<table>
<thead>
<tr>
<th>Sample No</th>
<th>THK XK Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
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</thead>
<tbody>
<tr>
<td>12</td>
<td>36.3-37.5</td>
<td>INORGANIC SILT, LOW LL (ML)</td>
<td>19.5</td>
<td>31</td>
<td>27</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GRAY, SANDY</td>
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**Project:** SAVANNAH HARBOR

**Area:** LAB NO. 97/811

**Boring No.:** SH-124

**Sample No.:** 12

**Date:** 04/09/84

**GRADATION CURVES**
<table>
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<th>XNK</th>
<th>Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Area</th>
<th>Boring No.</th>
<th>Date</th>
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<tbody>
<tr>
<td>17</td>
<td>27-0-38 ft</td>
<td></td>
<td>INORGANIC SILT, HIGH LL (MH)</td>
<td>64.1</td>
<td>98</td>
<td>61</td>
<td>17</td>
<td>SAVANNAH HARBOR</td>
<td>HARBOR WIDENING</td>
<td>SH-124</td>
<td>04/09/84</td>
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</table>

**GRADATION CURVES**
# GENERAL TEST REPORT

**U.S. ARMY ENGINEER DIVISION LABORATORY, SOUTH ATLANTIC**
**CORPS OF ENGINEERS**
**MARIETTA, GEORGIA**

**PROJECT**
Savannah Harbor
Savannah Harbor Widening

**TYPE SAMPLE**
Jar Samples of Disturbed Soil

**SOURCE**
SH-130, 132, 133, 134, 135, 136, 138, 139, 137,
HOLE NO. 143, 144, and 148

**FOR USE AS**
Investigation

**TESTED FOR**
Moisture Content

<table>
<thead>
<tr>
<th>Lab No.</th>
<th>Hole No.</th>
<th>Sample No.</th>
<th>Depth (ft)</th>
<th>Moisture Content (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1139</td>
<td>SH-130</td>
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<td>4.5-6.0</td>
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<td>10.5-12.0</td>
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<td>1118</td>
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<td>13.5-15.0</td>
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<td>21</td>
<td>66.0-67.5</td>
<td>58.7</td>
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<td>1158</td>
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<td>1197</td>
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<tr>
<td>1200</td>
<td>&quot;</td>
<td>7</td>
<td>27.0-28.5</td>
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<td>1216</td>
<td>SH-136</td>
<td>5</td>
<td>12.0-13.5</td>
<td>78.5</td>
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<tr>
<td>1219</td>
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<td>21.0-22.5</td>
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<tr>
<td>957</td>
<td>SH-137</td>
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<td>24.0-25.5</td>
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<td>966</td>
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<tr>
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<tr>
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<td>7.5-9.0</td>
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<tr>
<td>971</td>
<td>&quot;</td>
<td>5</td>
<td>12.0-13.5</td>
<td>117.3</td>
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</tbody>
</table>

**REMARKS:**
NOTE: See test results for all other samples on enclosed ENG Forms 2087.

**REPORTED BY**
☐ PHONE ☐ WIRE

**DATE**

**CHECKED BY**
ES

**SAMPLED BY**
District
<table>
<thead>
<tr>
<th>Lab No.</th>
<th>Hole No.</th>
<th>Sample No.</th>
<th>Depth (ft)</th>
<th>Moisture Content (%)</th>
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</thead>
<tbody>
<tr>
<td>977/999</td>
<td>SH-139</td>
<td>15</td>
<td>46.5-48.0</td>
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<tr>
<td>1022</td>
<td>SH-143</td>
<td>1</td>
<td>0.0-1.5</td>
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<td>1024</td>
<td>&quot;</td>
<td>3</td>
<td>7.5-9.0</td>
<td>22.5</td>
</tr>
<tr>
<td>1256</td>
<td>SH-144</td>
<td>5</td>
<td>12.0-13.5</td>
<td>101.1</td>
</tr>
<tr>
<td>1269</td>
<td>SH-148</td>
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<td>0.0-1.5</td>
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<tr>
<td>1274</td>
<td>&quot;</td>
<td>6</td>
<td>16.5-18.0</td>
<td>40.8</td>
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</tbody>
</table>
## General Test Report

**U.S. Army Engineer Division Laboratory, South Atlantic Corps of Engineers Marietta, Georgia**

### Project
- Savannah Harbor
- Savannah Harbor Widening

### Type Sample
- SOILS: Jar Samples of Disturbed Soils

### Source
- Hole No: SH-141, 145, 146 and 147

### For Use As
- Investigation

### Tested For
- Lab Classification and Field Moisture

<table>
<thead>
<tr>
<th>Lab. No.</th>
<th>Hole No.</th>
<th>Sample No.</th>
<th>Depth (Ft.)</th>
<th>Moisture Content (%)</th>
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</thead>
<tbody>
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<td>SH-141</td>
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<td>9.0/10.5</td>
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<td>66.1</td>
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<td>7.0/7.5</td>
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<td>12.0/15.0</td>
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<td>1088</td>
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<td>11</td>
<td>40.5/42.0</td>
<td>134.2*</td>
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</tbody>
</table>

### Remarks:
*See lab classification data on ENG Form 2087.*

### Reported By
- **Date**
- **Phone**
- **Wire**

### Tested By
- WB, JL
- **Date**
- **Checked By**
- **ES**

### Sampled By
- **District**

---

**SAD Form 158**
1 Feb 79

Previous editions of this form are obsolete
Sample No. | HWK Wk Depth | VISUAL Classification | Nat w % | LL | PL | PI | Project | Area | Boring No. | Date
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
15 | 52.5-54.0' | FAT CLAY (CH), GREENISH GRAY, WITH A LITTLE SAND AND WITH A TRACE OF MICA | -- | -- | -- | -- | SAVANNAH HARBOR WIDENING | LAB NO. 97/1151 | SH-130 | 06/04/87
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>ZHK'K Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
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</thead>
<tbody>
<tr>
<td>5</td>
<td>18.0-19.5'</td>
<td>INORGANIC SILT, HIGH LL (MH)</td>
<td>96.6</td>
<td>98</td>
<td>59</td>
<td>39</td>
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<td></td>
<td></td>
<td>DK. GRAY AND BROWN, WITH SOME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SAND AND WITH A TRACE OF MICA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AND ORGANIC FINES</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR

**Area:** LAB NO. 97/1119

**Boring No.:** SH-132

**Date:** 06/04/87

**GRADATION CURVES**
Sample No. | ENKOK Depth | Classification | Nat w % | LL | PL | PI
--- | --- | --- | --- | --- | --- | ---
14 | 43.5-45.0' | SILTY SAND (SM) | 33.6 | NP | NP | NP
| | | DK.GRAT.MICACEOUS.WITH A TRACE OF ORGANIC FINES |

<table>
<thead>
<tr>
<th>Project</th>
<th>SAFFANNA HABOR WIDENING</th>
</tr>
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<tbody>
<tr>
<td>Area</td>
<td>LAB NO. 97/1128</td>
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<tr>
<td>Boring No.</td>
<td>SH-132</td>
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<tr>
<td>Date</td>
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GRADATION CURVES
### Sample Information

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<th>X-WK</th>
<th>WK Depth</th>
<th>VISUAL Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Area</th>
<th>Boring No.</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>17</td>
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<td>POOR GRD SILTY SAND (SP-SH)</td>
<td>--</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
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<td>LAB No. 97/1131</td>
<td>SH-132</td>
<td>06/04/87</td>
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<tr>
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<td></td>
<td>GRAY, WITH A TRACE OF MICA</td>
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<td>SAVANNAH HARBOR WIDENING</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>SPECIFIC GRAVITY = 2.66</td>
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</tbody>
</table>

### Gradation Curves

- **U.S. Standard Sieve Opening in Inches**
- **U.S. Standard Sieve Numbers**
- **Hydrometer**

- **Percent Finer by Weight**
- **Percent Coarser by Weight**

- **Grain Size in Millimeters**

- **Cobbles**
- **Gravel**
- **Sand**
- **Silt or Clay**

- **Coarse**
- **Fine**

- **Coarse**
- **Medium**
- **Fine**
Sample No. | Rock/Water Depth | Classification                              | Nat w % | LL | PL | PI |
---|---|---|---|---|---|---|
20 | 61.5-63.0' | FAT CLAY (CH)                               | 57.7    | 107 | 42 | 65 |
      |              | DK.GRAY.WITH SOME SAND,MICA                |         |     |    |    |
      |              | CEQU.S.WITH A TRACE OF GRAVEL              |         |     |    |    |
      |              | SIZE WEATHERED ROCK                        |         |     |    |    |

Project: SAVANNAH HARBOR
Area: LAB NO. 97/1134
Boring No.: SH-132
Sample No.: 20
Date: 06/04/87
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

U.S. STANDARD SIEVE OPENING IN INCHES
6 4 2 1 1/2 1 1/4 1/4 1/5 2 4 6 8 10 15 20 30 40 50 70 100 140 200

U.S. STANDARD SIEVE NUMBERS
300 100 50 30 20 15 10 7 5 3 2 1.5 1 1.5 1 1

HYDROMETER

PERCENT FINER BY WEIGHT

GRAIN SIZE IN MILLIMETERS
0.001 0.01 0.05 0.1 0.3 0.5 1 1.5 3 5 10 30 50 70 100

50 60 70 80 90 100

PERCENT COARSER BY WEIGHT

COBBLES

SAND

GRAVEL

SILT OR CLAY

COARSE

FINE

COARSE

MEDIUM

FINE

Sample No. 
13.5-15.0' 
SILTY SAND, HIGH LL (SM-H) 
TAN, WITH A TRACE OF MICA

Classification 
Nat w % 
LL 
PL 
PI

Project 
SAVANNAH HARBOR 
SAVANNAH HARBOR WIDENING

Area 
LAB NO. 97/1159

Boring No. SH-133 
SAMPLE 7

Date 06/04/87

ENG FORM 1 MAY 83 2087
### Grading Curve Analysis

**Sample No.:** 16  
**Depth:** 45.0 - 46.5'  
**Visual Classification:** POORLY GRADED SAND (SP)  
**Color:** LT. BROWN WITH A TRACE OF MICA  

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Visual Classification</th>
<th>Natw %</th>
<th>LL</th>
<th>Pl</th>
<th>PI</th>
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</thead>
<tbody>
<tr>
<td>16</td>
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**Project:** SAVANNAH HARBOR WIDENING  
**Area:** LAB NO. 97/1168  
**Boring No.:** SH-133  
**Sample #:** 16  
**Date:** 06/04/87

**Gradation Curves**

- **U.S. Standard Sieve Opening in Inches**
- **U.S. Standard Sieve Numbers**
- **Hydrometer**

---

**Notes:**

- Sample 16 was analyzed for grading, with a focus on the natural weight percentage (Natw %) and classification (LL, Pl, PI).
- The sample was described as a poorly graded sand with a light brown color and a trace of mica.
- The project is part of the Savannah Harbor Widenning project, with specific area and boring number details provided.
- The analysis was conducted on 06/04/87.
Sample No. 4

XHMX Depth: 13.5-15.0'
Classification: POORLY GRADED SILTY SAND (SP-SM)

Net w %: --
LL: NP
PL: NP
PI: NP

Project: SAVANNAH HARBOR-WIDENING
Area: LAB NO. 97/620
Boring No.: SH-102

Date: 04/03/84

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 37/8
Req. No. EN-GS-84-03
<table>
<thead>
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<th>Sample No.</th>
<th>RKB wk Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>33.2-35.7</td>
<td>INORGANIC SILT, HIGH LL (MM)</td>
<td>59.2</td>
<td>70</td>
<td>35</td>
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<tr>
<td></td>
<td></td>
<td>GRAY, CLAYEY WITH A LITTLE SAND</td>
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</table>

**Project:** SAVANNAH HARBOR

**Area:** LAB NO. 97/625

**Boring No.:** SH-102

**Sample No.:** 9

**Date:** 04/03/84

**GRADATION CURVES**
Sample No. 10: 37.7-39.2' Poorly Graded Silty Sand (SP-SH) Tan, with a Trace of Gravel

Classification: Poorly Graded Silty Sand

Natural %: --

LL: NP

PL: NP

PI: NP

Project: Savannah Harbor

Area: Lab No. 97/626

Boring No.: SH-102 Sample No. 10

Date: 04/03/84
<table>
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<tr>
<th>Sample No.</th>
<th>HWK HWK Depth</th>
<th>VISUAL Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Area</th>
<th>Boring No.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>41.5-43.0</td>
<td>POORLY GRADED SAND (SP)</td>
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<td>NP</td>
<td>NP</td>
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<td>SAVANNAH HARBOR</td>
<td>LAB NO. 97/635</td>
<td>SH-103</td>
<td>04/06/84</td>
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</table>

**Gradation Curves**
Sample No. | XMK %K Depth | Classification | Nat w % | LL | PL | PI |
---|---|---|---|---|---|---|
6 | 22.5-24.0' | SILTY SAND (SM) | 49.3 | 43 | 31 | 12 |
| | | DK. GRAY AND BROWN. WITH A TRACE OF MICA AND ORGANIC FINES | | | | |

Project: SAVANNAH HARBOR WIDENING

Area: LAB NO. 97/1199

Boring No.: SH-135

Date: 06/04/87

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193
Req. No. SAS-EN-GS-87-23
<table>
<thead>
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<th>XXXKXK Depth</th>
<th>Visual Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
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</thead>
<tbody>
<tr>
<td>9</td>
<td>31.5-33.0'</td>
<td>POORLY GRADED SAND (SP)</td>
<td>--</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
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<tr>
<td></td>
<td></td>
<td>GRAY, WITH A TRACE OF MICA AND WITH GLASS FRAGMENTS</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPECIFIC GRAVITY = 2.67</td>
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</tbody>
</table>

**Project**: SAVANNAH HARBOR

**Area**: LAB NO. 97/1202

**Boring No.**: SH-135

**Date**: 06/04/87
Sample No. 13 46.5-48.0'  SILTY SAND (SM)  GRAYISH BROWN, WITH A TRACE OF HIGA  SPECIFIC GRAVITY = 2.68

Project  SAVANNAH HARBOR  SAVANNAH HARBOR WIDENING
Area  LAB NO. 97/1206
Boring No. SH-135  SAMPLE 13
Date  06/04/87

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

W.O. No. 5193
Req. No. SAS-EN-65-87-23

GRADATION CURVES

ENG FORM MAY 63 2087
### Sample No. 6

**Depth:** 15.0-16.5'  
**Classification:** Fat Clay (CH)  
**Natural Water %:** 98.3  
**LL:** 133  
**PL:** 42  
**PI:** 91  

**Project:** Savannah Harbor Widening  
**Area:** Lab No. 97/1217  
**Boring No.:** SH-136  
**Sample No.:** 6  
**Date:** 06/04/87  

**Gradation Curves**  

### Notes:  
- This page contains a grading curve chart for soil analysis.  
- The chart is used to determine the percentage of different grain sizes in the soil sample.  
- The sample is labeled as Fat Clay (CH) with a low plasticity index (PI).  
- The natural water content is high, indicating a clayey soil.  

---  

**U.S. Standard Sieve Numbers**  

- 6  
- 4  
- 2  
- 1  
- 1/2  
- 1/4  
- 3/4  
- 1  
- 1  
- 1  
- 2  
- 3  
- 4  
- 8  
- 16  
- 32  
- 64  
- 128  
- 256  
- 512  
- 1024  
- 2048  
- 4096  

**Grain Size in Millimeters**  

- 500  
- 100  
- 50  
- 10  
- 5  
- 1  
- 0.5  
- 0.1  
- 0.05  
- 0.01  
- 0.005  
- 0.001  

---  

**Percent Finer by Weight**  

- 100  
- 90  
- 80  
- 70  
- 60  
- 50  
- 40  
- 30  
- 20  
- 10  
- 6  
- 5  
- 4  
- 3  
- 2  
- 1  
- 0.5  
- 0.1  
- 0.05  
- 0.01  
- 0.005  
- 0.001  

---  

**Percent Coarser by Weight**  

- 100  
- 90  
- 80  
- 70  
- 60  
- 50  
- 40  
- 30  
- 20  
- 10  
- 6  
- 5  
- 4  
- 3  
- 2  
- 1  
- 0.5  
- 0.1  
- 0.05  
- 0.01  
- 0.005  
- 0.001  

---  

**Notes:**  
- The chart helps in identifying the percentage of each grain size in the soil sample.  
- The soil is predominantly clay with high water content.  
- The plasticity index is low, suggesting it is a non-plastic clay.
Sample No. 9

Classification:
- INORGANIC SILT, HIGH LL (MH)
- DK. GRAT. CLAY, WITH A TRACE OF SAND, MICA AND ORGANIC FINES

Project: SAVANNAH HARBOR

Area: LAB NO. 97/1220

Boring No.: SH-136

Date: 06/04/87
### Graduation Curves

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Gravel</th>
<th>Sand</th>
<th>Silt or Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fine</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Grain Size in Micrometers

- **Percent Coarser by Weight**
- **Percent Finer by Weight**
- **U.S. Standard Sieve Numbers**
- **Metric Standard Sieve Numbers**

---

Corp of Engineers, 611 South Cobb Drive, Marietta, GA 30060

W.O. No. 5193

Department of the Army, South Atlantic Division Laboratory
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>X-XX</th>
<th>Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Area</th>
<th>Boring No.</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>24.0-25.5'</td>
<td></td>
<td>FAT CLAY (CH)</td>
<td>79.5</td>
<td>126</td>
<td>37</td>
<td>89</td>
<td>SAVANNAH HARBOR</td>
<td>LAB NO. 97/974</td>
<td>SH-138</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DK. GRAY AND BROWN, WITH SOME</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SAVANNAH HARBOR WIDENING</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SAND AND A TRACE OF MICA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WOOD, AND GRAVEL SIZE WEATHER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FD ROCK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Date:** 06/04/87
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth</th>
<th>Visual Description</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>43.5-45.0'</td>
<td>POORLY GRADED SAND (SP)</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GRAY WITH A TRACE OF SLAG AND MICA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR WIDENING

**Area:** LAB NO. 97/980

**Boring No.:** SH-138

**Sample No.:** SAMPLE 14

**Date:** 06/04/87

---

**U.S. Standard Sieve Opening in Inches**

**U.S. Standard Sieve Numbers**

**Hydrometer**

**Percent Finer by Weight**

**Grain Size in Millimeters**

**Cobbles**

<table>
<thead>
<tr>
<th>COARSE</th>
<th>FINER</th>
<th>COARSE</th>
<th>MEDIUM</th>
<th>FINE</th>
</tr>
</thead>
</table>

**Gravel**

<table>
<thead>
<tr>
<th>COARSE</th>
<th>FINE</th>
</tr>
</thead>
</table>

**Sand**

<table>
<thead>
<tr>
<th>COARSE</th>
<th>MEDIUM</th>
<th>FINE</th>
</tr>
</thead>
</table>

**Silt or Clay**

<table>
<thead>
<tr>
<th>COARSE</th>
<th>MEDIUM</th>
<th>FINER</th>
</tr>
</thead>
</table>

---

**Gradation Curves**
<table>
<thead>
<tr>
<th>Lab No.</th>
<th>Hole No.</th>
<th>Sample No.</th>
<th>Depth (ft)</th>
<th>Moisture Content (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>977</td>
<td>SH-139</td>
<td>15</td>
<td>46.5-48.0</td>
<td>25.1</td>
</tr>
<tr>
<td>999</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1022</td>
<td>SH-143</td>
<td>1</td>
<td>0.0-1.5</td>
<td>19.2</td>
</tr>
<tr>
<td>1024</td>
<td>&quot;</td>
<td>3</td>
<td>7.5-9.0</td>
<td>22.5</td>
</tr>
<tr>
<td>1256</td>
<td>SH-144</td>
<td>5</td>
<td>12.0-13.5</td>
<td>101.1</td>
</tr>
<tr>
<td>1269</td>
<td>SH-148</td>
<td>1</td>
<td>0.0-1.5</td>
<td>40.7</td>
</tr>
<tr>
<td>1273</td>
<td>&quot;</td>
<td>5</td>
<td>12.0-13.5</td>
<td>44.4</td>
</tr>
<tr>
<td>1274</td>
<td>&quot;</td>
<td>6</td>
<td>16.5-18.0</td>
<td>40.8</td>
</tr>
</tbody>
</table>
**Sample No.** | **Depth** | **Classification** | **Nat w %** | **LL** | **PL** | **PI** |
---|---|---|---|---|---|---|
8 | 24.0-25.5' | CLAYEY SAND (SC) | 50.9 | 47 | 25 | 22 |
| | | DK.GRAY AND BROWN.WITH A | | | | |
| | | TRACE OF MICA.ORGANIC FINES | | | | |
| | | AND GRAVEL SIZE WEATHERED | | | | |
| | | ROCK | | | | |

**Project** | SAVANNAH HARBOR

**Area** | LAB NO. 97/992

**Boring No.** | SH-139

**Date** | 06/04/87

**DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY**
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

**W.O. No.** 5193

**Req. No.** SAS-EN-GS-87-23
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>X*KXK Depth</th>
<th>Visual Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>33.0-34.5</td>
<td>POOR GRD SILTY SAND (SP-50)</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GRAY, MICAEOUS, WITH A TRACE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OF SLAG AND GRAVEL SIZE WEATHERED ROCK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPECIFIC GRAVITY = 2.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR WIDENING

**Area:** LAB NO. 97/994

**Boring No.:** SH-139

**Date:** 06/04/87
### Sample Information

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>WPAK Depth</th>
<th>Visual Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>37.5-39.0'</td>
<td>FAT CLAY (CH), BROWNISH GRAY, WITH A LITTLE SAND AND WITH A TRACE OF MICA, ORGANIC FINES AND GRAVEL SIZE WEATHERED ROCK</td>
<td>28.4</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

- **Project:** SAVANNAH HARBOR
- **Area:** SAVANNAH HARBOR WIDENING
- **LAB NO.:** 97/996
- **Boring No.:** SH-139
- **Sample:** 12
- **Date:** 06/04/87

### Gradation Curves

The diagram shows the distribution of particle sizes for different soil fractions. The X-axis represents the grain size in millimeters, and the Y-axis represents the percent finer by weight.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>X(K) &amp; Depth</th>
<th>Visual Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>54.0-55.5</td>
<td>WELL GRD SILTY SAND (SW-SM) --</td>
<td>NP</td>
<td>HP</td>
<td>NP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LT. BROWN. WITH A TRACE OF WOOD AND MICA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR WIDENING

**Area:** LAB NO. 97/1001

**Boring No.:** SH-139

**Sample:** SAMPLE 17

**Date:** 06/04/87

**GRADATION CURVES**
# General Test Report

**U.S. Army Engineer Division Laboratory, South Atlantic Corps of Engineers**

**Marietta, Georgia**

| Project | Savannah Harbor
|---------|------------------
|         | Savannah Harbor Widening

| Type Sample | SOILS: Jar Samples of Disturbed Soils
|-------------|--------------------------------------------------
| Source      | HOLE NO: SH -141, 145,146 and 147
|             | **FOR USE AS** Investigation
|             | **TESTED FOR** Lab Classification and Field Moisture

<table>
<thead>
<tr>
<th>Lab No.</th>
<th>Hole No.</th>
<th>Sample No.</th>
<th>Depth (Ft.)</th>
<th>Moisture Content (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>97/1007</td>
<td>SH-141</td>
<td>5</td>
<td>9.0/10.5</td>
<td>90.8*</td>
</tr>
<tr>
<td>1008</td>
<td>&quot;</td>
<td>6</td>
<td>13.5/15.0</td>
<td>66.1</td>
</tr>
<tr>
<td>1018</td>
<td>&quot;</td>
<td>16A</td>
<td>52.5/53.5</td>
<td>39.0</td>
</tr>
<tr>
<td>1044</td>
<td>SH-145</td>
<td>3A</td>
<td>6.0/7.0</td>
<td>28.4</td>
</tr>
<tr>
<td>1045</td>
<td>&quot;</td>
<td>3B</td>
<td>7.0/7.5</td>
<td>91.3*</td>
</tr>
<tr>
<td>1047</td>
<td>&quot;</td>
<td>5</td>
<td>13.5/15.0</td>
<td>18.9</td>
</tr>
<tr>
<td>1050</td>
<td>&quot;</td>
<td>7</td>
<td>21.0/22.5</td>
<td>94.4</td>
</tr>
<tr>
<td>1052</td>
<td>&quot;</td>
<td>9A</td>
<td>27.0/27.5</td>
<td>103.3*</td>
</tr>
<tr>
<td>1065</td>
<td>SH-146</td>
<td>4</td>
<td>13.5/15.0</td>
<td>84.5</td>
</tr>
<tr>
<td>1079</td>
<td>SH-147</td>
<td>2</td>
<td>3.0/4.5</td>
<td>29.3</td>
</tr>
<tr>
<td>1082</td>
<td>&quot;</td>
<td>5</td>
<td>12.0/15.0</td>
<td>96.7</td>
</tr>
<tr>
<td>1088</td>
<td>&quot;</td>
<td>11</td>
<td>40.5/42.0</td>
<td>134.2*</td>
</tr>
</tbody>
</table>

**Remarks:**

*See lab classification data on ENG Form 2087.*

**Reported by**

- **Phone**
- **Wire**

**Tested by**

- WB, JL

**Checked by**

- ES

**Sampled by**

- District
### Test No.

<table>
<thead>
<tr>
<th>No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water content</td>
<td>( w_0 )</td>
<td>94.9%</td>
<td>89.1%</td>
<td>75.7%</td>
</tr>
<tr>
<td>Void ratio</td>
<td>( e_0 )</td>
<td>2.468</td>
<td>2.326</td>
<td>1.968</td>
</tr>
<tr>
<td>Saturation</td>
<td>( s_0 )</td>
<td>100.0%</td>
<td>99.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Dry density, lb/cu ft</td>
<td>( \rho_d )</td>
<td>46.8</td>
<td>48.8</td>
<td>54.7</td>
</tr>
<tr>
<td>Water content</td>
<td>( w_c )</td>
<td>89.2%</td>
<td>80.3%</td>
<td>58.3%</td>
</tr>
<tr>
<td>Void ratio</td>
<td>( e_c )</td>
<td>1.58</td>
<td>2.087</td>
<td>1.516</td>
</tr>
<tr>
<td>Saturation</td>
<td>( s_c )</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Final back pressure, psi</td>
<td>( p_f )</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Water content</td>
<td>( w_e )</td>
<td>89.2%</td>
<td>80.3%</td>
<td>58.3%</td>
</tr>
<tr>
<td>Void ratio</td>
<td>( e_e )</td>
<td>1.58</td>
<td>2.087</td>
<td>1.516</td>
</tr>
<tr>
<td>Minor principal stress, psi</td>
<td>( \sigma_3 )</td>
<td>0.50</td>
<td>1.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Max deviator stress, psi</td>
<td>( (\sigma_1 - \sigma_2)_{\text{max}} )</td>
<td>0.83</td>
<td>0.96</td>
<td>1.61</td>
</tr>
<tr>
<td>Time to failure, min</td>
<td>( t_f )</td>
<td>45</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Rate of strain, percent/min</td>
<td></td>
<td>0.10</td>
<td>0.11</td>
<td>0.11</td>
</tr>
<tr>
<td>Strain @ ( (\sigma_1 - \sigma_2)_{\text{Max}} )</td>
<td></td>
<td>4.4</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Uit deviator stress, psi</td>
<td>( (\sigma_1 - \sigma_2)_{\text{ult}} )</td>
<td>0.55</td>
<td>0.66</td>
<td>1.18</td>
</tr>
<tr>
<td>Initial diameter, in.</td>
<td>( D_0 )</td>
<td>1.38</td>
<td>1.38</td>
<td>1.38</td>
</tr>
<tr>
<td>Initial height, in.</td>
<td>( H_0 )</td>
<td>3.08</td>
<td>3.08</td>
<td>3.08</td>
</tr>
</tbody>
</table>

### Type of test

- **R**
  - Undisturbed

### Type of specimen

- **Undisturbed**
  - Dark gray clayey inorganic silt, high LL (MH), with some sand and a trace of organic matter and mica

### Classification

| LL | 95 | PL | 45 | PI | 50 | -- | \( G_s \) | 2.60 |

### Remarks

- See gradation curve on ENG Form 2087.

### Project

- Savannah Harbor Widening
- Lab No. 97/948

### Area

- **--**

### Boring No.

- SH-141
- Sample No. UD-1

### Depth

- 12.0'-14.0'
- Date 16 April 1987

---

**TRIAXIAL COMPRESSION TEST REPORT**

**TRANSLUCENT**
Sample No. | Thickness | Classification | Nat w % | LL | PL | PI
--- | --- | --- | --- | --- | --- | ---
UD-1 | 12.0-14.0' | Dark gray clayey inorganic silt, high LL (MH), with some sand, a trace of organic matter, and mica | 86.6 | 95 | 45 | 50

Project: Savannah Harbor Widening
Lab No. 97/948*
Area: --
Boring No. SH-141, Sample No. UD-1
Date: 16 April 1987

* R Triaxial Test
### Grading Curves

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>XFMN Depth</th>
<th>Visual Description</th>
<th>Classification</th>
<th>Nat w. %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>23.5-25.0&quot;</td>
<td>Silty sand, high LL (SM-H)</td>
<td>Grayish tan with some gravel</td>
<td>19.7</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
</tbody>
</table>

**Project:** Savannah Harbor

**Area:** Lab No. 97/645

**Boring No.:** SH-104  **Sample No.:** 7

**Date:** 04/06/84

---

**Note:** This document contains a grading curve chart with data points plotted and a table summarizing sample details. The table lists sample numbers, physical properties, and visual descriptions. The project details, area, and date of sample collection are also provided.
# Gradation Curves

**Sample No.** | **Depth** | **Visual Classification** | **Nat w. %** | **LL** | **PL** | **PI** | **Project** | **Area** | **Boring No.** | **Date**
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
1 | 6.9-8.3’ | Inorganic Silt, High LL (MH) | -- | -- | -- | -- | Savannah Harbor | Lab No. 97/651 | SH-105 | 04/06/84

**Date**: 04/06/84

**Notes**: This graph illustrates the gradation curves of a sediment sample, showing the distribution of particle sizes. The sample is from Borehole SH-105, taken from sample number 1, and corresponds to a depth of 6.9 to 8.3 feet. The sample is described as having inorganic silt with high liquid limit (MH). The project is Savannah Harbor, and the area is Lab No. 97/651.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>11.3-15.5'</td>
<td>Inorganic Silt, High LL (MH)</td>
<td>142.8</td>
<td>73</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gray, clayey with a trace of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Project: Savannah Harbor
Area: Lab No. 97/653
Boring No.: SH-105
Sample No.: 3
Date: 04/06/84

GRADATION CURVES
### Gradation Curves

#### Table:

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>R.M. W. Depth (in)</th>
<th>Visual Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>23.5-25.0</td>
<td>SILTY SAND (SM)</td>
<td>--</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR  
**Area:** LAB NO. 97/657  
**Boring No.:** SH-105  
**Sample No.:** 7  
**Date:** 04/06/84

#### Diagram:
- **U.S. Standard Sieve Opening in Inches**
- **U.S. Standard Sieve Numbers**
- **Hydrometer**
- **Grain Size in Millimeters**
- **Percent Passing by Weight**

The diagram illustrates the gradation curve for the sample, showing the percentage of material passing through various sieve sizes.
### Gradation Curves

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Material Depth</th>
<th>Visual Classification</th>
<th>% Passing</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>31.8'-32.5'</td>
<td>POORLY GRADED SAND (SP)</td>
<td>-</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
</tbody>
</table>

- **Project:** SAVANNAH HARBOR
- **Area:** LAB NO. 97/659
- **Boring No.:** SH-105
- **Sample No.:** 9
- **Date:** 04/06/84
### Table

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Key Ref.</th>
<th>Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td></td>
<td>47.5-50.3'</td>
<td>SILTY SAND (SM)</td>
<td>--</td>
<td>44</td>
<td>26</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TAN. CLAYETY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes
- **Project:** SAVANNAH HARBOR
- **Area:** LAB NO. 97/664
- **Boring No.:** SH-105
- **Sample No.:** 14
- **Date:** 04/06/84

**Gradation Curves**
Sample No. | WK X Wk Depth | Classification | Nat w % | LL | PL | PI |
--- | --- | --- | --- | --- | --- | --- |
6 | 45.2-46.7' | SILTY SAND (SM) | -- | 45 | 31 | 14 |

Project: SAVANNAH HARBOR
HARBOR WIDENING

Area: LAB NO. 97/674

Boring No. SH-107 SAMPLE NO. 6
Date: 04/06/84
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>PHX ( y ) Depth</th>
<th>Classification</th>
<th>Nat w. %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>25.5-28.0'</td>
<td>INORGANIC SILT, HIGH LL (MH)</td>
<td>112.6</td>
<td>111</td>
<td>57</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GRAY, CLAYEY WITH SOME SAND</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR

**Area:** LAB NO. 97/677

**Boring No.:** SH-108

**Sample No.:** 2

**Date:** 04/06/84

**ENG FORM** 1 MAY 63 2087
### Gradation Curves

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>XKK &amp; X Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>48.5-50.0'</td>
<td>Inorganic Silt, High LL (MH)</td>
<td>33.3</td>
<td>56</td>
<td>32</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gray, Clayey, Sandy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** Savannah Harbor

**Area:** LAB NO. 97/684

**Boring No.:** SH-108  SAMPLE NO. 9

**Date:** 04/06/84
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>THK XXX Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>38.6-40.1'</td>
<td>INORGANIC SILT, HIGH LL (MH)</td>
<td>163.6</td>
<td>156</td>
<td>60</td>
<td>96</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BLACK AND BROWN WITH A LITTLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SAND</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Project: SAVANNAH HARBOR

Area: LAB NO. 97/685

Boring No. SH-109 SAMPLE NO. 1

Date: 04/06/84
### Gradation Curves

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>X[km]</th>
<th>Depth</th>
<th>Visual</th>
<th>Classification</th>
<th>Nat. w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>36.0-37.5</td>
<td></td>
<td>WELL GRD SILTY SAND (SW-SM)</td>
<td>--</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GRAY WITH A TRACE OF MICA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR

**Area:** LAB NO. 97/1245

**Boring No.:** SH-142

**Sample:** SAMPLE 13

**Date:** 06/04/87
### Sample 16

- **Size:** 49.5-51.0 in
- **Visual Classification:** Poorly Graded Sand (SP)
- **Laboratory Classification:**
  - **NaI w%:** NP
  - **LL:** NP
  - **PL:** NP
  - **PI:** NP

- **Project:** Savannah Harbor
- **Area:** Lab No. 97/1248
- **Boring No.:** SH-142
- **Sample No.:** 16
- **Date:** 06/04/87

---

**Gradation Curves**

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Size</th>
<th>Visual</th>
<th>Classification</th>
<th>NaI w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>49.5-51.0</td>
<td></td>
<td>Poorly Graded Sand</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gray with a little</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>gravel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>size wood fragments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>trace of mica</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Tables and Graphs**

- **U.S. Standard Sieve Opening in Inches**
- **U.S. Standard Sieve Numbers**
- **Hydrometer**
- **Percent Coarser by Weight**
- **Percent Finer by Weight**

---

**Gradation Curves**

- **Cobble:**
  - 6
  - 4
  - 3
  - 2
  - 1
  - 1/2
  - 1/4
  - 1/8
  - 1/16
  - 1/32
  - 1/64
  - 1/128

- **Gravel:**
  - 10
  - 5
  - 1
  - 0.5
  - 0.1
  - 0.05
  - 0.01
  - 0.005
  - 0.001

- **Sand:**
  - 100
  - 50
  - 20
  - 10
  - 5
  - 2
  - 1
  - 0.5
  - 0.1
  - 0.05
  - 0.01
  - 0.005
  - 0.001

---

**Notes:**

- The chart illustrates the gradation curves for the sample, showing the percentage of material retained on each sieve.
- The sample is categorized as Poorly Graded Sand with a trace of mica.
- The project and area details are provided for context.

---

**Form:** ENG 1 MAY 63 2087
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>INHk AW Depth</th>
<th>VISUAL Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>31.5-33.0'</td>
<td>SILTY SAND (SH)</td>
<td>...</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LT.BROWN.WITH A TRACE OF MICA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AND WITH POCKETS OF GRAY (CH)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR WIDENING

**Area:** LAB NO. 97/1031

**Boring No.:** SH-143

**Date:** 06/04/87
Sample No. | Depth | Classification | Nat w % | LL | PL | PI
--- | --- | --- | --- | --- | --- | ---
4 | 9.0-10.5' | INORGANIC SILT, HIGH LL (MM) | 86.2 | 99 | 42 | 57

Project: SAVANNAH HARBOR
Area: LAB NO. 97/1255
Boring No.: SH-141
Date: 06/04/87
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Z-116 AK Depth</th>
<th>Visual Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Area</th>
<th>Boring No.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>33.0-34.5'</td>
<td>POORLY GRADED SAND (SP)</td>
<td>--</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>SAVANNAH HARBOR</td>
<td>LAB NO. 97/1262</td>
<td>SH-144</td>
<td>06/04/87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GRAY WITH A TRACE OF MICA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SAVANNAH HARBOR WIDENING</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GRADATION CURVES**
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Wk &amp; Depth</th>
<th>Visual Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Area</th>
<th>Boring No.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>46.5-48.0'</td>
<td>POORLY GRADED SAND (SP)</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>SAVANNAH HARBOR</td>
<td>LAB NO. 97/1266</td>
<td>SH-144</td>
<td>06/04/87</td>
</tr>
</tbody>
</table>

GRADATION CURVES
NOTE: Insufficient soil to perform Atterberg limits test.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>WET WKT Depth</th>
<th>VISUAL Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B</td>
<td>7.0 - 7.5'</td>
<td>INORGANIC SILT HIGH LL (MH)</td>
<td>91.3</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DK. GRAY. CLAYY. WITH SOME SAND,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MICACEOUS, WITH ORGANIC FINES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR

**Area:** LAB NO. 97/1045

**Boring No.:** SH-145

**Sample 3B**

**Date:** 04/03/87
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>%X%% Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>9A</td>
<td>27.0-27.5</td>
<td>INORGANIC SILT, HIGH LL (MH)</td>
<td>103.3</td>
<td>115</td>
<td>47</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DK.GRAY.CLAYEY, WITH A LITTLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SAND, TRACE OF MICA AND WITH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ORGANIC FINES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project**: SAVANNAH HARBOR

**Area**: LAB NO. 97/1052

**Boring No.**: SH-145

**Date**: 04/03/87

**Gradation Curves**
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>EMK XX Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>40.5-42.0'</td>
<td>SILTY SAND, HIGH LL (SH-M)</td>
<td>134.2</td>
<td>74</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DK. GRAY, WITH DECAYED WOOD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>FRAGMENTS AND WITH A TRACE OF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MICA AND ORGANIC FINES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** SAVANNAH HARBOR

**Area:** SAVANNAH HARBOR WIDENING

**LAB NO.: 97/1088**

**Boring No.:** SM-147

**SAMPLE 11**

**Date:** 04/03/87

**GRADATION CURVES**

**ENG FORM 1 MAY 63 2087**
Sample No. | XNK XK Depth | Classification | Nat w % | LL | PL | PI |
--- | --- | --- | --- | --- | --- | --- |
3 | 4.5-6.0' | SILTY CLAYEY SAND (SM-SC) | 34.4 | 23 | 17 | 6 |
| | | GRAY, WITH A TRACE OF MICA | | | | |

Project: SAVANNAH HARBOR

Area: LAB NO. 97/1271

Boring No.: SM-148

Date: 06/04/87
### Gradation Curves

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>XHK/AK Depth</th>
<th>Visual Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>24.0-25.5</td>
<td>Poor Grd Silty Sand(SP-SM)</td>
<td></td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gray, with a trace of Mica and Organic Fines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specific Gravity = 2.66</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project:** Savannah Harbor

**Area:** LAB NO. 97/1277

**Boring No.:** SM-148

**Sample:** 9

**Date:** 06/04/87
NOTE: Insufficient soil to perform grain size analysis.

Sample No. 16

Visual Classification: Poorly graded sand (SP), brownish tan, with wood fragments.

Specific Gravity = 2.68

Project: Savannah Harbor Widening

Area: Lab No. 97/1284

Boring No.: SH-148, Sample 16

Date: 9 June 1987
## GENERAL TEST REPORT

**U.S. ARMY ENGINEER DIVISION LABORATORY, SOUTH ATLANTIC CORPS OF ENGINEERS**

**MARIEETTA, GEORGIA**

**DISTRICT/OFFICE**

Savannah

**PROJECT**

Savannah Harbor

Savannah Harbor Widening

**DATE REPORTED**

8 April 1987

**CONTRACT NO.**

--

**WORK ORDER NO.**

5193

**TYPE SAMPLE**

SOILS:

Jar Samples of Disturbed Soils

**REQN. NO.**

SAS-EN-GS-87-23

**SOURCE**

HOLE NO: SH -141, 145,146 and 147

**BASE UNIT COST**

--

**FOR USE AS**

Investigation

**DATE SAMPLE RECEIVED**

27 Feb thru 16 Mar 1987

**TESTED FOR**

Lab Classification and Field Moisture

**LAB NO.**

97/1007-1088

### Lab. No. | Hole No. | Sample No. | Depth (Ft.) | Moisture Content (%) |
--- | --- | --- | --- | --- |
97/ | SH-141 | 5 | 9.0/10.5 | 90.8* |
97/ | " | 6 | 13.5/15.0 | 66.1 |
97/ | " | 16A | 52.5/53.5 | 39.0 |
| SH-145 | 3A | 6.0/7.0 | 28.4 |
97/ | " | 3B | 7.0/7.5 | 91.3* |
97/ | " | 5 | 13.5/15.0 | 18.9 |
97/ | " | 7 | 21.0/22.5 | 94.4 |
1052 | " | 9A | 27.0/27.5 | 103.3* |
97/ | SH-146 | 4 | 13.5/15.0 | 84.5 |
1079 | SH-147 | 2 | 3.0/4.5 | 29.3 |
1082 | " | 5 | 12.0/15.0 | 96.7 |
1088 | " | 11 | 40.5/42.0 | 134.2* |

**REMARKS:**

*See lab classification data on ENG Form 2087.

**REPORTED BY**

☐ PHONE ☐ WIRE

**TESTED BY**

Wb, jl

**CHECKED BY**

Es

**SAMPLED BY**

District

**SAD FORM 158**

1 Feb 79

Previous editions of this form are obsolete

**SHEET 1 of 1**
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>XYYZZ Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>Pi</th>
</tr>
</thead>
<tbody>
<tr>
<td>UD-1</td>
<td>12.0-14.0'</td>
<td>Dark gray clayey inorganic silt, high LL (MH), with some sand, a trace of organic matter, and mica</td>
<td>86.6</td>
<td>95</td>
<td>45</td>
<td>50</td>
</tr>
</tbody>
</table>

Project: Savannah Harbor Widening
Lab No. 97/948

Area: --
Boring No. SH-141, Sample No. UD-1
Date: 16 April 1987

* Triaxial Test
### Test No.

<table>
<thead>
<tr>
<th>Test No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water content $w_0$</td>
<td>94.9%</td>
<td>89.1%</td>
<td>75.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Void ratio $e_0$</td>
<td>2.468</td>
<td>2.326</td>
<td>1.968</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturation $S_o$</td>
<td>100.0%</td>
<td>99.6%</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry density ($\gamma_d$)</td>
<td>46.8</td>
<td>48.8</td>
<td>54.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water content $w_c$</td>
<td>89.2%</td>
<td>80.3%</td>
<td>58.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Void ratio $e_c$</td>
<td>2.318</td>
<td>2.087</td>
<td>1.516</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturation $S_c$</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final back pressure, T/sq ft</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water content $w_r$</td>
<td>89.2%</td>
<td>80.3%</td>
<td>58.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Void ratio $e_r$</td>
<td>2.318</td>
<td>2.087</td>
<td>1.516</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor principal stress, T/sq ft</td>
<td>$\sigma_3$</td>
<td>0.50</td>
<td>1.00</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>Max deviator stress, T/sq ft</td>
<td>$(\sigma_1-\sigma_3)_{max}$</td>
<td>0.83</td>
<td>0.96</td>
<td>1.61</td>
<td></td>
</tr>
<tr>
<td>Time to failure, min</td>
<td>$t_f$</td>
<td>45</td>
<td>35</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Rate of strain, percent/min</td>
<td>0.10</td>
<td>0.11</td>
<td>0.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strain @ $(\sigma_1-\sigma_3)_{Max.}$</td>
<td>4.4</td>
<td>3.7</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ulit deviator stress, T/sq ft</td>
<td>$(\sigma_1-\sigma_3)_{ulti}$</td>
<td>0.55</td>
<td>0.66</td>
<td>1.18</td>
<td></td>
</tr>
<tr>
<td>Initial diameter, in.</td>
<td>$D_0$</td>
<td>1.38</td>
<td>1.38</td>
<td>1.38</td>
<td></td>
</tr>
<tr>
<td>Initial height, in.</td>
<td>$H_0$</td>
<td>3.08</td>
<td>3.08</td>
<td>3.08</td>
<td></td>
</tr>
</tbody>
</table>

### Method of saturation

- Controlled stress
- Controlled strain

### Type of test
- R: Undisturbed

### Type of specimen
- Dark gray clayey inorganic silt, high LL (MH), with some sand and a trace of organic matter and mica

### Classification
- LL: 95
- PL: 45
- PT: 50

### Remarks
- See gradation curve on ENG Form 2087.

### Project
- Savannah Harbor Widening
- Lab No. 97/948

### Area
- --

### Boring No.
- SH-141

### Sample No.
- UD-1

### Depth
- 12.0-14.0'

### Date
- 16 April 1987

### TRIAXIAL COMPRESSION TEST REPORT

---

**Note:** The document appears to be a technical report summarizing the results of a triaxial compression test on soil samples. The data includes various physical properties such as water content, void ratio, saturation, and stress-strain characteristics. The test was conducted on a sample of dark gray clayey inorganic silt, high LL (MH), with some sand and a trace of organic matter and mica. The report includes details on the method of saturation, type of test, type of specimen, classification, and project details.
### U.S. STANDARD SIEVE OPENING IN INCHES

<table>
<thead>
<tr>
<th>Opening in Inches</th>
<th>U.S. Standard Sieve Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>1 1/4</td>
</tr>
<tr>
<td>2 1/8</td>
<td>1 1/2</td>
</tr>
<tr>
<td>1</td>
<td>1 3/4</td>
</tr>
<tr>
<td>1 1/4</td>
<td>1 5/8</td>
</tr>
<tr>
<td>1 3/8</td>
<td>1 15/16</td>
</tr>
<tr>
<td>1 7/32</td>
<td>1 1/2</td>
</tr>
</tbody>
</table>

### HYDROMETER

<table>
<thead>
<tr>
<th>Hydrometer</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

### PERCENT FINER BY WEIGHT

<table>
<thead>
<tr>
<th>PERCENT FINER BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
</tr>
<tr>
<td>90</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>70</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

### PERCENT COARSER BY WEIGHT

<table>
<thead>
<tr>
<th>PERCENT COARSER BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
</tr>
<tr>
<td>90</td>
</tr>
<tr>
<td>80</td>
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<tr>
<td>70</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

### TABLE

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Area</th>
<th>Boring No.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>9.0-10.5'</td>
<td>INORGANIC SILT, HIGH LL (MH) WITH DK.GRAY AND BROWN.CLAYET.WITH A TRACE OF SAND AND MICA AND WITH ORGANIC FINES</td>
<td>90.8</td>
<td>122</td>
<td>51</td>
<td>71</td>
<td>SAVANNAH HARBOR</td>
<td>LAB NO. 97/1007</td>
<td>SH-141</td>
<td>04/03/87</td>
</tr>
</tbody>
</table>

### GRADATION CURVES
## Gradation Curves

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth</th>
<th>Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>9A</td>
<td>27.0–27.5'</td>
<td>Inorganic Silt, High LL (MH)</td>
<td>103.3</td>
<td>115</td>
<td>47</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dark Gray Clay, With a Little Sand, Trace of Mica and With Organic Fines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Project: Savannah Harbor
Area: Lab No. 97/1052
Boring No.: SH-145
Date: 04/03/87
NOTE: Insufficient soil to perform atterberg limits test.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>WM X X Depth</th>
<th>Visual Classification</th>
<th>Nat w %</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B</td>
<td>7.0-7.5'</td>
<td>INORGANIC SILT HIGH LL (MH)</td>
<td>91.3</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DK.GRAY.CLAYET.WITH SOME SAND,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MICACEOUS,WIITH ORGANIC FINES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Project: SAVANNAH HARBOR WIDENING
Area: LAB NO. 97/1045
Boring No. SH-145
Sample 3B
Date: 04/03/87

GRADATION CURVES
Sample No. | Sample Depth | Classification | Nat w % | LL | PL | PI
--- | --- | --- | --- | --- | --- | ---
1 | 40.5-42.0' | SILTY SAND, HIGH LL (SM-H) | 134.2 | 74 | 36 | 38

GRADATION CURVES

Project: SAVANNAH HARBOR WIDENING
Area: LAB NO. 97/1088
Boring No.: SH-147, SAMPLE 11
Date: 04/03/87
DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

Note: The requested specific gravity test was not performed due to an insufficient amount of spoil.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth/Elev</th>
<th>Classification</th>
<th>Nat w%</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Lab No.</th>
<th>Boring No.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>26.5-26.0'</td>
<td>Gray clayey sand (SC), with a little gravel and with a trace of roots and mica.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PRELIMINARY BORINGS</td>
<td>97/1481</td>
<td>SH-154</td>
<td>04/28/92</td>
</tr>
</tbody>
</table>

GRADATION CURVES
Sample No. | Depth/Elev | Classification                                                                 | Nat w% | LL  | PL  | PI  | Project     | Lab No.  | Boring No. | Date       
|-----------|-----------|--------------------------------------------------------------------------------|--------|-----|-----|-----|-------------|----------|------------|------------
| 5         | 35.5-37.0' | Gray poorly graded sand (SP), with a trace of gravel size quartz and with a trace of mica. |        |     |     |     | PRELIMINARY BORINGS | 97/1484  | SH-154     | 04/28/92   

specific gravity = 2.68

GRADATION CURVES
### Gradation Curves

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth/Elev</th>
<th>Classification</th>
<th>Nat w%</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Lab No.</th>
<th>Boring No.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>50.5-52.0'</td>
<td>Greenish gray clayey sand high LL (SC-H) with a trace of mica. Specific gravity = 2.76</td>
<td>37.6</td>
<td>57</td>
<td>27</td>
<td>30</td>
<td>PRELIMINARY BORINGS</td>
<td>97/1497</td>
<td>SH-154</td>
<td>04/30/92</td>
</tr>
</tbody>
</table>

**COBBLES**

- **GRANULAR MATERIALS**
  - **SAND**
    - **COARSE**
    - **FINE**
    - **MIXED**
    - **FACIES**
  - **SILT OR CLAY**

**HYDROMETER**

**U.S. STANDARD SIEVE OPENING IN INCHES**

- 6
- 3
- 1.5
- 1/2
- 3/8
- 3
- 6
- 8
- 10
- 14
- 18
- 20
- 30
- 50
- 70
- 100
- 140
- 200

**U.S. STANDARD SIEVE NUMBERS**

- 500
- 100
- 50
- 10
- 5
- 1
- 0.5
- 0.1
- 0.05
- 0.01
- 0.005

**PERCENT FINE BY WEIGHT**

**PERCENT COARSER BY WEIGHT**

**GRADATION CURVES**

**SAVANNAH HARBOR**
Sample No. | Depth/Elev | Classification | Nat w% | LL | PL | PI | Project | Boring No. | Lab No. | Date
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
1 | 41.7-43.2' | Greenish gray silty sand high LL (SM-H), with a trace of mica. Specific gravity = 2.69 | 57 | 37 | 20 | SAVANNAH HARBOR | SH-156 | 97/1491 | 04/29/92

GRADATION CURVES
### Sample No. 1

**Depth/Elev:** 34.5-37.5'

- **Classification:** Brown poorly graded sand (SP), with a trace of mica, roots and gravel size, rusty metal fragments.

- **Natural Water (%)**
  - Total: -

- **Liquid Limit (LL):** NP
- **Plastic Limit (PL):** NP
- **Plasticity Index (PI):** NP

- **Project:** PRELIMINARY BORINGS
- **Lab No.:** 97/1502
- **Boring No.:** SH-158
- **Date:** 04/28/92

---

**Gradation Curves**

The chart shows the distribution of granular materials with varying grain sizes, from cobbles to silt or clay, indicating the percent finer by weight. The data points are plotted on the graph, and the specific gravity is noted as 2.66.
Sample No. | Depth/Elev | Classification | Nat w% | LL | PL | PI | Project | Lab No. | Boring No. | Date |
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
4 | 48.0-49.5' | Greenish gray inorganic silt high LL (MH), clayey, with some sand and with a trace of mica. | 44.2 | 82 | 46 | 36 | SAVANNAH HARBOR | 97/1505 | SH-158 | 04/30/92 |
Sample No. | Depth/Elev | Classification | Nat w% | LL | PL | PI | Project | Preliminary Borings | Lab No. | Boring No. | Date  
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---  
2 | 42.8-44.3' | Gray clayey sand (SC), with a trace of mica. | - | 43 | 24 | 19 | Savannah Harbor | Preliminary Borings | 97/1602 | SH-159 | 05/11/92
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth/Elev</th>
<th>Classification</th>
<th>Nat w%</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Lab No.</th>
<th>Boring No.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>42.8-43.3'</td>
<td>Gray silty sand high LL (SH-H), with a</td>
<td>-</td>
<td>82</td>
<td>42</td>
<td>40</td>
<td>Savannah Harbor</td>
<td>97/1605</td>
<td>SH-160</td>
<td>05/13/92</td>
</tr>
<tr>
<td></td>
<td></td>
<td>trace of mica and shell.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Preliminary Borings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specific gravity = 2.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GRADATION CURVES**
Note: The requested specific gravity test was not performed due to an insufficient amount of soil.

Sample No. | Depth/Elev | Classification | Nat w% | LL | PL | PI | Project | Boring No. | Lab No. | Date
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
2 | 43.0-43.4' | Gray inorganic silty high LL (MH), clayey sandy, with a trace of mica. | - | 85 | 40 | 45 | Savannah Harbor Preliminary Borings | SH-182 | 97/1815 | 05/11/92
Sample No. | Depth/Elev | Visual Classification | Nat w% | LL | PL | PI | Project          | Lab No. | Boring No. | Date
---|---|---|---|---|---|---|---|---|---
1 | 41.8-44.3' | Gray inorganic silt high LL (MH), sandy clayey, with a trace of mica & organic matter, Specific gravity = 2.57 | - | - | - | - | PRELIMINARY BORINGS | 97/1351 | SH-163 | 02/14/92
Sample No. | Depth/Elev | Classification                           | Nat w% | LL | PL | PI | Project         | Lab No. | Boring No. | Date   
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- 
3   | 44.8-46.3' | Gray silty sand high LL (SM-H), with a trace of mica and shell. | - | 65 | 38 | 27 | SAVANNAH HARBOR | 97/1353 | SH-163 | 02/12/92
Sample No. | Depth/Elev | Classification | Nat % | LL | PL | PI | Project             | Lab No. | Boring No. | Date       
------------|------------|----------------|-------|----|----|----|---------------------|--------|------------|------------
1           | 38.6-43.7" | Gray inorganic silt high LL (MH), clayey with a trace of sand & organic matter. Specific gravity = 2.60 | 175   | 71 | 104 | PRELIMINARY BORINGS | 97/1357| SH-164     | 02/14/92   

**GRADATION CURVES**
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth/Elev</th>
<th>Classification</th>
<th>Nat w%</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>440.455'</td>
<td>Gray inorganic silt high LL (MH), sandy, micaceous.</td>
<td>-</td>
<td>66</td>
<td>37</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specific gravity = 2.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project**: SAVANNAH HARBOR  
**PRELIMINARY BORINGS**

**Lab No.**: 97/1359

**Boring No.**: SH-164

**Date**: 02/12/92
Sample No. | Depth/Elev | Classification | Nat w% | LL | PL | PI |
---|---|---|---|---|---|---|
3 | 47.3-48.8' | Gray silty sand (SM), with a trace of mica. | - | 40 | 30 | 10 |

Project: SAVANNAH HARBOR

PRELIMINARY BORINGS

Lab No. 97/1510

Boring No. SH-166

Date: 04/28/92

GRADATION CURVES
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Depth/Elev</th>
<th>Classification</th>
<th>Nat w%</th>
<th>LL</th>
<th>PL</th>
<th>PI</th>
<th>Project</th>
<th>Preliminary Borings</th>
<th>Lab No.</th>
<th>Boring No.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>42.6-44.7&quot;</td>
<td>Gray inorganic silt high LL (MH), clayey sandy, with a trace of mica.</td>
<td>-</td>
<td>96</td>
<td>44</td>
<td>52</td>
<td>Project Savannah Harbor</td>
<td>Preliminary Borings</td>
<td>97/1626</td>
<td>SH-167</td>
<td>05/11/92</td>
</tr>
</tbody>
</table>

**GRADATION CURVES**

**U.S. STANDARD SIEVE OPENING IN INCHES**
- 6
- 4
- 3
- 2
- 1 1/2
- 1 3/4
- 1 1/4
- 1 3/8
- 1 3/16
- 3/16
- 1/8
- 3/32
- 1/16
- 1/32
- 1/64

**U.S. STANDARD SIEVE NUMBERS**
- 6
- 4
- 3
- 2
- 1
- 1 1/2
- 1 3/4
- 1 1/4
- 1 3/8
- 1 3/16
- 3/16
- 1/8
- 3/32
- 1/16
- 1/32
- 1/64

**SILT OR CLAY**

**GRAN SIZE IN MILLIMETERS**
- 500
- 150
- 50
- 10
- 5
- 1

**PERCENT FINER BY WEIGHT**
- 100
- 90
- 80
- 70
- 60
- 50
- 40
- 30
- 20
- 10

**PERCENT COARSER BY HEIGHT**
- 0
- 0.001
- 0.005
- 0.01
- 0.05
- 0.1
- 0.5
- 1
- 10
- 20
- 30
- 40
- 50
- 60
- 70
- 80
- 90
- 100

**COBBLES**

**GRAVEL**

**SAND**

**FINE**

**COARSE**

**MEDIUM**

**HYDROMETER**

**CERTIFIED**