

| DOCKETED | |
|-------------------------|---|
| Docket Number: | 24-OPT-02 |
| Project Title: | Compass Energy Storage Project |
| TN #: | 264553 |
| Document Title: | Geotechnical Evaluation Report (TN #255561-6) References Part 2_4 of 9 |
| Description: | N/A |
| Filer: | Erin Phillips |
| Organization: | Dudek |
| Submitter Role: | Applicant Consultant |
| Submission Date: | 7/2/2025 6:58:42 PM |
| Docketed Date: | 7/2/2025 |

BORING LOG

| Logged By: | | Date Drilled: | | Drill Rig: | | Boring Diameter: | | Boring Number: | | |
|---|---------|---------------|--------------|--|--|-------------------|--|---------------------|------------------|-------------|
| Descriptions on this boring log apply only at the specific boring location and at the time the boring was made. The descriptions on this log are not warranted to be representative of subsurface conditions at other locations or times. | | | | | | Boring Elevation: | | LB-14 | | |
| DEPTH, FT | SAMPLES | BLOWS/FOOT | GROUND WATER | DESCRIPTION | | | | MOISTURE CONTENT, % | DRY DENSITY, PCF | OTHER TESTS |
| 50 | | | | OLDER ALLUVIUM (Q210) (Cont.) (SLIDE-AFFECTED?) SILTY CLAY VERY DARK GREY, SOFT, MOIST TO V. MOIST, MICACEDUS, ← LOCALLY OXIDE STAINED, LIVE ROOTS FRACTURES W/ SLIGHT SEEPAGE, DISCONTIN. PARTING SURFACES | | | | | | |
| 55 | | | | DARK GREY, SOFT, TO FIRM, VERY MOIST TO WET, ← SLIGHT ORGANIC ODOR, MICACEDUS, NO OBSERV. STRUCTURE INTERBED, FINE SILTY SAND TO SANDY SILT, N50W, 20°E | | | | | | |
| 60 | | | | CONCRETIONS ← LIVE ROOTS, 1/4" THICK, SLIGHT SEEPAGE, DISCONTIN. PLANAR DISCONTINUOUS, LAMINATIONS OF SILTY SAND | | | | | | |
| 65 | | | | GREY TO DARK GREY, VERY MICACEDUS, ABUNDANT ROOTS, ALMOST STRUCTURELESS THIN COLOR BAND, N-S, 40°E DARK COLOR. SCATTERED CONCRETIONS & CHARCOAL FLECKS, LOCALLY ABUNDANT CHARCOAL ← THIN COLOR BAND, DARK COLOR - NO CLAY, N-S, 40°E 1-2" THICK IV. FINE SAND, DEPOSITIONAL ← SAND LAMINATIONS, V. FINE SAND DIPPING EASTERLY | | | | | | |
| 70 | | | | | | | | | | |
| 75 | | | | | | | | | | |

HAMMER

WEIGHT:
DROP:

PROJECT NO.:

1651-4

FIGURE NO.:

3

BORING LOG

| Logged By: | | Date Drilled: | | Drill Rig: | | Boring Diameter: | | Boring Number: | | |
|---|---------|---------------|--------------|---|--|-------------------|--|---------------------|-------------------|-------------|
| Descriptions on this boring log apply only at the specific boring location and at the time the boring was made. The descriptions on this log are not warranted to be representative of subsurface conditions at other locations or times. | | | | | | Boring Elevation: | | LB-14 | | |
| DEPTH, FT | SAMPLES | BLOWS/FOOT | GROUND-WATER | DESCRIPTION | | | | MOISTURE CONTENT, % | DRY DENSITY, g/cc | OTHER TESTS |
| 75 | | | | OLDER ALLUVIUM (Qq1d) (cont.) (SLIDE-AFFECTED?) SILT CLAY - GREY TO DARK GREY, STIFF, MOIST, TRACES WHITE MIN. & OXIDE STAINING, MOTTLED. GYPSUM XTAL TO 1" DIAM. SCATTERED CONCRETIONS, 4-5" DIAM, CARBON-RICH SCATTERED WOOD FRAGMENTS, PARTIALLY DECOMPOSED, SOME COLOR BANDING PARTIALLY DECOMPOSED ROOTS, 1/4" DIAM. COLOR BANDING, MAYBE BEDDING, NOT CLAYEY DIPPING 33° N | | | | | | |
| 80 | | | | | | | | | | |
| 85 | | | | | | | | | | |
| 90 | | | | | | | | | | |
| 95 | | | | | | | | | | |
| 100 | | | | CONTACT - SOFT, STICKY, CLAYEY, V. MOIST, STEEPLY DIPPING 50° TO EAST BEDROCK (TC) CLAYEY SILTSTONE DARK OLIVE GREY, MOD. HARD, MOIST, NSQW, 50° E | | | | | | |
| HAMMER | | WEIGHT: DROP: | | PROJECT NO.: 1651-4 | | | | FIGURE NO.: 4 | | |

BORING LOG

| Logged By: | | Date Drilled: | | Drill Rig: | | Boring Diameter: | | Boring Number: | | | |
|--|---------|---------------|---------------|---|--|-------------------|--|------------------------|------------------|------------------|--|
| <small>Descriptions on this boring log apply only at the specific boring location and at the time the boring was made. The descriptions on this log are not warranted to be representative of subsurface conditions at other locations or times.</small> | | | | | | Boring Elevation: | | LB-14 | | | |
| DEPTH, FT | SAMPLES | BLOWS/FOOT | CHARTED WATER | DESCRIPTION | | | | MOISTURE CONTENT, % | DRY DENSITY, pcf | OTHER TESTS | |
| 100 | | | | <p>BEDROCK (T₂) ↓ CLAYEY SILTSTONE ↓ END DOWNHOLE LOG DARK OLIVE GREY, MOD. HARD, MOIST, MASSIVE, NO OXIDES, WHITE MIN.</p> <p>MASSIVE</p> <p>NO APPARENT CHANGE OF ROCK CHARACTERISTICS</p> | | | | | | | |
| 105 | | | | | | | | | | | |
| 110 | | | | | | | | | | | |
| 115 | | | | <p>TD = 115'</p> <p>DOWNHOLE LOG TO 101'</p> | | | | | | | |
| 120 | | | | | | | | | | | |
| 125 | | | | | | | | | | | |
| HAMMER | | | | WEIGHT: DROP: | | | | PROJECT NO.: 1651-4 | | FIGURE NO.: 5 | |

BORING LOG

| Logged By: | | Date Drilled: | | Drill Rig: | | Boring Diameter: | | Boring Number: | | |
|---|---------|---------------|--------------|---|--|-------------------|--|------------------------|--------------------|-------------|
| Descriptions on this boring log apply only at the specific boring location and at the time the boring was made. The descriptions on this log are not warranted to be representative of subsurface conditions at other locations or times. | | | | | | Boring Elevation: | | LB-15 | | |
| DEPTH, FT | SAMPLES | BLOWS/FOOT | GROUND WATER | DESCRIPTION | | | | MOISTURE CONTENT, % | DRY DENSITY pcf | OTHER TESTS |
| 0 | | | | <u>OLDER ALLUVIUM (Qoal) (Landslide Affected)</u> SILTY CLAY VERY DARK GREYISH BROWN, FIRM, SLIGHTLY MOIST SLIGHTLY POROUS, SCATTERED CHARCOAL FLECKS, WITH SCATTERED SMALL ROCK FRAGS., IRREGULAR SHAPED, IN-FILLED SEAM OF LT. BROWN SILT (BURROW INFILL / LIQUEFACTION?) CLAYEY SILT, LIGHT BROWN, IRREG. SHAPE SHARP COLOR CHANGE ALONG SLIGHTLY CLAYEY PLANE N-S, 30°E, LT. BROWN ABOVE, LT. OLIVE GREY BELOW w/ FE OXIDE & WHITE MIN. STAINING SCATTERED CARBON FLECKS, THIN, TIGHT CONTACT MOTTLING, DARK BROWN, THIN BANDING COLOR BANDING, DEPOSITIONAL CONTACT SANDY SILT N-S, 10°E, LESS CLAY BELOW w/ CLAYEY SILT, LIGHT BROWN, SOFT TO FIRM, MOIST CONTACT SHARP, WAVY, POSSIBLY EROSIONAL CLAYEY SILT BROWN TO DARK BROWN, (PALEDSOL?) FIRM, MOIST, SLIGHTLY POROUS, GRADATIONAL CONTACT SILTY CLAY, OLIVE BROWN, SOFT, MOIST, w/ WHITE MIN. STAINING w/ SOME FE OXIDES INDISTINCT BEDDING, SUBHORIZONTAL, DISCONTIN. ABUNDANT WHITE MIN. STAINING | | | | | | |
| 5 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 25 | | | | | | | | | | |

HAMMER

 WEIGHT:
DROP:

 PROJECT NO.:
1651-4

 FIGURE NO.:
1.

BORING LOG

| | | | | |
|---|---------------|------------|-------------------|----------------|
| Bored By: | Date Drilled: | Drill Rig: | Boring Diameter: | Boring Number: |
| Descriptions on this boring log apply only at the specific boring location and at the time the boring was made. The descriptions on this log are not warranted to be representative of subsurface conditions at other locations or times. | | | Boring Elevation: | LB-15 (cont.) |

| DEPTH FT | SAMPLES | BLOWS/FOOT | GROUND WATER | DESCRIPTION | MOISTURE CONTENT, % | DENSITY, PCF | OTHER TESTS |
|--|---------|------------|--------------|--|---------------------|--------------|-------------|
| <div style="text-align: center;">5</div> <div style="text-align: center;">10</div> <div style="text-align: center;">15</div> <div style="text-align: center;">20</div> <div style="text-align: center;">25</div> <div style="text-align: center;">30</div> <div style="text-align: center;">35</div> <div style="text-align: center;">40</div> <div style="text-align: center;">45</div> <div style="text-align: center;">50</div> | | | | <p><u>OLDER ALLUVIUM (Q_{alio}) 'LANDSLIDE AFFECTED'</u></p> <p><u>SILTY CLAY</u></p> <p>LIGHT OLIVE BROWN, SOFT, MOIST, SLI. POROUS, WITH FE AND WHITE MINERAL STAINING, ABUNDANT SMALL & ROCK FRAGMENTS, MOTTLED, NO OBSERV. STRUCTURE</p> <p>← IRREGULAR, DARK GREY-BROWN CLAY POCKETS</p> <p>← CONCRETION, SUBANGULAR, CARB. CEMENTED 6" DIAM, SLI. MOISTURE ON DISCONTINUOUS FRACTURES</p> <p>NUMEROUS FRACTURES, SOME CLAY LINED AND STRIATED, DISCONTINUOUS, VERY MOIST TO WET FRACTURES INTERSECTING, SOME CAVING, SOFT-FIRM</p> <p>ZONE OF INTERSECTING CLAY SEAMS, WET,</p> <p>ZONE OF SOIL INFILLING BOUNDED BY SHARP DISCONTINUOUS PLANES, STEEPLY DIPPING, NEAR VERTICAL</p> <p>← IRREGULAR, ORGANIC-RICH, LENSES, DISCONTIN.</p> <p>SEVERAL DISCONTINUOUS CLAY SEAMS, VAR. ANGLES</p> <p>← CLAY SEAM E-W, 10-30°S</p> <p>CLAY LINED FRACTURE 1/8 - 1/16" THICK, SHEAR? SMOOTH, PLANAR, W/ STRIATIONS ORIENTED DOWN DIP, SOIL-LIKE MATERIAL ABOVE PLANE, ABRUPT COLOR CHANGE, <u>NSW, 60°E</u></p> <p>GRADATIONAL CONTACT - OLDER ALLUVIUM TO VERY WEATHERED BEDROCK (T) SLIDE AFFECTED</p> <p>← CLAY SEAM, WELL DEFINED, PLANAR, DEEPLY STRIATED, <u>N 15E, 22°NW</u>, STRIATIONS TREND <u>NTSE</u></p> <p>← CLAY SEAM, WELL DEFINED, PLANAR, <u>N55E 20°NW</u> STRIATIONS TRENDING <u>N70W</u></p> <p>← CLAYEY PLANE, STRIATED, LESS MOTTLED BELOW PLANE, PLASTIC CLAY, <u>N 15W, 55 NE</u></p> <p>FISH VERTEBRAE, 1" DIAM, 1.5" HIGH, LATE PLIOCENE - EARLY PLEISTOCENE</p> <p>CLAY SEAM, CUT OFF BY STEEPER SEAM, DISCONT. <u>N-S, 35°E</u>, LOCALLY MOTTLED, ORGANICS, CHARCOAL FLECKS, DARK LENSES ~2" DIAM.</p> | | | |
| HAMMER WEIGHT: DROP: | | | | PROJECT NO.: 1651-4 | FIGURE NO.: 2 | | |

BORING LOG

ged By:

Date Drilled:

Drill Rig:

Boring Diameter:

Boring Number:

Descriptions on this boring log apply only at the specific boring location and at the time the boring was made. The descriptions on this log are not warranted to be representative of subsurface conditions at other locations or times.

Boring Elevation:

LB-15(cont.)

| DEPTH, FT | SAMPLES | BLOWS/FOOT | GROUND WATER | DESCRIPTION | MOISTURE CONTENT, % | DRY DENSITY PCF | OTHER TESTS |
|-----------|---------|------------|--------------|--|------------------------|--------------------|-------------|
| 50 | | | | <p><u>BEDROCK (Tc) (HIGHLY WEATHERED) (cont.) (SLIDE AFFECTED)</u></p> <p>SILTY CLAY(STONE)</p> <p>DARK GREY TO GREY MOTTLED, SOFT TO MOD. HRD, MST,</p> <p>SOME FE OXIDE STAINING, MICACEOUS, ORGANIC MATTER, MASSIVE</p> <p>CLAY SEAM, CONTINUOUS, PLANAR, STRIATIONS</p> <p>POTENTIAL SLIP SURFACE, <u>N10W, 21E</u>, STRIATIONS</p> <p>TREND <u>NG5E</u>, PLASTIC CLAY, <u>1/2" THICK</u>, MOIST</p> | | | |
| 55 | | | | <p><u>BEDROCK (Tc) (SLIDE AFFECTED)</u></p> <p>CLAYEY SILTSTONE</p> <p>DARK OLIVE GREY, MOD. HARD, MOIST, MOD. FRACTURED, DK. MINERAL + OR. OXIDE STAINING, THICKLY BEDDED TO MASSIVE, MICACEOUS</p> <p>FRACTURES, STEEP, DISCONTINUOUS, SLIGHT SEEPAGE</p> <p>INTENSELY FRACTURED, STEEP, DISCONTIN. FRACTS WET (SEEPAGE)</p> <p>SOFT TO MOD. HARD, VERY FRACTURED</p> | | | |
| 60 | | | | | | | |
| 65 | | | | <p>CLAY SEAMS - <u>N30W, 20°NE</u>, VERY PLANAR SLIDE PLANE.</p> <p><u>BEDROCK (Tc) - CLAYEY SILTSTONE</u></p> <p>DARK OLIVE GREY, HARD, MOIST, MASSIVE, MICACEOUS,</p> <p>HARD SILICEOUS SILTSTONE LAYER, SEEPAGE</p> <p>SHELL FRAGMENTS</p> <p>FRACTURES, PARALLEL, <u>N40W, 50°NE</u></p> | | | |
| 70 | | | | | | | |
| 75 | | | | | | | |

HAMMER

WEIGHT:
DROP:

PROJECT NO.:
1651-4

FIGURE NO.:
3

BORING LOG

Logged By: _____ Date Drilled: _____ Drill Rig: _____ Boring Diameter: _____ Boring Number: **LB-15 (cont.)**
 Descriptions on this boring log apply only at the specific boring location and at the time the boring was made. The descriptions on this log are not warranted to be representative of subsurface conditions at other locations or times. Boring Elevation: _____

| DEPTH, FT | SAMPLES | BLOWS/FOOT | GROUND WATER | DESCRIPTION | MOISTURE CONTENT, % | DRY DENSITY, PCF | OTHER TESTS |
|----------------------------------|---------|------------|--------------|--|---------------------|------------------|-------------|
| 7.5 | | | | BEDROCK (Tc) (cont.) CLAYEY SILTSTONE DARK OLIVE GREY, HARD, MOIST, MASSIVE, ← MICACEOUS ← FRACTURE / JOINT PLANE, FAIRLY CONTIN., CLAY COATING, THIN, SMOOTH, PLANAR, N-S, 60°E | | | |
| 0 | | | | | | | |
| 5 | | | | ← SOFTER ZONE, POSSIBLE FRACTURE, 1/2' THICK, DISCONTINUOUS ← POSSIBLE BEDDING, SUBHORIZONTAL, SLIGHTLY CLAYEY, (CONTINUOUS?) | | | |
| 10 | | | | | | | |
| 15 | | | | ← FRACTURE?, DISCONTINUOUS, SLIGHT SEEP, 2-4" THICK SOFTER ZONE | | | |
| 20 | | | | ← FRACTURE, CONTINUOUS, VERY TIGHT, NO CLAY, SLIGHT SEEP, SUBPARALLEL FRACTURES ABOVE + BELOW, N-S, 57°E | | | |
| 25 | | | | | | | |
| 30 | | | | | | | |
| 35 | | | | | | | |
| 40 | | | | | | | |
| 45 | | | | | | | |
| 50 | | | | | | | |
| 55 | | | | | | | |
| 60 | | | | | | | |
| 65 | | | | | | | |
| 70 | | | | | | | |
| 75 | | | | | | | |
| 80 | | | | | | | |
| 85 | | | | | | | |
| 90 | | | | | | | |
| 95 | | | | | | | |
| 100 | | | | | | | |
| HAMMER WEIGHT: _____ DROP: _____ | | | | PROJECT NO.: 1651-4 | FIGURE NO.: 4 | | |

BORING LOG

| | | | | |
|---|---------------|------------|-------------------|----------------|
| ged By: | Date Drilled: | Drill Rig: | Boring Diameter: | Boring Number: |
| Descriptions on this boring log apply only at the specific boring location and at the time the boring was made. The descriptions on this log are not warranted to be representative of subsurface conditions at other locations or times. | | | Boring Elevation: | LB-15(cont.) |

| DEPTH, FT | SAMPLES | BLOWS/FOOT | GROUND WATER | DESCRIPTION | MOISTURE CONTENT, % | DRY DENSITY, PCF | OTHER TESTS |
|-----------|---------|------------|--------------|---|---------------------|------------------|-------------|
| 0 | | | | <u>BEDROCK (Tc) (CONT.)</u> CLAYEY SILTSTONE. DARK OLIVE GREY, HARD, MOIST, MASSIVE, MICAC., SLIGHTLY FRACTURED, VERY HARD, FEWER MICRO FOSSILS SLIGHTLY MOIST, FEWER SEEPS SANDY SILTSTONE w/ V. FINE SAND. SILTSTONE w/ CLAY TO SILTSTONE DARK OLIVE GREY, HARD, SLI. MOIST, ABUNDANT MICRO FOSSILS, WET FROM SEEP VERY HARD, ABUNDANT MICROFOSSILS, SLI. MOIST SOFT ZONE AROUND HOLE, <u>HORIZONTAL</u> SLIGHTLY LESS HARD, 6" THICK LAYER, NO CLAY END OF BORING @ 147! Hole BACK FILLED AND TAMPED. | | | |
| 120 | | | | | | | |
| 130 | | | | | | | |
| 140 | | | | | | | |
| 150 | | | | | | | |

HAMMER

WEIGHT:
DROP:

PROJECT NO.:
1651-4

FIGURE NO.:
5

LOCATION OF BORING

JOB NO.

1051-4

CLIENT

JUNIPERO SERRA
HIGH SCHOOL

LOCATION

SAN JUAN
CAPISTRANO, CA

DRILLING METHOD: BUCKET AUGER

BORING NO.

LB-17

SHEET

1 OF 7

SAMPLING METHOD:

DRILLING

WATER LEVEL

START

FINISH

TIME

11:45AM

DATE

DATE

5-29-01

CASING DEPTH

DRIVING WT.:

DATUM

ELEVATION

SURFACE CONDITIONS:

| SAMPLER TYPE | INCHES DRIVEN | BLOWS | DEPTH OF CASING | SAMPLE NO. | SAMPLE DEPTH | BLOWS/FT. SAMPLER | NUMBER OF RINGS | DEPTH IN FEET | SOIL GRAPH | |
|--------------|---------------|-------|-----------------|------------|--------------|-------------------|-----------------|---------------|------------|--|
| | | | | | | | | 0 | | FILL (?) |
| | | | | | | | | 1 | | SILTY CLAY |
| | | | | | | | | 2 | | DARK BROWN, SOFT, S. MOIST |
| | | | | | | | | 3 | | MOTTLED GRAY, LIGHT BROWN AREAS, FE OXIDE SPOTS |
| | | | | | | | | 4 | | NUMEROUS ROOTLETS |
| | | | | | | | | 5 | | |
| | | | | | | | | 6 | | CLAYEY SILT |
| | | | | | | | | 7 | | GRAY, STIFF, S. MOIST, MOTTLED, SCATTERED SUB-ANG. RK FRAC |
| | | | | | | | | 8 | | SILTY SAND |
| | | | | | | | | 9 | | GRAY, SOFT, S. MOIST |
| | | | | | | | | 10 | | |
| | | | | | | | | 11 | | CLAYEY SILT TO SILTY SAND |
| | | | | | | | | 12 | | DARK GRAYISH BROWN, STIFF, S. MOIST |
| | | | | | | | | 13 | | DARK YELLOWISH BROWN |
| | | | | | | | | 14 | | ~ 2' WIDE ZONE OF LOOSELY CONSOLIDATED WHITE SAND - |
| | | | | | | | | 15 | | YELLOWISH BROWN TRENCH BACKFILL |
| | | | | | | | | 16 | | WHITE MIN. STREAK, LOCALLY |
| | | | | | | | | 17 | | |
| | | | | | | | | 18 | | SILTY SAND |
| | | | | | | | | 19 | | GRAY TO OLIVE GRAY, SOFT, S. MOIST |
| | | | | | | | | 20 | | FE OXIDES, LOCAL WHITE MIN. STREAKING |
| | | | | | | | | 21 | | |
| | | | | | | | | 22 | | ORANGE-GRAY SAND |
| | | | | | | | | 23 | | SECONDARY MIN. SEAMS - VEINLETS w/ SAND CUT ACROSS |
| | | | | | | | | 24 | | WEATHERED BEDROCK ~ SHARP, VERY IRREGULAR CONTACT |
| | | | | | | | | 25 | | CLAYEY SILT |
| | | | | | | | | 26 | | GRAY (DARKER THAN ABOVE), SOFT, S. MOIST |

CHK'D BY

DATE: 5-27-01

LOCATION OF BORING

JOB NO.

1651-4

CLIENT

JUNIPERO SERRA
HIGH SCHOOL

LOCATION

SAN JUAN
CAPISTRANO, CA

DRILLING METHOD: BUCKET AUGER

BORING NO.

LB-17

SHEET

3 OF 7

SAMPLING METHOD:

DRILLING

START

FINISH

TIME

TIME

11:45 AM

TIME

DATE

DATE

DATE

5-29-01

CASING DEPTH

DRIVING WT.:

DATUM

ELEVATION

| SAMPLER TYPE | INCHES DRIVEN | BLOWS | DEPTH OF CASING | SAMPLE NO. | SAMPLE DEPTH | BLOWS/FT. SAMPLER | NUMBER OF RINGS | DEPTH IN FEET | SOIL GRAPH |
|--------------|---------------|-------|-----------------|------------|--------------|-------------------|-----------------|---------------|------------|
| | | | | | | | | 40 | |
| | | | | | | | | 1 | |
| | | | | | | | | 2 | |
| | | | | | | | | 3 | |
| | | | | | | | | 4 | |
| | | | | | | | | 45 | |
| | | | | | | | | 6 | |
| | | | | | | | | 7 | |
| | | | | | | | | 8 | |
| | | | | | | | | 9 | |
| | | | | | | | | 50 | |
| | | | | | | | | 1 | |
| | | | | | | | | 2 | |
| | | | | | | | | 3 | |
| | | | | | | | | 4 | |
| | | | | | | | | 55 | |
| | | | | | | | | 6 | |
| | | | | | | | | 7 | |
| | | | | | | | | 8 | |
| | | | | | | | | 9 | |
| | | | | | | | | 60 | |

SURFACE CONDITIONS:

(CONT'D)

WEATHERED BEDROCK

CLAYEY SILT (W/ SOME VE. SAND)

GRAY, SOFT, MOIST

SCATTERED FE OXIDES

GRAY, SOFT TO STIFF, MOIST

CONCRETION ~ 1 TO 3" DIAM.

GYPSUM CRYSTALS

TOP OF CASING (47.9')

(SEEPAGE BEGINS)

CLAYEY SILT

GRAY, SOFT, MOIST

WHITE MIN. - GYPSUM; SLIGHTLY MOTTLED

OXIDE STAINING, WHITE MIN. STREAK LOCALLY

GYPSUM CRYSTALS

CLAYEY SILT

GRAY, STIFF, S. MOIST

SMALL WHITE MIN. SPECKS, OXIDATION LOCALLY

VERY MOTTLED, FE OXIDES, YELLOW STAIN

WHITE MIN., CRYSTALS OF GYPSUM

HARD, ANGULAR LGT GRAY SILTSTONE FRAG ~ 2.5" DIAM

CHK'D BY

DATE: 5-29-01

LOCATION OF BORING

JOB NO.

1651-4

CLIENT

JUNIPERO SERRA
HIGH SCHOOL

LOCATION

SAN JUAN
CAPISTRANO, CA

DRILLING METHOD: BUCKET AUGER

BORING NO.

LB-17

SHEET

4 OF 7

SAMPLING METHOD:

DRILLING

START

FINISH

WATER LEVEL

TIME

TIME

TIME

11:45 AM

DATE

DATE

5-29-01

CASING DEPTH

DRIVING WT.:

DATUM

ELEVATION

SURFACE CONDITIONS:

| SAMPLER TYPE | INCHES DRIVEN | BLOWS | DEPTH OF CASING | SAMPLE NO. | SAMPLE DEPTH | BLOWS/FT. SAMPLER | NUMBER OF RINGS | DEPTH IN FEET | SOIL GRAPH |
|--------------|------------------|-------|--------------------|---------------|-----------------|----------------------|--------------------|------------------|---------------|
| | | | | | | | | 60 | |
| | | | | | | | | 1 | |
| | | | | | | | | 2 | |
| | | | | | | | | 3 | |
| | | | | | | | | 4 | |
| R | | | | 2 | 65' | 1P=6" 4B=6" | | 65 | |
| | | | | | | | | 6 | |
| | | | | | | | | 7 | |
| | | | | | | | | 8 | |
| | | | | | | | | 9 | |
| | | | | | | | | 70 | |
| | | | | | | | | 1 | |
| | | | | | | | | 2 | |
| | | | | | | | | 3 | |
| | | | | | | | | 4 | |
| | | | | | | | | 75 | |
| | | | | | | | | 6 | |
| | | | | | | | | 7 | |
| | | | | | | | | 8 | |
| | | | | | | | | 9 | |
| | | | | | | | | 80 | |

(CONT'D)

WEATHERED BEDROCK

CLAYEY SILT

GRAY, STIFF, S. MOIST

CLAYEY SILT

DARK GRAY, FIRM, S. MOIST

LOCAL OXIDES

CLAYEY SILT

GRAY, STIFF, MOIST

FE OXIDES, WHITE MIN. DEPOSITS

VERY MOIST, SLIGHT SEEPAGE

CLAYEY ZONE

DARKER GRAY W/ DEPTH

BR? - - - - ?

VERY DARK GRAY, STIFF, MOIST

WHITE SPECKS (SCATTERED)

ZONES OF UNOXIDIZED BR., GRADUALLY MORE UNOX W/
DEPTH

SOME SCATTERED OXIDATION

CHKD BY

DATE 5-29-01

DATE

LOCATION OF BORING

JOB NO.

1051-H

CLIENT

JUNIPERO SERRA
HIGH SCHOOL

LOCATION

SAN JUAN
CAPISTRANO, CA

DRILLING METHOD:

BUCKET AUGER

BORING NO.

LB-17

SHEET

5 OF 7

SAMPLING METHOD:

DRILLING

START

FINISH

TIME

TIME

WATER LEVEL

TIME

DATE

11:45AM

DATE

5-29-01

CASING DEPTH

DRIVING WT.:

DATUM

ELEVATION

| SAMPLER TYPE | INCHES DRIVEN | BLOWS | DEPTH OF CASING | SAMPLE NO. | SAMPLE DEPTH | BLOWS/FT. SAMPLER | NUMBER OF RINGS | DEPTH IN FEET | SOIL GRAPH |
|--------------|---------------|-------|-----------------|------------|--------------|-------------------|-----------------|---------------|------------|
| | | | | | | | | 80 | |
| | | | | | | | | 1 | |
| | | | | | | | | 2 | |
| | | | | | | | | 3 | |
| | | | | | | | | 4 | |
| | | | | | | | | 85 | |
| | | | | | | | | 6 | |
| | | | | | | | | 7 | |
| | | | | | | | | 8 | |
| | | | | | | | | 9 | |
| | | | | | | | | 90 | |
| | | | | | | | | 1 | |
| | | | | | | | | 2 | |
| | | | | | | | | 3 | |
| | | | | | | | | 4 | |
| | | | | | | | | 95 | |
| | | | | | | | | 6 | |
| | | | | | | | | 7 | |
| | | | | | | | | 8 | |
| | | | | | | | | 9 | |
| | | | | | | | | 100 | |

SURFACE CONDITIONS:

(CONT'D)

BEDROCK

CLAYEY SILTSTONE

VERY DARK GRAY, MOD. HARD, MOIST

WATER SEEPING FROM SIDES

VERY HARD ZONE OF CONCRETIONS (LGT GRAY)

VERY DARK GRAY, MOD. HARD, MOIST TO V. MOIST

SCATTERED WHITE FLECKS

< VERY MOIST TO WET >

CHK'D BY

DATE 5-29-01

LOCATION OF BORING

JOB NO.

1651-4

CLIENT

JUNIPERO SERRA
HIGH SCHOOL

LOCATION

SAN JUAN
CAPISTRANO

DRILLING METHOD: BUCKET AUGER

BORING NO.

LB-17

SHEET

6 OF 7

SAMPLING METHOD

DRILLING

WATER LEVEL

TIME

DATE

CASING DEPTH

START

TIME

FINISH

TIME

DATE

DATE

DRIVING WT.:

DATUM

ELEVATION

| SAMPLER TYPE | INCHES DRIVEN | BLOWS | DEPTH OF CASING | SAMPLE NO. | SAMPLE DEPTH | BLOWS/FT. SAMPLER | NUMBER OF RINGS | DEPTH IN FEET | SOIL GRAPH | SURFACE CONDITIONS |
|--------------|---------------|-------|-----------------|------------|--------------|-------------------|-----------------|---------------|------------|-------------------------------------|
| | | | | | | | | 100 | | (CONT'D) |
| | | | | | | | | 1 | | BEDROCK |
| | | | | | | | | 2 | | CLAYEY SILTSTONE |
| | | | | | | | | 3 | | VERY DARK GRAY, MOD. HARD, V. MOIST |
| | | | | | | | | 4 | | (BUCKETS VERY WET, MUDDY) |
| | | | | | | | | 105 | | |
| | | | | | | | | 6 | | |
| | | | | | | | | 7 | | |
| | | | | | | | | 8 | | |
| | | | | | | | | 9 | | |
| | | | | | | | | 110 | | VERY DARK GRAY, MOD. HARD, V. MOIST |
| | | | | | | | | 1 | | |
| | | | | | | | | 2 | | |
| | | | | | | | | 3 | | |
| | | | | | | | | 4 | | |
| | | | | | | | | 115 | | (BUCKETS STILL WET, MUDDY) |
| | | | | | | | | 6 | | |
| | | | | | | | | 7 | | |
| | | | | | | | | 8 | | |
| | | | | | | | | 9 | | <NO CHANGE> |
| | | | | | | | | 120 | | |

CHK'D BY

DATE 5-30-01

**Previous
Leighton Logs**

GEOTECHNICAL BORING LOG

DATE 7-29-80

DRILL HOLE NO. B-1

SHEET 1 OF 2

PROJECT Currie - Samalgon

PROJECT NO. 180165-02

DRILLING CO. California Testing - Bakers

TYPE OF RIG Bucket

HOLE DIAMETER 24"

DRIVE WEIGHT 2800#(0-30)

DROP 12 IN.

ELEVATION TOP OF HOLE 250+

REF. OR DATUM

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE NO. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|------------------------|--------------------|-------------------|--------------------|------------------------|---------------------------|---|
| 0 | | | | | | | | Topsoil: dk. brn. - gray, moist, soft, clayey, sandy silt; rts. e; rt/h; local FeO stng. |
| 5 | | | 1 | Push | | | | Slide Debris: @ 3.7' siliceous cobble - tan silt @ 5' mod. plastic; mod. firm; massive |
| 10 | | | 2 | Push | | | | @ 8.5' contact w/ green brn., moist, soft - med. firm, sandy silt w/ clay; oxid.; FeO stng. blebs of topsoil; mottled; local FeO blebs @ 9' tan sandstone frag. 1" dia., angular |
| 15 | | C: N30E d. 185E | 3 | P-8" 1 | | | | @ 12' green brn, moist - wet clayey silt; no structure @ 12.7-13.1' band of soil; dk brn. - irreg. upper contact; no sign of rupture @ 14' green brn., moist, soft - med. firm, clayey silt, mass.; no structure; mottled |
| 20 | | | 4 | Push | | | | @ 18' FeO stng., abdt.; lighter bright org. |
| 25 | | | 5 | Push | | | | @ 20' looks like remnant structure, destroyed during sliding; less blotchy & fewer plands @ 20-22' more clay, rich; micaceous; jarosite stng. @ 22.5' less mica; mod. plastic; no structure @ 23' local FeO pod; soft concr. |
| 30 | | Standing Hco 8-2-80 | | | | | | |

GEOTECHNICAL BORING LOG

DATE 7-29 & 8-2-80

DRILL HOLE NO. B-1

SHEET 2 OF 2

PROJECT Currie - Samuelson

PROJECT NO. 180165-02

DRILLING CO. California Testing - Bo-Jac

TYPE OF RIG Bucket

HOLE DIAMETER 24"

DRIVE WEIGHT 2800# (0-30)

DROP 12 IN.

ELEVATION TOP OF HOLE _____ REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE NO. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|--------------------------------------|--------------------|-------------------|--------------------|------------------------|---------------------------|---|
| 30 | | | 6 | Push | | | | LOGGED BY <u>BC</u> SAMPLED BY <u>STH</u> |
| | | Standing H ₂ O 7-29-80 | | | | | | |
| 35 | | | | | | | | Total Depth: 34' Notes: 1) Cal Testing broke down @ 34' 7-29-80; H ₂ O standing @ 33.5 1 hour after breakdown 2) Bo-Jac drilled to 34' 8-2-80 drilling very slow due to severe caving; decided @ 34' it was not feasible to continue 3) H ₂ O standing @ 28.5 8-2-80 4) down hole logged to 25' stopped due to severe caving |

GEOTECHNICAL BORING LOG

DATE 8-2-80

DRILL HOLE No. B-2

SHEET 1 OF 4

PROJECT Currie - Samuelson

PROJECT No. 180165-02

DRILLING Co. Bo-Jac

TYPE OF RIG Bucket

HOLE DIAMETER 24"

DRIVE WEIGHT 2500# (0-25'); 1500# (25-45') DROP 12 IN.

ELEVATION TOP OF HOLE 290

REF. OR DATUM

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|---|
| 0 | | | | | | | | Colluvium: dk. gray brn., moist-dry, soft-med. firm, sandy, clayey silt; large rts; highly expansive; white sand lenses, some green silt lenses @ 1' root @ 2' rt. |
| 5 | | | 1 | Push | 105.0 | 20.2 | CL | Slide Debris: Some oxid. silt @ 5' @ 6' med-dk. brn, moist, local rt/h @ 8' dk. brn. |
| 10 | | | 2 | Push | 103.5 | 22.7 | CL | @ 11' grn. gray brn., moist, med. firm clayey silt; hi. mottled; no structure; rt/h becoming more firm |
| 15 | | | 3 | P-6" Z | 95.5 | 27.4 | CL | @ 13' grades to Capistrano looking debris: med. brn - grn. brn. gray, wet, soft clayey silt, hi. weathered; some organics; micro slicks on broken surfaces; FeO stng. @ 15' gray brn, moist, firm clayey silt; plastic; mottled w/ FeO stng; no structure @ 16' dk. MnO stnd concr. @ 17' slightly more structured same a.a.; abdt. FeO stng. water, near saturation |
| 20 | | | 4 | Push | 88.1 | 30.2 | CL | @ 19' a.a. |
| 25 | | | 5 | Push | 99.2 | 26.2 | CL | @ 21' same a.a., but more moist; minor FeO stng. @ 23' moist-wet-sat.; minor seepage @ 25' oxid. sandy silt layer |
| 30 | | | | | | | | @ 27' small conc. free H ₂ O clay - sandy-silt |

GEOTECHNICAL BORING LOG

DATE 8-2-80

DRILL HOLE No. B-2

SHEET 2 OF 4

PROJECT Currie - Samuelson

PROJECT No. 180165-02

DRILLING Co. Bo-Jac

TYPE OF RIG Bucket

HOLE DIAMETER 24"

DRIVE WEIGHT 1500#(25-45'); 750#(45-65')

DROP 12 IN.

ELEVATION TOP OF HOLE 225

REF. OR DATUM

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|---|
| 30 | | | 6 | 3 | 104.5 | 24.4 | CL | |
| | | | | | | | | @32' gypsum |
| | | | | | | | | @33' becoming darker gray; odor thin layering, possible sodiment |
| 35 | | | 7 | 2 | 97.1 | 30.2 | CL | |
| | | | | | | | | @37' abdt. organics, wood bark small nodules of cream silt |
| 40 | | | 8 | 3 | 91.4 | 31.5 | CL | |
| | | | | | | | | @39' fresh fibrous bark, dk gray clayey silt matrix, organic odor |
| 45 | | | 9 | 2 | 85.8 | 37.4 | CL | |
| | | | | | | | | @44' small rootlets |
| | | | | | | | | @46' gray silt nodules |
| | | | | | | | | @47' metamorphic clast (chlorite schist) |
| 50 | | | 10 | 10 | 99.4 | 27.1 | CL | |
| | | | | | | | | @53' abdt., fresh organics branches & roots; still mica. silt |
| 55 | | | 11 | 11 | 95.8 | 27.7 | CL | |
| | | | | | | | | @58' matl. same a.a. |
| 60 | | | | | | | | |

GEOTECHNICAL BORING LOG

DATE 8-2-80

DRILL HOLE No. B-2

SHEET 3 OF 4

PROJECT Currie - Samuelson

PROJECT No. 180165-02

DRILLING Co. Bo-Jac

TYPE OF RIG Bucket

HOLE DIAMETER 24"

DRIVE WEIGHT 150#(45-65); 1500#(65-90')

DROP 12 IN.

ELEVATION TOP OF HOLE _____

REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|--|
| 60 | | | 12 | 11 | 102.9 | 21.8 | CL | <p>LOGGED BY _____</p> <p>SAMPLED BY <u>STH</u></p> <p>@61' thin bedded clayey silt, med-dk. gray; odorous organics mottled blcks of mica. silt</p> <p>@63' concr. 6-8" dk. gray & lt. gray silt > 12"</p> |
| 65 | | | 13 | 13 | 98.1 | 26.1 | CL | <p>@67' same dk. flood plain deposits</p> <p>@68' still abdt. organics</p> |
| 70 | | | 14 | 3 | 95.1 | 29.0 | CL | <p>@70' lt. gray sand lenses; abdt. organics</p> <p>@73' some small local slicks beginning of gradational change to unox.</p> |
| 75 | | | 15 | 14 | 90.1 | 32.8 | CL | <p>@75' brn, wet sand lens coarse grnd; small pebbles</p> |
| 80 | | | 16 | 12 | 89.4 | 32.4 | CL | <p>Bedrock(?)</p> <p>@77' contact(?) dk. gray, moist, firm-stiff, sandy clayey silt; massive; petro. odor</p> <p>@79' gyp. filled jt., local slicks</p> |
| 85 | | | 17 | 14 | 82.3 | 37.7 | CL | <p>@82' questionable bedrock, looks a bit messy; some silt lenses tan & lt. green</p> <p>@83' high clay content, clayey silt; v/ stiff</p> <p>@85' good bedrock</p> <p>@86' becomes siltier, local slicks; good bedding signs; fossils</p> |
| 90 | | | | | | | | |

DATE 8-2-80 DRILL HOLE No. B-2 SHEET 4 OF 4
PROJECT Currie-Samuelson PROJECT No. 180165-02
DRILLING Co. Bo-Jac TYPE OF RIG Bucket
HOLE DIAMETER 24" DRIVE WEIGHT 1500# (65-90') DROP 12 IN.
ELEVATION TOP OF HOLE _____ REF. OR DATUM _____

S05A(11/77)

GEOTECHNICAL BORING LOG

DATE 11-20-80 DRILL HOLE No. B-3 SHEET 1 OF 4
 PROJECT Currie - Samuelson PROJECT No. 180165-02
 DRILLING Co. Al-Roy TYPE OF RIG Bucket
 HOLE DIAMETER 22" DRIVE WEIGHT 2400#(0-25) ; 1550#(25-45) DROP 12 IN.
 ELEVATION TOP OF HOLE 270± REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|---|
| 0 | | | | | | | | LOGGED BY <u>BC, TB recorded</u> SAMPLED BY <u>TB</u> |
| 5 | | | ① 3-5' | 4 | 104.1 | 12.3 | | Colluvium: 0-7' Col: med-dk brn; dry-moist, v/l stiff-hard, clayey Sandy silt; v/l porous; abdt. roots; scattered cobbles to 3". caliche stringers; mass; fresh root hairs; abdt. gypsum blebs, locally stringers @6' fresh roots |
| 10 | | | 2 | 4 | 90.8 | 13.6 | | Siltstone: @7' Silt: lt gray brn-brn, damp-moist, stiff-v/l stiff Sandy silt; some jarosite & FeO stng; mod. porous; abdt. caliche stringers; local loose areas @8' concretion: 6" thick; mass; North wall; cemented silt @9' animal burrow @9.5' loose soil w/ openings @10' silt: mottled green gray, org. brn, brn; dry-damp, mod. stiff silt; w/ abdt. FeO jarosite stng, appears v/l broken & jumbled; some caliche blebs & stringers @12' concretion @13' silt becomes tan-lt brn, mod. locally ox. @15' concretion |
| 15 | | | 3 | 4 | 99.3 | 15.4 | | |
| 20 | | | ② 17-14' | 4 | 95.9 | 23.4 | | @20.5' Silt changes to dk. brn w/ lt. brn mot.; moist-v/moist, med. stiff, clayey silt; porous; abdt. caliche @22' Silt changes to med-lt. gray brn; contains weathered FeO stng. clasts up to 4'; abdt. FeO stng; appears v/l broken; abdt. caliche stringers; v/l moist @24.8' concretion |
| 25 | | | 5 | 2 | 97.7 | 23.6 | | |
| 30 | | | | | | | | @29' ox. patch on N wall; silt. moist |

GEOTECHNICAL BORING LOG

DATE 11-20-80 DRILL HOLE No. B-3 SHEET 2 OF 4
 PROJECT Curria - Samuelson PROJECT No. 180165-02
 DRILLING Co. AI-Roy TYPE OF RIG Bucket
 HOLE DIAMETER 22" DRIVE WEIGHT 1550#(25-45'); 850#(45-70') DROP 12 IN.
 ELEVATION TOP OF HOLE 270± REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|--|
| | N S | | | | | | | LOGGED BY <u>BC, TB recorded</u> SAMPLED BY <u>TB</u> |
| 30 | f. f. | | 6 | 3 | 88.9 | 35.2 | | |
| | f. f. | | ③ | | | | | |
| | f. f. | | 32-35 | | | | | |
| | f. f. | | | | | | | @32' concretion; small |
| | f. f. | | | | | | | @33' Silt. 1/4 moist |
| | f. f. | | | | | | | @34' concretion on South wall |
| 35 | f. f. | | 7 | 3 | 88.6 | 30.5 | | |
| | f. f. | | | | | | | @35' Silt. gray - grn gray & gray |
| | f. f. | | | | | | | brn. 1/4 moist & wet, 1/4 broken |
| | f. f. | | | | | | | w/ FeO stng. frags; abdt. |
| | f. f. | | | | | | | jarosite; scattered forams; |
| | f. f. | | | | | | | 1/4 clayey |
| | f. f. | | | | | | | @36' small concretion |
| | f. f. | | | | | | | @38' ox. more abdt. |
| 40 | f. f. | | 8 | 3 | 89.9 | 31.1 | | |
| | f. f. | | | | | | | @40' gray brn. FeO stnd. clayey |
| | f. f. | | | | | | | Silt; hi. plastic |
| | f. f. | | | | | | | |
| | f. f. | | | | | | | |
| 45 | f. f. | | 9 | 4 | 86.8 | 35.4 | | |
| | f. f. | | | | | | | @45' numerous weathered FeO |
| | f. f. | | | | | | | stnd. clasts; scat. organic |
| | f. f. | | | | | | | blabs; silt. more consistent, |
| | f. f. | | | | | | | gray, w/ ox. brn. bands |
| | f. f. | | | | | | | @46' concretion |
| | f. f. | | | | | | | |
| | f. f. | | | | | | | @48.5' local zone of FeO stng. |
| | f. f. | | | | | | | continuous; 1' thk. |
| 50 | f. f. | | 10 | 18 | 85.6 | 37.2 | | |
| | ox. | | | | | | | @50' abdt. organic matl.; |
| | UNOX. | | | | | | | appears less broken; less |
| | | | | | | | | FeO stng; dk gray - black |
| | | | | | | | | banding; matl. still mot.; |
| | | | | | | | | slt. gray - dk gray; plastic |
| | | | | | | | | @50.3' seepage from around |
| | | | | | | | | concretion |
| | | | ④ | | | | | @51' more mass. gray silt; |
| | | | 32-35 | | | | | less ox., sandy, clayey silt; |
| 55 | | | 11 | 13 | 96.3 | 26.7 | | |
| | | | | | | | | moist; no FeO stng, soft-firm |
| | | | | | | | | @52' abdt. organics, end of ox. |
| | | | | | | | | zone |
| | | | ⑤ | | | | | |
| | | | 55-60 | | | | | |
| | | | chunks | | | | | |
| 60 | | | | | | | | Unoxidized Siltstone: gray, soft, unox |
| | | | | | | | | sandy, clayey silt, no structure; |
| | | | | | | | | occas. dk. bands of organic matl. |
| | | | | | | | | @55' 1/4 strong organic odor(stinks) |
| | | | | | | | | roots still intact; appear fairly |
| | | | | | | | | fresh; tan ox. veins & seams; mica |

GEOTECHNICAL BORING LOG

DATE 11-20-80

DRILL HOLE No. B-3

SHEET 3 OF 4

PROJECT Currie-Samuelson

PROJECT No. 180165-02

DRILLING Co. AI-Roy

TYPE OF RIG Bucket

HOLE DIAMETER 22"

DRIVE WEIGHT 850#(45-70'); 2100#(70-100')

DROP 12 IN.

ELEVATION TOP OF HOLE 270±

REF. OR DATUM

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|--|
| | | | | | | | | LOGGED BY <u>BC, TB recorded</u> SAMPLED BY <u>TB</u> |
| 60 | ~ | | 12 | 13 | 98.0 | 25.0 | | @59' small concretion @60' gray-dk. gray, y/l moist, med. stiff, sll sandy, clayey slt.; abdt. organics, rts, plastic, strong organic odor; mottled; scat. gravel; contains rnd. lt. gray sandy clasts(?); scat. Forams; mica; dark banding of org. matl. @61' concretion; tan slt. @63.5' large organic sticks; less banding @67' sll sandier mica, sandy, clayey slt.; mass. |
| 65 | ~ | | 13 | 22 | 103.5 | 25.2 | | |
| 70 | ~ | | 14 | 10 | 94.4 | 28.4 | | @70' zone of bedrock frags; fresh sticks |
| 75 | ~ | | 15 | 7 | 94.6 | 28.2 | | @74' small concretion, layer of gray slt |
| 80 | ~ | | 16 | 6 | 94.5 | 28.5 | | @77' large organic frags. @79' yellow concretion; sll firmer @80' sll petrol. odor as well as organic odor; slt. mot. a.a. scat. organics @81' series of conc.; tan cementd. slt. @83' yellow concretion |
| 85 | ~ | | 17 | 20 | 100.2 | 19.5 | | @85.5' conc. w/ seepage at bottom; matl. has mot. appearance brn-gray; scat. org. & strong org. odor; med. stiff; firmer than above |
| 90 | ~ | | | | | | | @88' conc.; abdt rts. below @89' local Forams; org. chunks |

GEOTECHNICAL BORING LOG

DATE 10/20-21/80

DRILL HOLE No. 1RW

SHEET 1 OF 5

PROJECT Currie

PROJECT No. 180165-02

DRILLING Co. A-W

TYPE OF RIG Rotary Wash

HOLE DIAMETER 5"

DRIVE WEIGHT 530 lbs.

DROP 12 IN.

ELEVATION TOP OF HOLE _____ REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|--|
| 0 | | | | | | | | LOGGED BY <u>LC + TB</u> SAMPLED BY <u>TB</u> |
| 5 | | | | | | | | SOIL: DK. brn. adobe clay. |
| 10 | | | | | | | | @ 4' Med. grey-brn silty clay w/ abdt. FeO staining. |
| 15 | | | (15) | | | | | |
| 20 | | | | | | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |

GEOTECHNICAL BORING LOG

DATE 10/20-21/90

DRILL HOLE No. 1 RW

SHEET 2 OF 5

PROJECT Currie

PROJECT No. 180165-02

DRILLING Co. A & W

TYPE OF RIG Rotary Wash

HOLE DIAMETER 5" DRIVE WEIGHT 530 lbs.

DROP 12 IN

ELEVATION TOP OF HOLE _____ REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION | |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|--|--|
| | | | | | | | | LOGGED BY <u>LC & TB</u> | |
| | | | | | | | | SAMPLED BY <u>TB</u> | |
| 30 | ~ | | | | | | | @ 32' DK. grey; med stiff; clayey silt; unoxidized; massive; petrol. odor; traces of organic material; scattered Forams. | |
| 31 | ~ | | | | | | | | |
| 32 | ~ | | | | | | | | |
| 33 | ~ | | | | | | | | |
| 34 | ~ | | | | | | | | |
| 35 | ~ | | | | | | | | |
| 36 | ~ | | | | | | | | |
| 37 | ~ | | | | | | | | |
| 38 | ~ | | | | | | | | |
| 39 | ~ | | | | | | | | |
| 40 | ~ | | (25) | | | | | | |
| 41 | ~ | | | | | | | | |
| 42 | ~ | | | | | | | | |
| 43 | ~ | | | | | | | | |
| 44 | ~ | | | | | | | | |
| 45 | ~ | | | | | | | | |
| 46 | ~ | | | | | | | | |
| 47 | ~ | | | | | | | | |
| 48 | ~ | | | | | | | | |
| 49 | ~ | | | | | | | | |
| 50 | ~ | | | | | | | | |
| 51 | ~ | | | | | | | | |
| 52 | ~ | | | | | | | | |
| 53 | ~ | | | | | | | | |
| 54 | ~ | | | | | | | | |
| 55 | ~ | | (3) | 31 | | | | | |
| 56 | ~ | | | | | | | | |
| 57 | ~ | | | | | | | | |
| 58 | ~ | | | | | | | | |
| 59 | ~ | | | | | | | | |
| 60 | ~ | | | | | | | | |

GEOTECHNICAL BORING LOG

DATE 10/20-21/80 DRILL HOLE NO. 1 RW SHEET 3 OF 5
 PROJECT Currie PROJECT NO. 180165-02
 DRILLING CO. A & W TYPE OF RIG Rotary Wash
 HOLE DIAMETER 5" DRIVE WEIGHT 530 lbs. DROP 12 IN.
 ELEVATION TOP OF HOLE _____ REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE NO. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION | |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|------------------------------|--|
| | | | | | | | | LOGGED BY <u>LC & TB</u> | |
| | | | | | | | | SAMPLED BY <u>TB</u> | |
| 60 | ~ | | | | | | | | |
| | ~ | | | | | | | | |
| | ~ | | | | | | | | |
| | ~ | | | | | | | | |
| 65 | ~ | | | | | | | | |
| | ~ | | | | | | | | |
| | ~ | | | | | | | | |
| | ~ | | | | | | | | |
| 70 | ~ | | (4) | 35 | | | | | |
| | ~ | | (5) | 29 | | | | | |
| | ~ | | (6) | 47 | | | | | |
| | ~ | | (7) | 27 | | | | | |
| | ~ | | (8) | 43 | | | | | |
| 75 | ~ | | (9) | 80 | | | | | |
| | ~ | | (10) | 80 | | | | | |
| | ~ | | (11) | 63 | | | | | |
| | ~ | | (12) | 62 | | | | | |
| 80 | ~ | | (13) | 95 | | | | | |
| | ~ | | (14) | 70 | | | | | |
| | ~ | | (15) | 70 | | | | | |
| | ~ | | (16) | 80 | | | | | |
| | ~ | | (17) | 70 | | | | | |
| 85 | ~ | | (18) | 60 | | | | | |
| | ~ | | (19) | 75 | | | | | |
| | ~ | | (20) | 65 | | | | | |
| | ~ | | (21) | 40 | | | | | |
| | ~ | | (22) | 50 | | | | | |
| 90 | ~ | | (23) | 55 | | | | | |

GEOTECHNICAL BORING LOG

DATE 10/20-21/90

DRILL HOLE NO. 1 RW

SHEET 4 OF 5

PROJECT Currie

PROJECT NO. 180165-02

DRILLING CO. A & W

TYPE OF RIG Rotary Wash

HOLE DIAMETER 5"

DRIVE WEIGHT 530 lbs.

DROP 12 IN.

ELEVATION TOP OF HOLE _____

REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE NO. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION | |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|-------------------------------|------------|
| | | | | | | | | LOGGED BY | SAMPLED BY |
| 90 | | | (24) | 35 | | | | LC & TB | TB |
| | | | (25) | 55 | | | | @ 92' Sandy layer 3/4" thick. | |
| | | | (26) | 75 | | | | | |
| | | | (27) | 70 | | | | | |
| | | | (28) | 80 | | | | | |
| 95 | | | (29) | 90 | | | | | |
| | | | (30) | 75 | | | | | |
| | | | (31) | 65 | | | | | |
| | | | (32) | 75 | | | | | |
| | | | (33) | 90 | | | | | |
| 100 | | | (34) | 100 | | | | | |
| | | | (35) | 70 | | | | | |
| | | | (36) | 65 | | | | | |
| | | | (37) | 75 | | | | | |
| | | | (38) | 65 | | | | | |
| 105 | | | (39) | 75 | | | | | |
| | | | (40) | 50 | | | | | |
| | | | (41) | 60 | | | | | |
| | | | (42) | 60 | | | | | |
| 110 | | | (43) | 65 | | | | | |
| | | | (44) | 70 | | | | | |
| | | | (45) | 100 | | | | | |
| | | | (46) | 85 | | | | | |
| | | | (47) | 100 | | | | | |
| | | | (48) | 75 | | | | | |
| 115 | | | (49) | 70 | | | | | |
| | | | (50) | 55 | | | | | |
| | | | (51) | 65 | | | | | |
| | | | (52) | 60 | | | | | |
| 120 | | | (53) | 55 | | | | | |

DATE 10/20-21/80 DRILL HOLE NO. 1RW SHEET 5 OF 5
PROJECT Currie PROJECT NO. 180165-02
DRILLING CO. A+W TYPE OF RIG Rotary Wash
HOLE DIAMETER 5" DRIVE WEIGHT 530 lbs. DROP 12 IN.
ELEVATION TOP OF HOLE _____ REF. OR DATUM _____

505A(11/77)

GEOTECHNICAL BORING LOG

DATE 10/22/80

DRILL HOLE No. 2RW

SHEET 1 OF 3

PROJECT Carrie

PROJECT No. 180165-02

DRILLING Co. A & W

TYPE OF RIG Rotary Wash

HOLE DIAMETER 5"

DRIVE WEIGHT 530 lbs.

DROP 12 IN.

ELEVATION TOP OF HOLE _____ REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|--|
| 0 | | | | | | | | LOGGED BY <u>LC & TB</u> SAMPLED BY <u>TB</u> |
| 5 | | | | | | | | SOIL: OK. brn adobe clay. |
| 10 | | | | | | | | @ 4' Med. grey-brn silty clay w/ abdt. FeO staining. |
| 15 | | | | | | | | @ 15' Sample not retained. |
| 20 | | | ① | 5 (8") | | | | @ 16' Med. grey-brn; med. stiff; silty clay; abdt. FeO staining; gyp. filled fracts up to 1/8"; dissem. gyp. crystals. |
| 25 | | | | | | | | @ 25' Sample not retained. |
| 30 | | | ② | 15 | | | | @ 26 1/2' Med. yel-brn; v/ stiff; siltstone; mod. fractured w/ gyp. filling, up to 1/8" thick. |
| | | | ③ | 43 | | | | @ 27' Only cuttings retained. |
| | | | ④ | 45 | | | | @ 28' OK. grey; med. stiff; clayey silt; unoxidized; massive; petrol. odor; traces of organic material. |
| | | | ⑤ | 24 | | | | @ 30' Only cuttings retained. |
| | | | | 25 | | | | |

GEOTECHNICAL BORING LOG

DATE 10/22/80 DRILL HOLE NO. 2 RW
 PROJECT Currie
 DRILLING CO. A & W
 HOLE DIAMETER 5" DRIVE WEIGHT 530 lbs.
 ELEVATION TOP OF HOLE _____ REF. OR DATUM _____

SHEET 2 OF 3
 PROJECT NO. 180165-02
 TYPE OF RIG Rotary Wash
 DROP 12 IN

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE NO. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|--|
| | | | | | | | | LOGGED BY <u>TB</u> SAMPLED BY <u>TB</u> |
| 30 | ~ | | ⑥ | 30 | | | | @ 30' Very clayey seams in siltstone. |
| | ~ | | | 30 | | | | @ 31' Sample not retained. |
| | ~ | | ⑦ | 30 | | | | |
| | ~ | | ⑧ | 19 | | | | |
| 35 | ~ | | ⑨ | 32 | | | | |
| | ~ | | ⑩ | 30 | | | | |
| | ~ | | | 17 | | | | @ 36' Sample not retained. |
| | ~ | | ⑪ | 19 | | | | |
| | ~ | | ⑫ | 23 | | | | |
| 40 | ~ | | ⑬ | 29 | | | | |
| | ~ | | ⑭ | 30 | | | | |
| | ~ | | ⑮ | 30 | | | | |
| | ~ | | ⑯ | 50 (32) | | | | @ 42' 3" Very hard layer, 1'± thick; could not sample. |
| | ~ | | ⑰ | 45 | | | | @ 44' Siltstone becomes stiffer. |
| 45 | ~ | | ⑱ | 45 | | | | |
| | ~ | | ⑲ | 30 | | | | |
| | ~ | | ⑳ | 40 | | | | |
| | ~ | | ㉑ | 30 | | | | |
| 50 | ~ | | ㉒ | 45 | | | | |
| | ~ | | ㉓ | 40 | | | | |
| | ~ | | ㉔ | 50 | | | | |
| | ~ | | ㉕ | 45 | | | | |
| | ~ | | ㉖ | 34 | | | | |
| 55 | ~ | | ㉗ | 38 | | | | |
| | ~ | | ㉘ | 40 | | | | |
| | ~ | | | 45 | | | | @ 56' Sample not retained. |
| | ~ | | ㉙ | 41 | | | | |
| | ~ | | ㉚ | 50 | | | | |
| 60 | ~ | | ㉛ | 40 | | | | |

GEOTECHNICAL BORING LOG

DATE 10/22/80

DRILL HOLE No. 2 RW

SHEET 3 OF 3

PROJECT Currie

PROJECT No. 180165-02

DRILLING Co. A & W

TYPE OF RIG Rotary Wash

HOLE DIAMETER 5"

DRIVE WEIGHT 530 lbs

DROP 12 IN.

ELEVATION TOP OF HOLE _____

REF. OR DATUM _____

| DEPTH FEET | GRAPHIC LOG | ATTITUDES | TUBE SAMPLE No. | BLOWS PER FOOT | DRY DENSITY PCF | MOISTURE CONTENT, % | SOIL CLASS. (U.S.C.S.) | GEOTECHNICAL DESCRIPTION | |
|---------------|----------------|-----------|--------------------|-------------------|--------------------|------------------------|---------------------------|--------------------------|------------|
| | | | | | | | | LOGGED BY | SAMPLED BY |
| 60 | ~ | | (32) | 45 | | | | TB | |
| | ~ | | (33) | 34 | | | | TB | |
| | ~ | | (34) | 50 | | | | | |
| | ~ | | (35) | 40 | | | | | |
| 65 | ~ | | (36) | 45 | | | | | |
| | ~ | | (37) | 44 | | | | | |
| | ~ | | (38) | 45 | | | | | |
| | ~ | | (39) | 50 | | | | | |
| | ~ | | (40) | 50 | | | | | |
| 70 | ~ | | (41) | 50 | | | | | |
| | | | | | | | | Total Depth 70' | |

**Cotton Shires
Boring Log Summary**



June 22, 2001
EC0021

TO: Dan McFarland
Building Official
CITY OF SAN JUAN CAPISTRANO
32400 Paseo Adelanto
San Juan Capistrano, California 92675

SUBJECT: **Summary of Surface and Subsurface Exploration**
RE: **Rancho Capistrano**

DISCUSSION

Based upon the results of the meeting held on May 31, 2001, between representatives of the City of San Juan Capistrano, Lowney Associates, Stoney Miller Consultants, Inc., Cotton, Shires and Associates, Inc. (CSA), TRC, Inc., Junipero Serra High School and the Rancho Capistrano Ministries, it was agreed that Lowney Associates would prepare a geologic report, prior to a full geotechnical report. Due to the geologic complexity of the site and the fact that many of the large-diameter boreholes encountered deep landslide debris, an accurate characterization of the site geologic conditions and landslide geometries is necessary prior to initiating geotechnical analyses of the site slopes. The purpose of the geologic report is to summarize the findings of the surface and subsurface investigation, generate a geologic model that incorporates the geologic elements observed during the investigation, and provide recommendations for further investigation, as needed.

Approximately two weeks has elapsed since the completion of logging of LB-17 (June 4, 2001). In this letter-report we have provided a brief summary of the surface and subsurface conditions that we observed at the site, and our interpretation of the geologic elements that we consider critical to generating an accurate geologic model of the site. This letter is intended to be circulated to Lowney Associates so that they are aware of our observations, interpretations, and associated concerns prior to finalizing a geologic report. It may be prudent to meet to discuss some of the issues identified in this letter.

SURFACE GEOLOGIC CONDITIONS

The surface conditions that influence the site are characterized by three primary geomorphic features: 1) the actively incising Oso Creek channel along the eastern portion of the property; 2) the mostly level Oso Creek alluvial terrace; and 3) the steep western hillside area. These three features contain distinct geologic and geotechnical characteristics that must be identified in order to define the potential risk that geologic hazards in these areas impose upon the proposed development. Once the geologic and geotechnical elements have been characterized, and the level of risk quantified, then appropriate mitigation may be designed.

Oso Creek Channel – The Oso Creek channel contains a U-shaped concrete lining along the northern portion of the property. Through this area, the creek embankment is only about 10

feet in height. The lined channel ends approximately 2,300 feet south of the northern property boundary where Oso Creek transitions to a more natural channel and meanders to the southern property boundary. This southerly reach is characterized by 15- to 20-foot high embankments near the end of the lined channel to 30- to 50-foot high embankments near the southern property boundary. Active landslides are common along much of the southern reach, downstream of the lined portion of the channel. These landslides appear to increase in lateral extent and depth in the downstream direction as the depth of creek incision increases southward. These landslides attain depths of approximately 10 to 40 feet, and have lateral dimensions of up to 400 feet in length and 200 feet in width. Most of the landslides occur within the alluvial terrace deposits which appear to be sliding atop the Capistrano Formation bedrock. However, Oso Creek appears to be incising through Capistrano Formation materials in the central portion of the southern reach.

Alluvial Terrace – The central portion of the site is characterized by mostly level, alluvial floodplain deposits of Oso Creek. These deposits typically consist of unconsolidated sand, silt and clay. Where exposed in the Oso Creek embankments, these materials are generally flatlying, and are typically interbedded with individual beds ranging from 6 inches to 2 feet in thickness. Perched groundwater was observed along the embankment where small seeps occurred up to 15 feet above creek level.

Western Hillside – The steep (20- to 40-degree inclinations) east-facing hillside located along, and upslope of, the western property boundary extends along the entire western boundary, and is interrupted in three locations by prominent east-flowing drainages that have incised steep-walled canyons into the hillside. The western hillside contains prominent topographic benches high on the slope with steep to precipitous (30- to 45-degree inclination) slopes above the topographic benches. Capistrano Formation bedrock materials are exposed along some of the steep-walled drainage canyons and indicate that in-place bedrock materials are nearly flatlying in the central portion of the slope area. Three possible geologic interpretations of the topographic benches high on the western slope include; 1) The benches represent downdropped landslide deposits created by deep-seated landslides; 2) The benches represent ancient alluvial terraces that were carved into the hillside, followed by regional tectonic uplift of the San Juan Mountains, resulting in the elevated topographic position of the terrace relative to the active Oso Creek floodplain; and 3) Terrace deposits are located atop the topographic bench but have been displaced by deep-seated landslides.

SUBSURFACE GEOLOGIC CONDITIONS

Large-Diameter Boreholes

A total of seventeen large-diameter boreholes were excavated to depths ranging from approximately 65 feet to 140 feet. Most of the boreholes encountered some groundwater, and most of the boreholes were downhole logged; however, several boreholes were not downhole logged due to groundwater and associated caving conditions. Only one large-diameter borehole was excavated high on the western hillside due to the fact that most of this area is outside of the Rancho Capistrano property. The remainder of the large-diameter boreholes were located near or along the western property boundary. No large-diameter boreholes were excavated in the vicinity of Oso Creek, or within the active landslides near the creek channel. The following is a summary of the subsurface conditions within each borehole, as observed by CSA:

LB-1 - Collapsed, no downhole logging by CSA.

LB-2 - Landslide debris 0-54', unfractured bedrock 54'-80'.

LB-3 - Collapsed, no downhole logging by CSA.

LB-4 - Collapsed below 28', CSA logged 0-28', inconclusive.

LB-5 - Landslide debris 0-53.4', unfract. bedrock 53.4'-BOH.

LB-6 - Collapsed, no downhole logging by CSA.

LB-7 - Landslide (ls) debris 0-10', possible ls debris 10'-43', possible deep ls 43'-67.5'.

LB-8 - Landslide debris 0-62.5', unfract. bedrock 62.5'-116'.

LB-9 - Landslide debris 0-34', unfract. bedrock 34'-72'.

LB-10 - Landslide debris 0-67.7', unfract. bedrock 67.7'-BOH.

LB-11 - Collapsed below 36', CSA logged 0-36', inconclusive.

LB-12 - Colluvium/fract. bedrock 0-60', unfract. bedrock 60'-80'; possible deep ls below 80'.

LB-13 - Landslide debris 0-54', fract. bedrock 54'-62', unfract. bedrock 62'-98'.

LB-14 - Landslide debris 0-99', fract. bedrock 99'-100', possible deeper ls below 100'.

LB-15 - Landslide debris 0-65', fract. bedrock 65'-80', unfract. bedrock 80'-140'.

LB-16 - Landslide debris 0-105', fract. bedrock 105'-108', unfract. bedrock 108-130'.

LB-17 - Sheared, tilted sediments 0-108', no logging below 108', likely ls debris.

Groundwater Conditions

Groundwater was encountered in most of the large-diameter boreholes and was typically characterized by small seeps along fracture zones and shears. The depth to the seepage zone was generally between 25 and 40 feet below the ground surface along the western property boundary. LB-17, which was excavated atop the topographic bench in the northern portion of the property, encountered groundwater at a depth of approximately 54 feet below the ground surface. Groundwater seepage was also noted during our reconnaissance along the Oso Creek channel where isolated seepage zones were observed along the creek embankment, up to 15 feet above creek level. The occurrence of groundwater throughout most of the site indicates that it is more pervasive than a groundwater table

CONCLUSIONS

Oso Creek Channel - Based upon our site geologic mapping and aerial photograph analysis, it appears that the southern reach of Oso Creek is characterized by a rapidly incising creek channel, resulting in highly unstable embankments, particularly where the creek has eroded down through the alluvial terrace material to the level of the Capistrano Formation bedrock. We observed active landslides along the majority of the eastern and western embankments that have failed within the past 10 years. Many of these landslides are large, deep-seated (greater than 10 feet deep) features that have extended up to 150 feet from the creek into the relatively level floodplain. Additionally, through aerial photograph analysis, we have observed large changes in the historic creek and embankment positions over time. Consequently, it is our opinion that the weak terrace materials comprising the majority of the creek embankments are highly susceptible to landsliding and rapid retreat as Oso Creek actively incises its creek bed. The flatlying, interbedded nature of the alluvial deposits results in locally perched groundwater that helps destabilize the creek embankments.

Alluvial Terrace - The alluvial terrace materials typically consist of interbedded sands, silts, and clays derived from Oso Creek. These deposits are generally unconsolidated, weak, and contain locally perched groundwater. In the absence of a free face where landsliding could occur, these materials appear generally stable. However, the clay layers and soil horizons may be potentially expansive, and liquefaction and settlement appear possible during seismic events. In the western portion of the site, where the western hillside abuts the terrace, deep landslide deposits have been identified within large-diameter boreholes. At present, it is unclear how far these landslide deposits extend into the terraced portion of the site.

Western Hillside - Based upon our site geologic mapping, and downhole logging of 14 large-diameter boreholes, it is our opinion that the western property boundary is underlain by deep-seated landslides. The landslide deposits are typically characterized by highly disrupted, fractured and sheared bedrock, alluvium, and slopewash atop prominent basal shear surfaces. The basal shear surfaces are typically characterized by planar, polished, and striated discontinuities, and typically consist of paper thin to 1/8-inch thick clay gouge. Since most of the upslope areas are outside of the Rancho Capistrano property boundary, little subsurface information was obtained in these areas. Therefore, projecting landslide basal rupture surfaces from where they were observed in the large-diameter boreholes to the upslope areas is difficult. However, without the benefit of subsurface exploration, the best available method for interpreting the geologic conditions of the site is by surface geologic mapping and aerial photograph analysis. Both of these methods suggest that the large topographic benches high on the slope, when combined with the observed deep-seated landslide deposits at the base of the slope, are associated with the downdropped headscarp region of large landslides. One large-diameter borehole (LB-17) was excavated high on the slope in the center of the topographic bench in the northern portion of the site, and encountered geologic evidence suggestive of landsliding. Although the lower portion of this borehole collapsed prior to complete geologic logging, the 20-degree westward inclination of stratigraphy, abundant high-angle shears with prominent near-vertical striae, and the lack of competent bedrock and terrace deposits points toward a landslide origin for the bench rather than a terrace origin. Without further exploration high on the western slopes, we are of the opinion that the upslope extent of landsliding should extend, at a minimum, to the base of the upper escarpment, and include the topographic bench.

However, we are of the opinion that, based upon the surface and subsurface geologic information gathered at the site to date, insufficient geologic data exists to generate a geologic model suitable for development of comprehensive mitigation design.

RECOMMENDED ACTION

Oso Creek Channel – It is our opinion that the rapidly incising creek channel and highly unstable embankments will need to be investigated to determine long-term rates of embankment retreat and gross stability of the embankments so that appropriate setbacks can be established. To date, no subsurface exploration has been performed to address creek embankment instability. At a minimum, detailed surface geologic mapping and profiling, aerial photograph analysis, small/large-diameter exploration, and laboratory testing should be performed at appropriate locations along the embankment to characterize the site conditions.

Alluvial Terrace – The alluvial terrace materials contain potentially expansive clay layers and soil horizons, and contain sand layers and perched groundwater that may be susceptible to liquefaction and settlement. It is our understanding that subsurface exploration in the form of small-diameter boreholes was performed by Lowney Associates to address these issues. It is our opinion that additional subsurface exploration is necessary to determine the downslope extent of landslides extending eastward from the western hillside.

Western Hillside – It is our opinion that the western hillside, in the vicinity of the western property boundary, is underlain by deep-seated landslide deposits. Since most of the upslope areas are outside of the Rancho Capistrano property boundary, and little subsurface information is available in these areas, additional subsurface exploration upslope of the western property boundary would be beneficial for further refinement of the geologic model. Without additional subsurface exploration upslope of the western property boundary, the surface geologic and geomorphic evidence points toward a deep-seated landslide model extending upslope of the topographic bench high on the western slopes.

We have identified an area in the southern portion of the property where the western hillside appears to extend to Oso Creek, without a prominent terrace buffer zone as in the northern portion of the property. A prominent westerly bend in Oso Creek occurs in this area and bedrock materials of the Capistrano Formation crop out in the creek embankment, as opposed to alluvial materials which are exposed in most embankments throughout the property. It is our opinion that further investigation of this area is needed to determine whether the bedrock materials in this location are in-place or landslide debris, and whether further incision of Oso Creek could destabilize the slope to the west.

The debris flow potential originating from the steep drainage in the central hillside area should be evaluated.

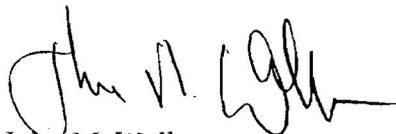
LIMITATIONS

This review has been performed to provide technical advice to assist the City in its discretionary permit decisions. Our services have been limited to review of documents provided to us, a visual review of the property, and a visual review of the large-diameter boreholes listed above. Our opinions and conclusions are made in accordance with

generally accepted principles and practices of the geotechnical profession. This warranty is in lieu of all other warranties, either expressed or implied.

Respectfully submitted,


COTTON, SHIRES AND ASSOCIATES, INC.
TOWN GEOTECHNICAL CONSULTANT



John M. Wallace
Senior Engineering Geologist
CEG 1923



Stan R. Helenschmidt
Managing Geotechnical Engineer
GE 2064 *exp 6-30-01*




William R. Cotton
Principal Engineering geologist
CEG 882

WRC:JMW:SRH:st

NMG
Boring Logs

DATE STARTED: 7/31/01 DATE ENDED: 8/3/01
 DRILLING COMPANY: Tri Vallley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

Boring No. B-1
 GROUND SURFACE ELEVATION: 290 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

| Elevation (ft.) | Depth (ft.) | Graphic Log | Altitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | DESCRIPTION | | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|-------------|--|-----------------|--------------------------|-------------------------|------------------------|---|----------------|-------------------|----------------------|---------|
| | | | | | | | Logged By: KV/WG | Sampled By: KV | | | |
| 280 | 5 |  | | | | | Colluvium (Qcol) Surface: Brown clayey silty fine to medium SAND, dry, loose to 3", abundant roots. @ 2' Dark brown clayey fine to medium SAND, moist, porous, roots. Landslide Materials (Qls) @ 3' Brown, yellow brown, and gray brown fine sandy SILT, moist, caliche nodules and stringers, FeO stain. @ 3.4'-3.8' Krotovina @ 5' Clayey SILT, moist, firm, caliche pods and stringers, roots. @ 7' Scattered gypsum. @ 8' Concretion on west wall, MnO-stained fractures. @ 9' Color changes to light gray, very moist, increase in clay. @ 10' SAMPLE: Brown, yellow brown, and gray brown slightly clayey SILT, very moist, trace charcoal, caliche stringers, massive, scattered FeO stain, slightly plastic. @ 11.5' Concretion @ 12' Light brown gray clayey SILT, caliche stringers. @ 13.5' Concretion @ 15' Trace jarosite staining, scattered subangular to subrounded concretionary 1" pebbles. @ 16.5' Dark brown colluvial lens @ 17.1' Mottled light gray and white fine sand with carbon fragments at base of colluvial lens, fades by 18 ft. @ 20' SAMPLE: Gray silty CLAY/clayey SILT, very moist, massive, plastic, FeO and jarosite staining along joints/fractures. @ 21' Rupture surface. Yellow sand stringers and FeO-stained joints from below 21 ft. terminate at surface. Material above not coherent. Capistrano Formation (Tc) @ 23' Patches of unoxidized material. @ 24' Transitions into dark gray to black unoxidized clayey SILTSTONE, moist, stiff, massive, micaceous, weathered | | 98.5 | 27.6 | |
| 270 | 10 | | | D-1 | Push | | | | | | |
| | 15 | | | SB-2 | | | | | | | |
| | 20 | | | D-2 | Push | | | | 92.3 | 31.5 | |
| | 25 | | RS: N80E 8SE | | | | | | | | |

**GEOTECHNICAL
LOG OF BORING**

01012-02
 CUSD/Rancho Capistrano



DATE STARTED: 7/31/01 DATE ENDED: 8/3/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

Boring No. B-1

GROUND SURFACE ELEVATION: 290 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

| Elevation (ft.) | | Depth (ft.) | Graphic Log | Altitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | DESCRIPTION | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|----|-------------|--|-----------|--------------------------|-------------------------|------------------------|--|-------------------|----------------------|---------|
| | | | S N | | | | | Logged By: <u>KV/WG</u> Sampled By: <u>KV</u> | | | |
| 260 | 30 | | J: N15W 85 NE | | | | | | | | |

GEOTECHNICAL
LOG OF BORING

01012-02

CUSD/Rancho Capistrano



DATE STARTED: 7/31/01 DATE ENDED: 8/3/01

DRILLING COMPANY: Tri Valley

EQUIPMENT USED: Bucket Auger

HOLE DIAMETER (in.) 30"

DRIVE DROP (in.) 12"

DRIVE WEIGHT (lbs.) See Notes

Boring No. B-1

GROUND SURFACE ELEVATION: 290 ft

DATUM: MSL

LOCATION:

COORD/STATION:

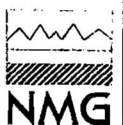
DESCRIPTION

| Elevation (ft.) | Depth (ft.) | Graphic Log | Altitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | Logged By: KV/WG Sampled By: KV | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|-------------|-------------|-----------|--------------------------|-------------------------|------------------------|--|-------------------|----------------------|---------|
| | | S N | | D-5 | 13 | | @ 50' SAMPLE: Dark green black unoxidized SILTSTONE, massive, micaceous, weathered foraminifera, strongly odoriferous. | 98.3 | 26.4 | |
| | 55 | | | | | | @ 54.5' Concretion. | | | |
| 230 | 60 | | | D-6 | 41 | | @ 60' SAMPLE: Same as at 50 ft. @ 60.4' Concretion. | 97.5 | 26.3 | |
| | 65 | | | | | | @ 66.5' Slightly sandy. | | | |
| | | | | | | | @ 68.5' Phosphatic nodule. | | | |
| 220 | 70 | | | D-7 | 22 | | @ 70' SAMPLE: Same as at 60 ft. | 95.4 | 27.5 | |
| | 75 | | | | | | @ 73.7' Pocket of sandy siltstone. | | | |

**GEOTECHNICAL
LOG OF BORING**

01012-02

CUSD/Rancho Capistrano



DATE STARTED: 7/31/01 DATE ENDED: 8/3/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

Boring No. B-1

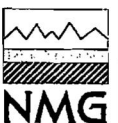
GROUND SURFACE ELEVATION: 290 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

| Elevation (ft.) | Depth (ft.) | Graphic Log | Attitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | DESCRIPTION | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|-------------|-------------|------------------|--------------------------|-------------------------|------------------------|---|-------------------|----------------------|---------|
| | | | | | | | Logged By: KV/WG Sampled By: KV | | | |
| 210 | 80 | S N | | D-8 | 44 | | @ 78.5' Subrounded cobbles, 3" to 5". @ 80' SAMPLE: Dark green black unoxidized SILTSTONE, moist, hard, micaceous, massive, strongly odoriferous, weathered foraminifera. @ 82' Increase in clay content. | 97.4 | 26.4 | |
| 200 | 90 | | | D-9 | 68/9" | | @ 89' Slightly sandy. @ 90' SAMPLE: Same as at 80 ft. | 94.2 | 28.0 | |
| | | | CS: N15W 38NE | | | | @ 92' Planar surface with paper-thin clay, no disturbance above or below, not visible on down-dip side of boring. | | | |
| | 95 | | | | | | @ 96' Slightly sandy. | | | |
| 190 | 100 | | | | | | @ 98' Slightly sandy. | | | |

GEOTECHNICAL LOG OF BORING

01012-02

CUSD/Rancho Capistrano



DATE STARTED: 7/31/01 DATE ENDED: 8/3/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

GROUND SURFACE ELEVATION: 290 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

Boring No. B-1

| Elevation (ft.) | Depth (ft.) | Graphic Log | Attitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | DESCRIPTION | | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|-------------|-------------|-----------|--------------------------|-------------------------|------------------------|--|----------------|-------------------|----------------------|---------|
| | | | | | | | Logged By: KV/WG | Sampled By: KV | | | |
| | | S N | | D-10 | 69/10" | | @ 100' SAMPLE: Same as at 90 ft., trace of oxidized fish scales. | | 90.5 | 32.0 | |
| 105 | | | | | | | @ 105' Black unoxidized SILTSTONE, damp to moist, hard, micaceous, massive, weathered foraminifera. | | | | |
| 180 | 110 | | | | | | | | | | |
| | 115 | | | D-11 SB-1 | 36/9" | | @ 115' SAMPLE: Same as at 105 ft. Upper rings contain gray green SILTSTONE, dry, caliche-lined joints/fractures, high-angle contact in rings. @ 115.3' Phosphatic nodule. | | 97.0 | 26.8 | |
| 170 | 120 | | | | | | @ 120.1' Phosphatic nodule and sand stringers. | | | | |
| | 125 | | | | | | | | | | |

**GEOTECHNICAL
LOG OF BORING**

01012-02

CUSD/Rancho Capistrano



DATE STARTED: 7/31/01 DATE ENDED: 8/3/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

Boring No. B-1
 GROUND SURFACE ELEVATION: 290 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

| Elevation (ft.) | Depth (ft.) | Graphic Log | Attitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | DESCRIPTION | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|-------------|-------------|-----------|--------------------------|-------------------------|------------------------|---|-------------------|----------------------|---------|
| | | S N | | | | | Logged By: KV/WG Sampled By: KV | | | |
| 160 | 130 | | | D-12 | 31/9" | | @ 130' SAMPLE: Same as at 115 ft. | 94.5 | 29.0 | |
| | 135 | | | | | | | | | |
| 150 | 140 | | | | | | @ 139' Slightly polished surface around concretion, slight seep. | | | |
| | 145 | | | D-13 | 40/8" | | @ 142.8' Concretion, 4" to 6", slight seep. | | | |
| | | | | | | | @ 145' SAMPLE: Black unoxidized SILTSTONE, damp to moist, hard, micaceous, massive, weathered foraminifera. | 99.7 | 25.3 | |
| 140 | 150 | | | | | | Logged to 148 on 8-2-01, resumed drilling. Resumed downhole logging on 8-3-01. | | | |

**GEOTECHNICAL
LOG OF BORING**

01012-02

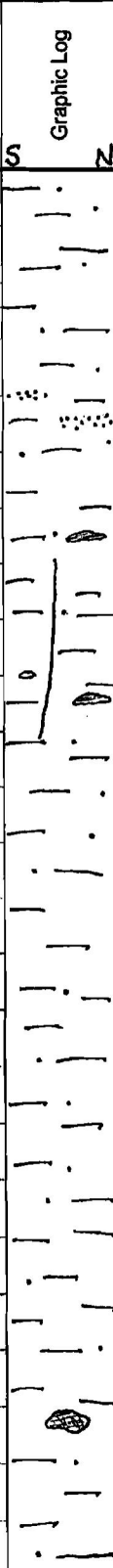
CUSD/Rancho Capistrano



DATE STARTED: 7/31/01 DATE ENDED: 8/3/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

Boring No. B-1

GROUND SURFACE ELEVATION: 290 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

| Elevation (ft.) | Depth (ft.) | Graphic Log | Altitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | DESCRIPTION | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|-------------|--|-----------------|--------------------------|-------------------------|------------------------|--|-------------------|----------------------|---------|
| | | | | | | | Logged By: KV/WG Sampled By: KV | | | |
| 155 | |  | J: N30W 85SW | | | | @ 154' Discontinuous light gray sand lenses. | | | |
| 160 | | | | D-14 | 35/8" | | @ 156.5' Coprolite; 3" long, 1/2" wide. @ 157' Driller began using Crowds. | | | |
| 165 | | | | | | | @ 159'-160' Coprolite; 1"-3" diameter. | | | |
| 170 | | | | | | | @ 160' SAMPLE: Dark green black unoxidized clayey SILTSTONE, damp to moist, hard, massive, micaceous, weathered foraminifera, trace MnO stain. | 93.5 | 29.7 | |
| 175 | | | | | | | @ 172.5' Small oval-shaped concretion, slight seepage. | | | |

GEOTECHNICAL LOG OF BORING

01012-02

CUSD/Rancho Capistrano



DATE STARTED: 7/31/01 DATE ENDED: 8/3/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

GROUND SURFACE ELEVATION: 290 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

Boring No. B- 1

[illegible]

GEOTECHNICAL LOG OF BORING

01012-02

CUSD/Rancho Capistrano



DATE STARTED: 7/31/01 DATE ENDED: 8/3/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

GROUND SURFACE ELEVATION: 290 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

Boring No. B- 1

[illegible]

GEOTECHNICAL LOG OF BORING

01012-02

CUSD/Rancho Capistrano



NMG Geotechnical, Inc. Page 1 of 3

GROUND SURFACE ELEVATION: 287 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

GEOTECHNICAL LOG OF BORING

CUSD/Rancho Capistrano



DATE STARTED: 8/6/01 DATE ENDED: 8/8/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) 0-28/5952, 28-55/3921, 55-84/2531

Boring No. B-2

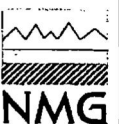
GROUND SURFACE ELEVATION: 287 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

| Elevation (ft.) | Depth (ft.) | Graphic Log | Attitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | DESCRIPTION | | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|-------------|-------------|--------------|--------------------------|-------------------------|------------------------|--|----------------|-------------------|----------------------|---------|
| | | | | | | | Logged By: KV/WG | Sampled By: KV | | | |
| 260 | | | | D-5 | 3 | | @ 25' SAMPLE: Same as at 20 ft., weathered foraminifera. | | 97.1 | 26.3 | |
| | 30 | | | D-6 | 7 | | @ 30' SAMPLE: Same as at 25 ft. | | 98.0 | 26.2 | |
| | 35 | | | | | | @ 35.3' Thin wispy sand lenses; bedding is subhorizontal. | | | | |
| 250 | | | | D-7 | 8 | | @ 40' SAMPLE: Dark green black clayey unoxidized SILTSTONE, moist, hard, massive, micaceous, weathered foraminifera, strongly odoriferous. | | 99.5 | 24.7 | |
| | 40 | | | | | | @ 46.3' Cemented material begins on north wall, no cemented material on south wall. Concentric joints on outside of concretion. | | | | |
| | 45 | | | | | | @ 48.7' Joint on west wall. | | | | |
| 240 | | | | | | | | | | | |
| | 50 | | J: N20W 80SW | | | | | | | | |

**GEOTECHNICAL
LOG OF BORING**

01012-02

CUSD/Rancho Capistrano



DATE STARTED: 8/6/01 DATE ENDED: 8/8/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) 0-28'/5952, 28-55'/3921, 55-84'/2531

Boring No. B-2

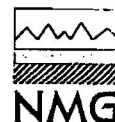
GROUND SURFACE ELEVATION: 287 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

| Elevation (ft.) | Depth (ft.) | Graphic Log | Attitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | DESCRIPTION | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|-------------|-------------|----------------------|--------------------------|-------------------------|------------------------|---|-------------------|----------------------|---------|
| | | E W | J: N80W 70NE ▼ | D-8 | 9 | | Logged By: KV/WG Sampled By: KV/WG @ 50' SAMPLE: Same as at 40 ft. Downhole: Joint on east wall. Water entering boring from around concretion. @ 51.2' Groundwater. End of logging. @ 53' Coring to 58.5'. | 94.8 | 28.4 | |
| 230 | 55 | | | | | | | | | |
| 60 | | | | | | | | | | |
| 65 | | | | | | | | | | |
| 220 | | | | | | | NOTES Total Depth 58.5 ft. Boring Terminated Due to Concretion Groundwater at 51.2' after 24 hours Downhole Logged to 51 ft. Backfilled and Tamped | | | |
| 70 | | | | | | | | | | |
| 75 | | | | | | | | | | |

**GEOTECHNICAL
LOG OF BORING**

01012-02

CUSD/Rancho Capistrano



NMG Geotechnical, Inc. Page 1 of 6

GROUND SURFACE ELEVATION: 292 ft


DATUM: MSL

LOCATION:

COORD/STATION:

DATE STARTED: 8/8/01 DATE ENDED: 8/9/01
 DRILLING COMPANY: Tri Vallley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

01012-02



Report: BUCKET AUGER; Project: 0101012-02; Date: 8/8/01; Location: CUSD/Rancho Capistrano

DATE STARTED: 8/8/01 DATE ENDED: 8/9/01
 DRILLING COMPANY: Tri Valley
 EQUIPMENT USED: Bucket Auger
 HOLE DIAMETER (in.) 30"
 DRIVE DROP (in.) 12"
 DRIVE WEIGHT (lbs.) See Notes

Boring No. B-3

GROUND SURFACE ELEVATION: 292 ft
 DATUM: MSL
 LOCATION:
 COORD/STATION:

| Elevation (ft.) | Depth (ft.) | Graphic Log | Altitudes | Sample Method and Number | Blow Count/ Penetration | Soil Class. (U.S.C.S.) | DESCRIPTION | Dry Density (pcf) | Moisture Content (%) | Remarks |
|-----------------|-------------|-------------|---------------|--------------------------|-------------------------|------------------------|--|-------------------|----------------------|---------|
| | | | | | | | Logged By: KV/WG Sampled By: KV | | | |
| | | | | D-5 | 3 | | @ 25' SAMPLE: Mottled dark gray brown, brown, and yellow brown, silty fine SAND, moist, very porous, roots, slightly clayey, sparse FeO stain and caliche. | 107.6 | 15.6 | |
| | | | C/B: N65W 7NE | | | | @ 26.7' Contact between dark gray brown slightly clayey SILT above and medium gray brown below. Transitions to light gray brown and clayey below. | | | |
| | | | RS: N38E 53SE | | | | @ 28.9' Rupture surface. | | | |
| | 30 | | B: N50E 45SE | D-6 | 4 | | @ 30' SAMPLE: Mottled as above, silty to clayey fine SAND, moist, porous, sparse FeO stain and caliche. | 107.9 | 18.0 | |
| 260 | | | | | | | Terrace Deposits (Qt) | | | |
| | 35 | | B: N20E 15NW | | | | @ 34.6' Contact with light brown clayey SILT and dark silty CLAY. | | | |
| | | | SH: N10E 40SE | | | | @ 36.7' Soil horizon: dark brown silty CLAY, moist, plastic, caliche stringers, trace charcoal. | | | |
| | 40 | | | | | | @ 37.8' Base of soil horizon reverse offset 3.5"-4"; shear surface along offset; lose shear surface at 38.4'. | | | |
| 250 | | | | D-7 | Push | | @ 40' SAMPLE: Olive gray silty CLAY, very moist, plastic, abundant charcoal, slightly mottled. | 102.1 | 23.2 | |
| | | | | | | | @ 40.6' Thin organic layer, discontinuous; dip direction N20W | | | |
| | | | | | | | @ 41.5' Abundant carbonate silt to 41.8', fine roots, porous. | | | |
| | 45 | | | | | | @ 44' Mottled brown gray, FeO stain, brown organic material lining pores. | | | |
| | | | | | | | @ 48.6' Organic horizon; dip is approximately 15NW | | | |
| 50 | | | | | | | | | | |

GEOTECHNICAL
LOG OF BORING

01012-02

CUSD/Rancho Capistrano

