

| DEPTH, FEET | SAMPLE NO. | PEN./TORVANE<br>SPT.-BLOW COUNT | BORING NO. <u>91211</u> DATE: BEGIN <u>7-14-91</u> PAGE <u>111</u>                     |               |              |                        |                                  |
|-------------|------------|---------------------------------|----------------------------------------------------------------------------------------|---------------|--------------|------------------------|----------------------------------|
|             |            |                                 | JOB NO. <u>14G 490</u> COMPLETE <u>7-14-91</u> Thin Walled Tube                        |               |              |                        |                                  |
|             |            |                                 | PROJECT <u>GIWW</u> <input checked="" type="checkbox"/> 3" <input type="checkbox"/> 6" |               |              |                        |                                  |
|             |            |                                 | LOCATION <u>SARGEANT BEACH</u>                                                         |               |              |                        |                                  |
|             |            |                                 | ELEVATION OF HOLE _____                                                                |               |              |                        |                                  |
|             |            |                                 | MANUFACTURER'S DESIGNATION OF DRILL RIG <u>F36</u>                                     |               |              |                        |                                  |
|             |            |                                 | GROUNDWATER: DEPTH <u>3</u> ft., ELEV. _____ ft., at end of Drilling                   |               |              |                        |                                  |
|             |            |                                 | WEATHER <u>PRK7-X CLOUDY</u>                                                           |               |              |                        |                                  |
|             |            |                                 | DRILLER <u>Robert Tankusley</u> LOGGER <u>John A. Hendrix</u>                          |               |              |                        |                                  |
|             |            |                                 | COLOR                                                                                  | MATERIAL TYPE | CONSISTENCY  | SECONDARY CONSTITUENTS | STRUCTURAL FEATURES AND COMMENTS |
| 0           | 1          | 0.75                            | GRAY                                                                                   | CLAY          | MEDIUM STIFF |                        | * BROWN                          |
|             | 2          | 1.5                             | GRAY                                                                                   | CLAY          | STIFF        |                        |                                  |
| 5           | 3          | 1.0                             | BROWN                                                                                  | CLAY          | STIFF        | UC                     | * GRAY                           |
|             | 4          | 1.25                            | "                                                                                      | "             | "            |                        |                                  |
| 10          | 5          | 1.5                             | "                                                                                      | "             | "            | UC                     |                                  |
|             | 6          | 1.0                             | "                                                                                      | "             | "            |                        | -W/SILT SEAMS & CRACKS IN HOLE   |
|             | 7          | 1.0                             | "                                                                                      | "             | "            | UC                     |                                  |
| 15          | 8          | 1.0                             | BROWN                                                                                  | CLAY          | STIFF        |                        | -W/SILT SEAMS & LAMINAR 14-18'   |
|             | 9          | 1.25                            | "                                                                                      | "             | "            |                        |                                  |
|             | 10         | 1.5                             | "                                                                                      | "             | "            | UC                     |                                  |
| 20          | 11         | 1.5                             | "                                                                                      | "             | "            |                        |                                  |
|             | 12         | 1.25                            | "                                                                                      | "             | "            |                        |                                  |
| 25          | 13         | 1.5                             | "                                                                                      | "             | "            | UC                     |                                  |
|             | 14         | 0.5                             | BROWN                                                                                  | CLAY          | MEDIUM STIFF |                        | * GRAY                           |
|             | 15         | 0.5                             | "                                                                                      | "             | "            |                        |                                  |
| 30          | 16         | 0.25                            | BROWN                                                                                  | CLAY          | SOFT         | UC                     | -W/SILT SEAMS 30-36'             |
|             | 17         | 0.25                            | "                                                                                      | "             | "            |                        |                                  |
| 35          | 18         | 0.5                             | BROWN                                                                                  | CLAY          | MEDIUM STIFF |                        | * GRAY                           |

# U.S. ARMY CORPS OF ENGINEERS

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|-------------|----|--------|---------------|---------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------|
|             |    |        |               |                                 | JOB NO. <u>14G490</u>                                               | COMPLETE <u>7-14-91</u>                                            | Thin Walled Tube          |
|             |    |        |               |                                 | PROJECT <u>GFWW</u>                                                 | <input checked="" type="checkbox"/> 3" <input type="checkbox"/> 6" |                           |
|             |    |        |               |                                 | LOCATION <u>SARGENT BEACH</u>                                       |                                                                    |                           |
|             |    |        |               |                                 | ELEVATION OF HOLE _____                                             |                                                                    |                           |
|             |    |        |               |                                 | MANUFACTURER'S DESIGNATION OF DRILL RIG <u>F36</u>                  |                                                                    |                           |
|             |    |        |               |                                 | GROUNDWATER: DEPTH <u>3</u> ft. ELEV. _____ ft., at end of Drilling |                                                                    |                           |
|             |    |        |               |                                 | WEATHER <u>PARTLY CLOUDY</u>                                        |                                                                    |                           |
|             |    |        |               |                                 | DRILLER <u>Robert Farberley</u>                                     | LOGGER <u>John A. Bentley</u>                                      |                           |
|             |    | COLOR  | MATERIAL TYPE | CONSISTENCY                     | SECONDARY CONSTITUENTS                                              | STRUCTURAL FEATURES AND COMMENTS                                   |                           |
| 35          | 19 | 0.25   | BROWN CLAY    | MEDIUM STIFF                    | UC                                                                  | *GRAY-W/SLT SEAMS.<br>30'-35'<br>-W/SLT PACKETS 36'-44'            |                           |
|             | 20 | 0.25   | "             | "                               |                                                                     |                                                                    |                           |
| 40          | 21 | 0.5    | "             | MEDIUM STIFF                    |                                                                     |                                                                    |                           |
|             | 22 | 0.75   | GRAY CLAY     | MEDIUM STIFF                    |                                                                     |                                                                    |                           |
| 45          | 23 | 1.5    | "             | STIFF                           |                                                                     |                                                                    |                           |
|             | 24 | 2.25   | "             | VERY STIFF                      |                                                                     |                                                                    |                           |
| 50          | 25 | 4.5+   | GRAY CLAY     | HARD                            |                                                                     |                                                                    |                           |
|             | 26 | 4.5+   | "             | "                               |                                                                     |                                                                    |                           |
|             | 27 | 3.25   | "             | VERY STIFF                      |                                                                     |                                                                    |                           |
| 55          | 28 | 2.5    | "             | "                               |                                                                     |                                                                    |                           |
|             | 29 | 1.5    | "             | STIFF                           |                                                                     | VERY SANDY BELOW 56'<br>-W/SAND LAYERS                             |                           |
| 60          | 30 | 1.5    | "             | "                               |                                                                     |                                                                    |                           |
|             |    |        |               |                                 | BOTTOM 91211                                                        |                                                                    |                           |

Project : Gulf Intracoastal Waterway near Sargeant Beach, Texas  
Contract No. DACW64-91-D-001, Delivery Order No. 0022

# SUMMARY OF LABORATORY TEST RESULTS

Boring No. 91-211

| S # | Depth (ft) | P P (tsf) | SPT Blows per Foot | Visual Classification                                                    | U S C | M c (%) | Dry Unit Wt (pcf) | Wet Unit Wt (pcf) | LL (%) | P L (%) | Mechanical Analysis % Passing |       |       |      |       | Torvane Shear Strength (tsf) | q u (tsf) |
|-----|------------|-----------|--------------------|--------------------------------------------------------------------------|-------|---------|-------------------|-------------------|--------|---------|-------------------------------|-------|-------|------|-------|------------------------------|-----------|
|     |            |           |                    |                                                                          |       |         |                   |                   |        |         | #4                            | #10   | #40   | #100 | #200  |                              |           |
| 1   | 0-2        | 1.00      |                    | Brown, Clay, Stiff                                                       | CH    | 34.0    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 2   | 2-4        | 1.25      |                    | Dark gray, Clay, Stiff                                                   | CH    | 30.3    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 3   | 4-6        | 0.50      |                    | Brown & gray, Clay, Medium Stiff, w/Ferrous stains<br><i>Soft</i>        | CH    | 37.9    | 82.3              | 113.5             | 61     | 24      | 100.0                         | 99.7  | 98.7  |      | 98.0  |                              | 0.28      |
| 4   | 6-8        | 0.75      |                    | Brown & gray, Clay, Medium stiff, w/Ferrous stains                       | CH    | 33.8    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 5   | 8-10       | 0.50      |                    | Brown & gray, Clay, Medium stiff, Silty, w/Ferrous stains<br><i>Soft</i> | CL    | 30.3    | 89.8              | 117.1             | 42     | 19      | 100.0                         | 99.6  | 99.6  |      | 99.1  |                              | 0.33      |
| 6   | 10-12      | 0.50      |                    | Brown & gray, Clay, Medium stiff, Silty, w/Ferrous stains<br><i>Soft</i> | CL    | 32.1    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 7   | 12-14      | 0.50      |                    | Brown & gray, Clay, Medium stiff, Silty<br><i>Soft</i>                   | CL    | 29.1    | 93.0              | 120.0             | 42     | 20      | 100.0                         | 100.0 | 100.0 |      | 94.5  |                              | 0.43      |
| 8   | 14-16      | 1.00      |                    | Brown, Clay, Stiff                                                       | CH    | 31.9    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 9   | 16-18      | 1.25      |                    | Brown, Clay, Stiff, w/Blocky structure, Slickensided                     | CH    | 39.6    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 10  | 18-20      | 1.50      |                    | Brown, Clay, Stiff                                                       | CH    | 41.7    | 79.3              | 112.3             | 77     | 29      | 100.0                         | 100.0 | 100.0 |      | 100.0 |                              | 0.75      |
| 11  | 20-22      | 1.50      |                    | Brown, Clay, Stiff                                                       | CH    | 40.9    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 12  | 22-24      | 0.50      |                    | Brown, Clay, Medium stiff, w/Shell fragments<br><i>Soft</i>              | CH    | 36.7    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 13  | 24-26      | 0.75      |                    | Brown, Clay, Medium stiff, w/Blocky structure                            | CH    | 37.2    | 81.8              | 112.2             | 76     | 28      | 100.0                         | 100.0 | 100.0 |      | 100.0 |                              | 0.46      |
| 14  | 26-28      | 0.25      |                    | Brown, Clay, soft, w/Ferrous stains                                      | CH    | 62.1    |                   |                   |        |         |                               |       |       |      |       | 0.10                         |           |
| 15  | 28-30      | 0.25      |                    | Brown, Clay, Soft, w/Ferrous stains                                      | CH    | 63.7    |                   |                   |        |         |                               |       |       |      |       | 0.10                         |           |
| 16  | 30-32      | 0.25      |                    | Brown, Clay, Soft                                                        | CH    | 56.8    | 66.5              | 104.3             | 67     | 26      | 100.0                         | 100.0 | 100.0 |      | 100.0 | 0.10                         | 0.16      |
| 17  | 32-34      | 0.25      |                    | Brown, Clay, Soft, w/Silt pockets                                        | CH    | 60.5    |                   |                   |        |         |                               |       |       |      |       | 0.10                         |           |

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classification, M c : Moisture Content  
q u : Unconfined Compressive Strength, W O H : Weight of hammer, W O P : Weight of pipe

Project Gulf Intracoastal Waterway near Sargeant Beach, Texas  
Contract No. DACW64-91-D-001, Delivery Order No. 0022

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| S # | Depth (ft) | PP (tsf) | SPT Blows per Foot | Visual Classification                                                               | U S C | M c (%) | Dry Unit Wt (pcf) | Wet Unit Wt (pcf) | LL (%) | P L (%) | Mechanical Analysis % Passing |       |       |      |       | Torvane Shear Strength (tsf) | q u (tsf) |
|-----|------------|----------|--------------------|-------------------------------------------------------------------------------------|-------|---------|-------------------|-------------------|--------|---------|-------------------------------|-------|-------|------|-------|------------------------------|-----------|
|     |            |          |                    |                                                                                     |       |         |                   |                   |        |         | #4                            | #10   | #40   | #100 | #200  |                              |           |
| 18  | 36-38      | 0.25     |                    | Brown, Clay, Soft, w/Shell fragments                                                | CH    | 53.6    |                   |                   |        |         |                               |       |       |      |       | 0.10                         |           |
| 19  | 36-38      | 0.25     |                    | Brown, Clay, Soft                                                                   | CH    | 55.4    | 67.6              | 105.1             | 69     | 27      | 100.0                         | 100.0 | 100.0 |      | 100.0 | 0.10                         | 0.11      |
| 20  | 38-40      | 0.25     |                    | Brown, Clay, Soft                                                                   | CH    | 50.1    |                   |                   |        |         |                               |       |       |      |       | 0.10                         |           |
| 21  | 40-42      | 0.50     |                    | Brown, Clay, <del>Medium stiff</del> w/Ferrous stains & shell fragments <i>Soft</i> | CH    | 64.7    |                   |                   |        |         |                               |       |       |      |       | 0.25                         |           |
| 22  | 42-44      | 0.25     |                    | Brown, Clay, Soft, w/Shell fragments                                                | CH    | 63.3    |                   |                   |        |         |                               |       |       |      |       | 0.25                         |           |
| 23  | 44-46      | 2.00     |                    | Dark gray, Clay, Very stiff, w/Blocky structure                                     | CH    | 27.3    | 95.6              | 121.7             | 62     | 25      | 100.0                         | 100.0 | 99.8  |      | 94.3  |                              | 1.13      |
| 24  | 46-48      | 2.25     |                    | Olive gray, Clay, Very stiff, w/Ferrous stains                                      | CH    | 27.6    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 25  | 48-50      | 3.50     |                    | Olive gray, Clay, Very stiff, Sandy, w/Sand pockets                                 | CL    | 14.3    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 26  | 50-52      | 3.50     |                    | Olive gray, Clay, Very stiff, Sandy, w/Sand pockets                                 | CL    | 16.2    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 27  | 52-54      | 2.50     |                    | Olive gray, Clay, Very stiff, Sandy, w/Ferrous stains                               | CL    | 22.3    | 103.4             | 126.4             | 34     | 18      | 100.0                         | 100.0 | 100.0 |      | 71.2  |                              | 0.53      |
| 28  | 54-56      | 1.75     |                    | Olive gray, Clay, Stiff, Sandy, w/Ferrous stains                                    | CL    | 22.1    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 29  | 56-58      | 1.75     |                    | Olive gray, Clay, Stiff, Sandy, w/Ferrous stains                                    | CL    | 26.4    |                   |                   |        |         |                               |       |       |      |       |                              |           |
| 30  | 58-60      | 1.75     |                    | Olive gray & brown, Clay, Stiff, Sandy                                              | CL    | 25.4    |                   |                   |        |         |                               |       |       |      |       |                              |           |
|     |            |          |                    |                                                                                     |       |         |                   |                   |        |         |                               |       |       |      |       |                              |           |
|     |            |          |                    |                                                                                     |       |         |                   |                   |        |         |                               |       |       |      |       |                              |           |
|     |            |          |                    |                                                                                     |       |         |                   |                   |        |         |                               |       |       |      |       |                              |           |
|     |            |          |                    |                                                                                     |       |         |                   |                   |        |         |                               |       |       |      |       |                              |           |

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