID: 9411G88

Sampled: 08/15/94
Received: 11/28/94
Analyzed: see below
Reported: 12/09/94

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-01<br>Sample Desc : **SOLID,M-003-B 3.5-5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **41** |
| Lab No: 9411G88-02<br>Sample Desc : **SOLID,M-003-E 11.5-13'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **27** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Cooper Testing Labs, Inc.
1951-X Colony Street
Mountain View, CA 94043

Client Proj. ID: Montgomery Watson 2738.1405

Lab Proj. ID: 9411G88

Sampled: 08/22/94
Received: 11/28/94
Analyzed: see below

Attention: Dave Cooper

Reported: 12/09/94

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-03<br>Sample Desc : **SOLID,M-112-A 3.5-5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **36** |
| Lab No: 9411G88-04<br>Sample Desc : **SOLID,M-112-A 10.5-12'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **40** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

| | | |
|---|---|---|
| Cooper Testing Labs, Inc.<br>1951-X Colony Street<br>Mountain View, CA 94043 | Client Proj. ID: Montgomery Watson 2738.1405<br>Lab Proj. ID: 9411G88 | Sampled:<br>Received: 11/28/94<br>Analyzed: see below |
| Attention: Dave Cooper | | Reported: 12/09/94 |

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-05<br>Sample Desc : **SOLID,M-115-E 3.5-4.5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **60** |
| Lab No: 9411G88-06<br>Sample Desc : **SOLID,M-115-E 10.5-12'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **69** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Cooper Testing Labs, Inc.
1951-X Colony Street
Mountain View, CA 94043

Client Proj. ID: Montgomery Watson 2738.1405

Lab Proj. ID: 9411G88

Sampled: 08/22/94
Received: 11/28/94
Analyzed: see below

Attention: Dave Cooper

Reported: 12/09/94

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-07 | | | | |
| Sample Desc : **SOLID,M-023-C 6-7.5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **140** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

| | | |
|---|---|---|
| Cooper Testing Labs, Inc.<br>1951-X Colony Street<br>Mountain View, CA 94043 | Client Proj. ID: Montgomery Watson 2738.1405<br>Lab Proj. ID: 9411G88 | Sampled: 08/15/94<br>Received: 11/28/94<br>Analyzed: see below |
| Attention: Dave Cooper | | Reported: 12/09/94 |

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-08<br>Sample Desc : **SOLID,M-016-E 6.5-8'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **61** |
| Lab No: 9411G88-09<br>Sample Desc : **SOLID,M-016-E 14.5-16'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **39** |
| Lab No: 9411G88-10<br>Sample Desc : **SOLID,M-016-B 6.5-8'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **45** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Cooper Testing Labs, Inc.
1951-X Colony Street
Mountain View, CA 94043

Client Proj. ID: Montgomery Watson 2738.1405

Lab Proj. ID: 9411G88

Sampled: 08/18/94
Received: 11/28/94
Analyzed: see below

Attention: Dave Cooper

Reported: 12/09/94

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-11<br>Sample Desc : **SOLID,M-116-E 3.5-4.5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **58** |
| Lab No: 9411G88-12<br>Sample Desc : **SOLID,M-116-E 10-11.5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/01/94** | **0.50** | **38** |
| Lab No: 9411G88-13<br>Sample Desc : **SOLID,M-017-E 3.5-5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **49** |
| Lab No: 9411G88-14<br>Sample Desc : **SOLID,M-017-E 10-11.5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **40** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Cooper Testing Labs, Inc.
1951-X Colony Street
Mountain View, CA 94043

Client Proj. ID: Montgomery Watson 2738.1405

Lab Proj. ID: 9411G88

Sampled: 08/15/94
Received: 11/28/94
Analyzed: see below

Attention: Dave Cooper

Reported: 12/09/94

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-15<br>Sample Desc : **SOLID,M-030-C 4-5.5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **48** |
| Lab No: 9411G88-16<br>Sample Desc : **SOLID,M-030-A 8.5-10'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **46** |
| Lab No: 9411G88-17<br>Sample Desc : **SOLID,M-030-E 2.5-4.0'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **120** |
| Lab No: 9411G88-18<br>Sample Desc : **SOLID,M-030-E 14-15.5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **23** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Cooper Testing Labs, Inc.
1951-X Colony Street
Mountain View, CA 94043

Client Proj. ID: Montgomery Watson 2738.1405

Lab Proj. ID: 9411G88

Sampled: 08/16/94
Received: 11/28/94
Analyzed: see below

Attention: Dave Cooper

Reported: 12/09/94

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-19 | | | | |
| Sample Desc : SOLID,M-11-06 3.5-5' | | | | |
| Cation Exchange Capacity | meq/Kg | 12/06/94 | 0.50 | 45 |

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

SEQUOIA ANALYTICAL - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Cooper Testing Labs, Inc.
1951-X Colony Street
Mountain View, CA 94043

Client Proj. ID: Montgomery Watson 2738.1405

Lab Proj. ID: 9411G88

Sampled: 08/17/94
Received: 11/28/94
Analyzed: see below

Attention: Dave Cooper

Reported: 12/09/94

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-20<br>Sample Desc : **SOLID,M-7C-09 3.5-5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **66** |
| Lab No: 9411G88-21<br>Sample Desc : **SOLID,M-7C-09 10.5-12'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **130** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Cooper Testing Labs, Inc.
1951-X Colony Street
Mountain View, CA 94043

Attention: Dave Cooper

Client Proj. ID: Montgomery Watson 2738.1405

Lab Proj. ID: 9411G88

Sampled: 08/22/94
Received: 11/28/94
Analyzed: see below
Reported: 12/09/94

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-22 | | | | |
| Sample Desc : **SOLID,M-06-06 3.5-5'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **46** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

| | | |
|---|---|---|
| Cooper Testing Labs, Inc.<br>1951-X Colony Street<br>Mountain View, CA 94043 | Client Proj. ID: Montgomery Watson 2738.1405<br>Lab Proj. ID: 9411G88 | Sampled: 08/15/94<br>Received: 11/28/94<br>Analyzed: see below |
| Attention: Dave Cooper | | Reported: 12/09/94 |

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9411G88-23<br>Sample Desc : **SOLID,M-030-A 4.5-6'** | | | | |
| **Cation Exchange Capacity** | **meq/Kg** | **12/06/94** | **0.50** | **38** |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Suzanne Chin
Project Manager

Cooper Testing Laboratories

Project No.153-04d

Montgomery-Watson 2738.1405

Figure No.

| BORING | DEPTH | % COBBLES | % GRAVEL | % SAND | % FINE | % SILT | % CLAY | Cu | Cc |
|---|---|---|---|---|---|---|---|---|---|
| -030-A | 8.5-10 | 0.00 | 0.00 | 94.58 | | 3.98 | 1.44 | 2.5 | 1.2 |
| -030-E | 2.5-4 | 0.00 | 2.04 | 76.30 | | 10.61 | 11.05 | 64.4 | 22.7 |
| -030-E | 14.15.5 | 0.00 | 0.00 | 96.12 | | 2.21 | 1.66 | 1.8 | 0.9 |
| -11-06 | 3.5-5 | 0.00 | 0.00 | 95.84 | | 2.28 | 1.87 | 2.5 | 1.2 |

| M-030-A 8.5-10 | | M-030-E 2.5-4 | | M-030-E 14.15.5 | | M-11-06 3.5-5 | |
|---|---|---|---|---|---|---|---|
| Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer | Grain Size (mm) | % Finer |
| .0014 | 0.99 | 0.0014 | 7.66 | 0.0015 | 0.00 | 0.0014 | 1.09 |
| .0024 | 0.99 | 0.0023 | 8.93 | 0.0025 | 1.33 | 0.0024 | 1.87 |
| 0.0034 | 0.99 | 0.0033 | 9.57 | 0.0035 | 1.33 | 0.0034 | 1.87 |
| 0.0049 | 1.42 | 0.0047 | 10.85 | 0.0049 | 1.66 | 0.0048 | 1.87 |
| 0.0069 | 1.64 | 0.0066 | 12.12 | 0.0070 | 1.66 | 0.0070 | 1.87 |
| 0.0097 | 1.64 | 0.0093 | 13.08 | 0.0099 | 2.33 | 0.0100 | 2.02 |
| 0.0137 | 1.64 | 0.0131 | 13.72 | 0.0139 | 2.66 | 0.0141 | 2.02 |
| 0.0239 | 1.97 | 0.0225 | 14.99 | 0.0243 | 2.66 | 0.0244 | 2.02 |
| 0.0378 | 2.41 | 0.0356 | 14.99 | 0.0385 | 2.66 | 0.0385 | 2.64 |
| 0.0534 | 2.84 | 0.0501 | 16.27 | 0.0544 | 2.66 | 0.0544 | 3.28 |
| 0.0750 | 5.42 | 0.0750 | 21.66 | 0.0750 | 3.88 | 0.0750 | 4.16 |
| 0.1500 | 16.79 | 0.1500 | 30.71 | 0.1500 | 8.82 | 0.1500 | 20.29 |
| 0.3000 | 75.73 | 0.3000 | 74.15 | 0.3000 | 68.43 | 0.3000 | 78.36 |
| 0.4250 | 94.10 | 0.4250 | 89.19 | 0.4250 | 91.15 | 0.4250 | 94.31 |
| 0.6000 | 98.60 | 0.6000 | 94.28 | 0.6000 | 94.90 | 0.6000 | 99.05 |
| 2.0000 | 99.92 | 2.0000 | 96.19 | 2.0000 | 98.90 | 0.8500 | 100.00 |
| 2.3800 | 100.00 | 4.7500 | 97.96 | 2.3800 | 100.00 | | |
| | | 9.5250 | 98.93 | | | | |
| | | 19.0500 | 100.00 | | | | |