



| | |
|-------------------|---------------------|
| Client: | Apex Companies, LLC |
| Project Name: | LHCC |
| Project Location: | New Bedford, MA |
| GTX #: | 11493 |
| Test Date: | 02/02/12 |
| Tested By: | jek |
| Checked By: | jdt |

Density (Unit Weight) of Soil by ASTM D 7263

| Boring ID | Sample ID | Depth, ft | Visual Description | Bulk Density, lb/ft ³ | Moisture Content, % | Dry Density, lb/ft ³ |
|-----------|-------------|-----------|---|----------------------------------|---------------------|---------------------------------|
| B-1 | A-2011-CAD4 | 0-2 | Moist, dark grayish brown sand with silt and gravel | 129 | 17.4 | 110 |
| B-1 | A-2011-CAD4 | 6-8 | Moist, gray sandy silt | 124 | 21.9 | 102 |
| B-1 | A-2011-CAD4 | 26-28 | Moist, olive sandy silt | 119 | 22.9 | 96.6 |
| B-1 | A-2011-CAD4 | 48-50 | Moist, olive silt with sand | 118 | 17.1 | 101 |
| B-2 | A-2011-CAD4 | 2-4 | Moist, grayish brown sand with silt | 121 | 19.9 | 101 |
| B-2 | A-2011-CAD4 | 14-16 | Moist, brown sand with silt and gravel | 132 | 7.1 | 123 |
| B-2 | A-2011-CAD4 | 30-32 | Moist, olive sand with gravel | 136 | 17.0 | 116 |
| B-2 | A-2011-CAD4 | 36-38 | Moist, dark yellowish brown sand with silt and gravel | 105 | 9.7 | 96.0 |
| B-3 | A-2011-CAD4 | 8-10 | Wet, very dark gray clay | 93.3 | 81.3 | 51.4 |
| B-3 | A-2011-CAD4 | 18-20 | Wet, very dark brown silty sand | 69.1 | 276.5 | 18.3 |
| B-3 | A-2011-CAD4 | 30-32 | Moist, olive sand with silt | 119 | 20.1 | 99.0 |
| B-3 | A-2011-CAD4 | 38-40 | Moist, grayish green sand | 118 | 11.2 | 107 |



| | |
|-------------------|---------------------|
| Client: | Apex Companies, LLC |
| Project Name: | LHCC |
| Project Location: | New Bedford, MA |
| GTX #: | 11493 |
| Test Date: | 02/02/12 |
| Tested By: | jek |
| Checked By: | jdt |

Density (Unit Weight) of Soil by ASTM D 7263

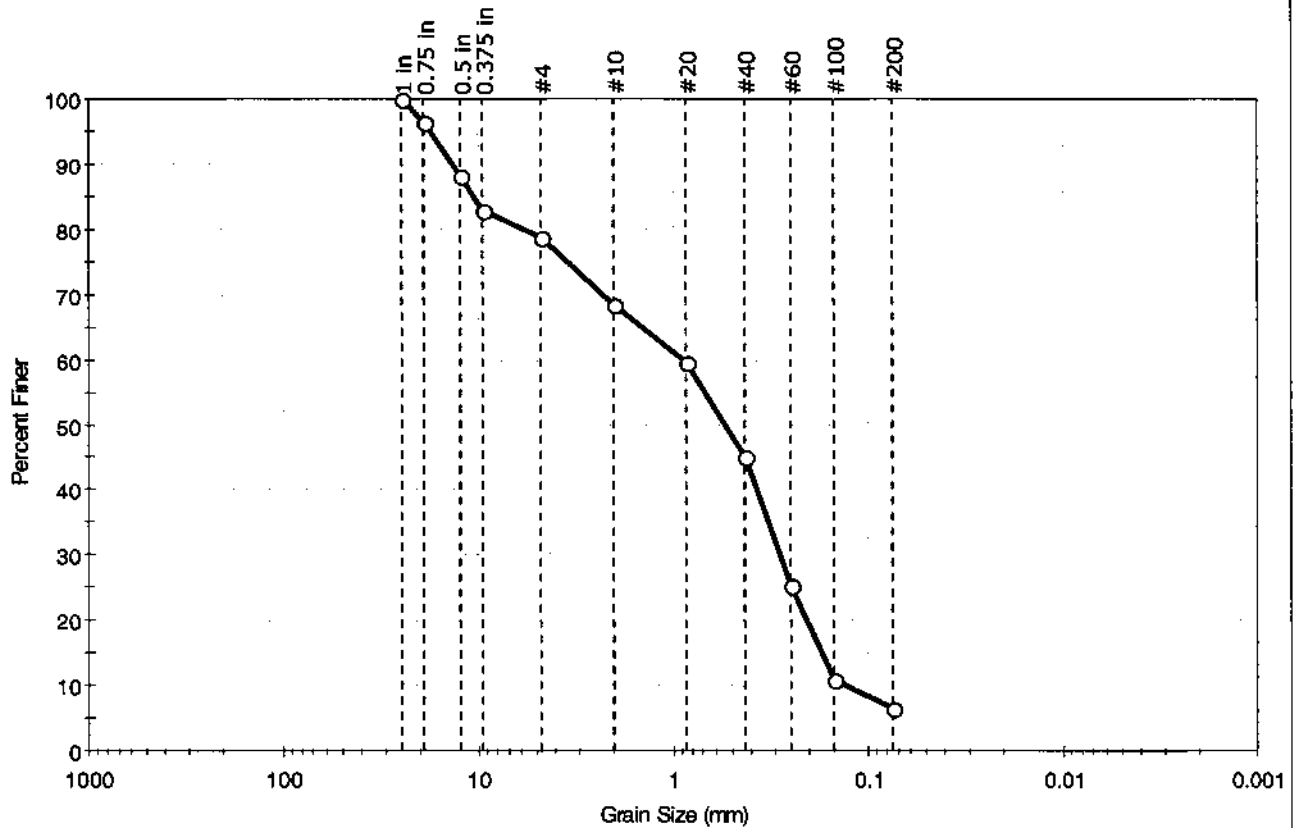
| Boring ID | Sample ID | Depth, ft | Visual Description | Bulk Density, lb/ft ³ | Moisture Content, % | Dry Density, lb/ft ³ |
|------------|-------------|-----------|--|----------------------------------|---------------------|---------------------------------|
| B-4 | A-2011-CAD4 | 2-4 | Wet, very dark gray clay with sand | 93.7 | 82.1 | 51.4 |
| B-4 | A-2011-CAD4 | 22-24 | Moist, gray silt | 117 | 26.9 | 92.0 |
| B-4 | A-2011-CAD4 | 41-43 | Moist, gray sand with gravel | 119 | 14.0 | 104 |
| B-5 | A-2011-CAD4 | 0-2 | Moist, very dark gray sand with silt | 134 | 19.4 | 112 |
| B-5 | A-2011-CAD4 | 8-10 | Moist, brown sand | 114 | 19.0 | 95.7 |
| B-5 | A-2011-CAD4 | 25-27 | Moist, olive gravel with silt and sand | 127 | 6.6 | 119 |
| B-6 | A-2011-CAD4 | 2-4 | Wet, very dark grayish brown sandy silt | 91.8 | 105.6 | 44.6 |
| B-6 | A-2011-CAD4 | 8-10 | Wet, grayish brown sandy silt | 101 | 60.5 | 62.7 |
| B-6 (COMP) | A-2011-CAD4 | 20-44 | Moist, yellowish brown sand with silt and gravel | 125 | 9.8 | 114 |
| B-6 | A-2011-CAD4 | 36-38 | Moist, olive sand | 119 | 16.6 | 102 |
| B-6 | A-2011-CAD4 | 47-49 | Moist, yellowish brown silty sand with gravel | 118 | 7.8 | 109 |

Notes: Density determined on disturbed samples by hand compacting into a container of known volume, measuring mass of soil and calculating.
 Moisture content determined by ASTM D 2216 at 110° C



| | | | |
|--|---|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-1 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228105 | |
| Depth: 0-2 ft | | | |
| Test Comment: --- | Sample Description: Moist, dark grayish brown sand with silt and gravel | | |
| Sample Comment: Shells noted in sample | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 21.3 | 72.2 | 6.5 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 1 in | 25.00 | 100 | | |
| 0.75 in | 19.00 | 97 | | |
| 0.5 in | 12.50 | 88 | | |
| 0.375 in | 9.50 | 83 | | |
| #4 | 4.75 | 79 | | |
| #10 | 2.00 | 69 | | |
| #20 | 0.85 | 60 | | |
| #40 | 0.42 | 45 | | |
| #60 | 0.25 | 25 | | |
| #100 | 0.15 | 11 | | |
| #200 | 0.075 | 6 | | |

| Coefficients | |
|------------------------------|-----------------------------|
| D ₈₅ = 10.6615 mm | D ₃₀ = 0.2827 mm |
| D ₆₀ = 0.8795 mm | D ₁₅ = 0.1726 mm |
| D ₅₀ = 0.5382 mm | D ₁₀ = 0.1281 mm |
| C _u = 6.866 | C _c = 0.709 |

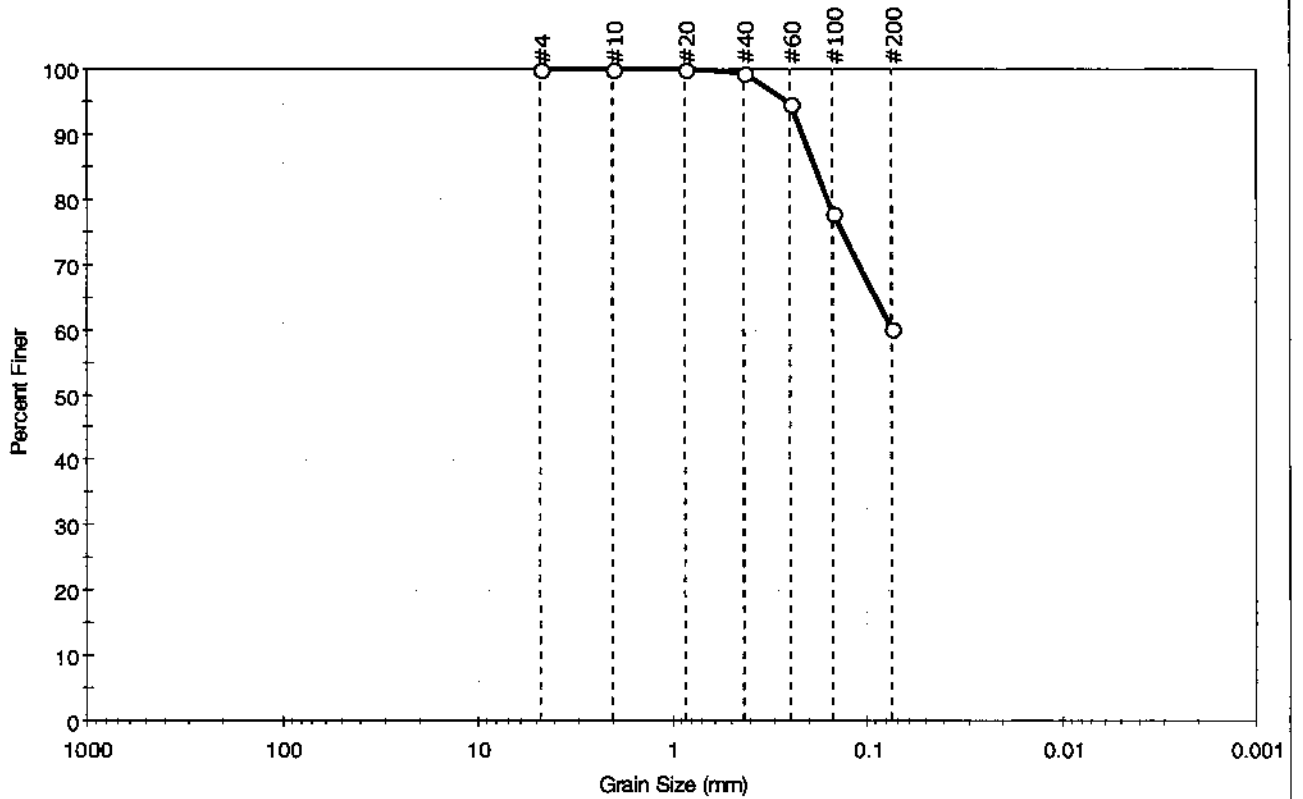
| Classification | |
|----------------|--|
| ASTM | N/A |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-b (0)) |

| Sample/Test Description | |
|----------------------------|-----------|
| Sand/Gravel Particle Shape | : ANGULAR |
| Sand/Gravel Hardness | : SOFT |



| | | | |
|--|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-1 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228106 | |
| Depth: 6-8 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, gray sandy silt | | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 0.0 | 39.9 | 60.1 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| #4 | 4.75 | 100 | | |
| #10 | 2.00 | 100 | | |
| #20 | 0.85 | 100 | | |
| #40 | 0.42 | 99 | | |
| #60 | 0.25 | 95 | | |
| #100 | 0.15 | 78 | | |
| #200 | 0.075 | 60 | | |

| <u>Coefficients</u> | |
|-----------------------------|-----------------------|
| D ₈₅ = 0.1859 mm | D ₃₀ = N/A |
| D ₆₀ = N/A | D ₁₅ = N/A |
| D ₅₀ = N/A | D ₁₀ = N/A |
| C _u = N/A | C _c = N/A |

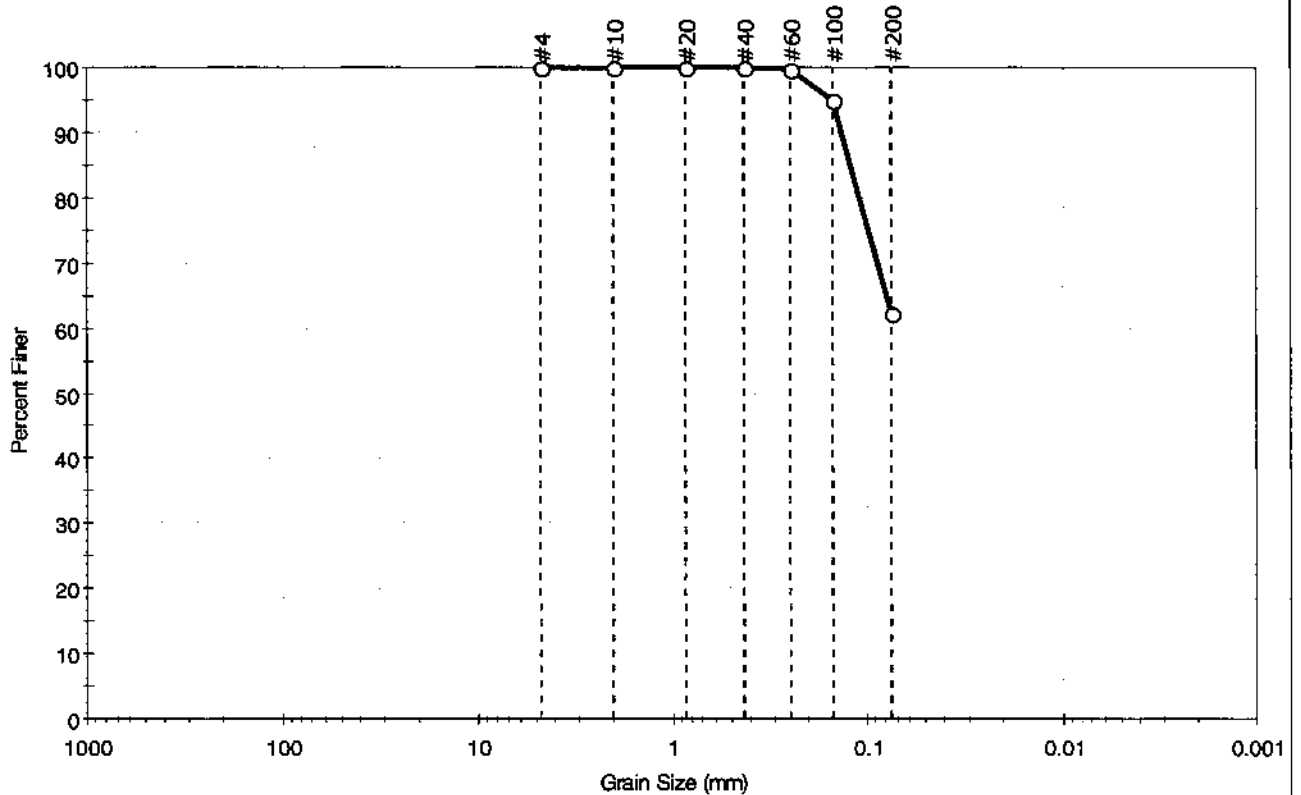
| <u>Classification</u> | |
|-----------------------|-----------------------|
| ASTM | N/A |
| AASHTO | Silty Soils (A-4 (0)) |

| <u>Sample/Test Description</u> |
|----------------------------------|
| Sand/Gravel Particle Shape : --- |
| Sand/Gravel Hardness : --- |



| | | | |
|---|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-1 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/27/12 | Test Id: 228107 | |
| Depth: 26-28 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, olive sandy silt | | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| --- | 0.0 | 37.7 | 62.3 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| #4 | 4.75 | 100 | | |
| #10 | 2.00 | 100 | | |
| #20 | 0.85 | 100 | | |
| #40 | 0.42 | 100 | | |
| #60 | 0.25 | 100 | | |
| #100 | 0.15 | 95 | | |
| #200 | 0.075 | 62 | | |

Coefficients

| | |
|-----------------------|-----------------------|
| $D_{85} = 0.1211$ mm | $D_{30} = \text{N/A}$ |
| $D_{60} = \text{N/A}$ | $D_{15} = \text{N/A}$ |
| $D_{50} = \text{N/A}$ | $D_{10} = \text{N/A}$ |
| $C_u = \text{N/A}$ | $C_c = \text{N/A}$ |

Classification

ASTM N/A

AASHTQ Silty Soils (A-4 (0))

Sample/Test Description

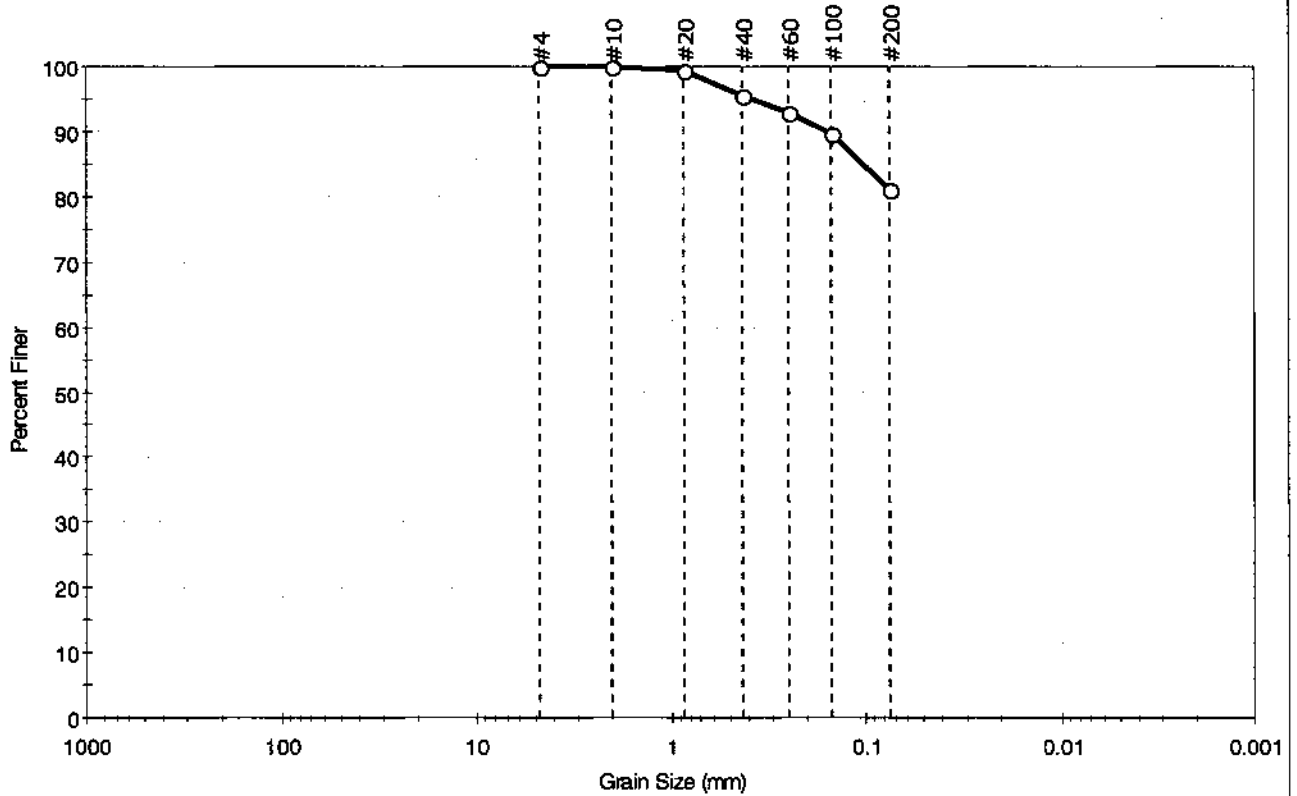
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



| | | | |
|---|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-1 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228108 | |
| Depth: 48-50 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, olive silt with sand | | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 0.0 | 19.0 | 81.0 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| #4 | 4.75 | 100 | | |
| #10 | 2.00 | 100 | | |
| #20 | 0.85 | 99 | | |
| #40 | 0.425 | 96 | | |
| #60 | 0.25 | 93 | | |
| #100 | 0.15 | 90 | | |
| #200 | 0.075 | 81 | | |

| Coefficients | |
|-----------------------------|-----------------------|
| D ₈₅ = 0.1038 mm | D ₃₀ = N/A |
| D ₆₀ = N/A | D ₁₅ = N/A |
| D ₅₀ = N/A | D ₁₀ = N/A |
| C _u = N/A | C _c = N/A |

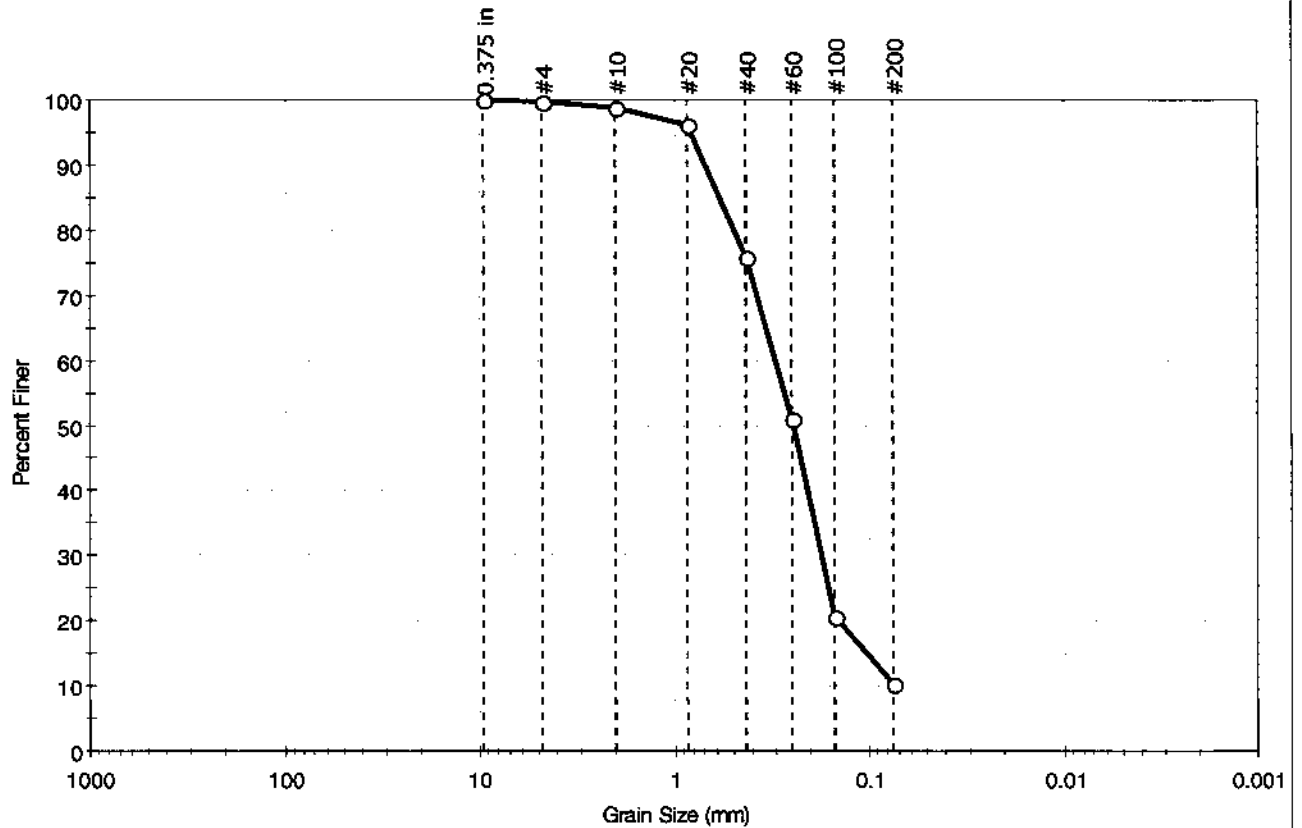
| Classification | |
|----------------|-----------------------|
| ASTM | N/A |
| AASHTO | Silty Soils (A-4 (0)) |

| Sample/Test Description |
|----------------------------------|
| Sand/Gravel Particle Shape : --- |
| Sand/Gravel Hardness : --- |



| | | | |
|-----------------------------|---|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-2 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228098 | |
| Depth: 2-4 ft | | | |
| Test Comment: --- | Sample Description: Moist, grayish brown sand with silt | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| --- | 0.3 | 89.3 | 10.4 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 0.375 in | 9.50 | 100 | | |
| #4 | 4.75 | 100 | | |
| #10 | 2.00 | 99 | | |
| #20 | 0.85 | 96 | | |
| #40 | 0.42 | 76 | | |
| #60 | 0.25 | 51 | | |
| #100 | 0.15 | 21 | | |
| #200 | 0.075 | 10 | | |

| Coefficients | |
|-----------------------------|-----------------------------|
| D ₈₅ = 0.5824 mm | D ₃₀ = 0.1756 mm |
| D ₆₀ = 0.3026 mm | D ₁₅ = 0.1025 mm |
| D ₅₀ = 0.2453 mm | D ₁₀ = 0.0729 mm |
| C _u = 4.151 | C _c = 1.398 |

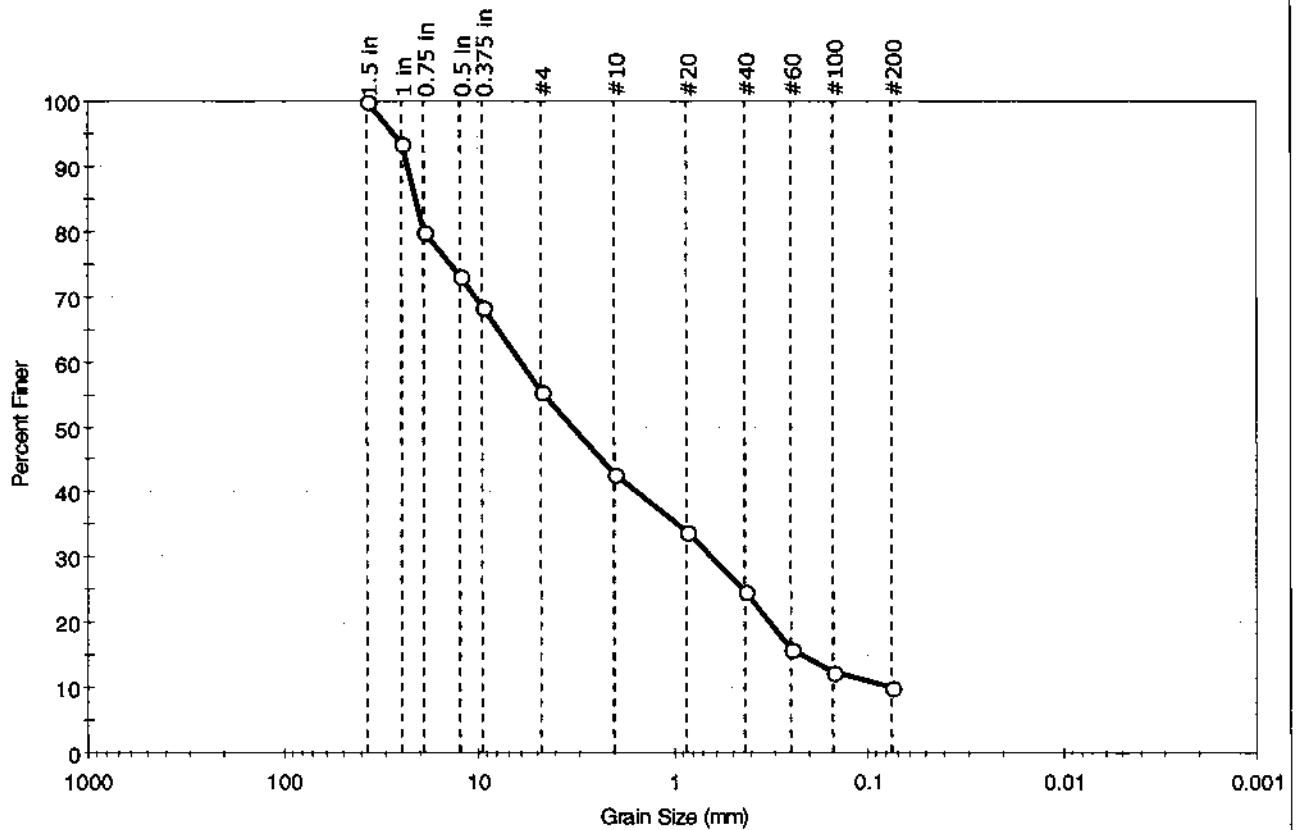
| Classification | |
|----------------|-----------------------------------|
| ASTM | N/A |
| AASHTO | Silty Gravel and Sand (A-2-4 (0)) |

| Sample/Test Description |
|----------------------------------|
| Sand/Gravel Particle Shape : --- |
| Sand/Gravel Hardness : --- |



| | | | |
|--|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-2 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID:A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228099 | |
| Depth : 14-16 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, brown sand with silt and gravel | | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| | | | |
|---------|---------|-------|-------------------|
| %Cobble | %Gravel | %Sand | %Silt & Clay Size |
| — | 44.5 | 45.4 | 10.1 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 1.5 in | 37.50 | 100 | | |
| 1 in | 25.00 | 93 | | |
| 0.75 in | 19.00 | 80 | | |
| 0.5 in | 12.50 | 73 | | |
| 0.375 in | 9.50 | 68 | | |
| #4 | 4.75 | 55 | | |
| #10 | 2.00 | 43 | | |
| #20 | 0.85 | 34 | | |
| #40 | 0.42 | 25 | | |
| #60 | 0.25 | 16 | | |
| #100 | 0.15 | 13 | | |
| #200 | 0.075 | 10 | | |

| Coefficients | |
|------------------------------|-----------------------------|
| D ₈₅ = 21.0785 mm | D ₃₀ = 0.6327 mm |
| D ₆₀ = 6.0496 mm | D ₁₅ = 0.2146 mm |
| D ₅₀ = 3.2695 mm | D ₁₀ = 0.0728 mm |
| C _u = 83.099 | C _c = 0.909 |

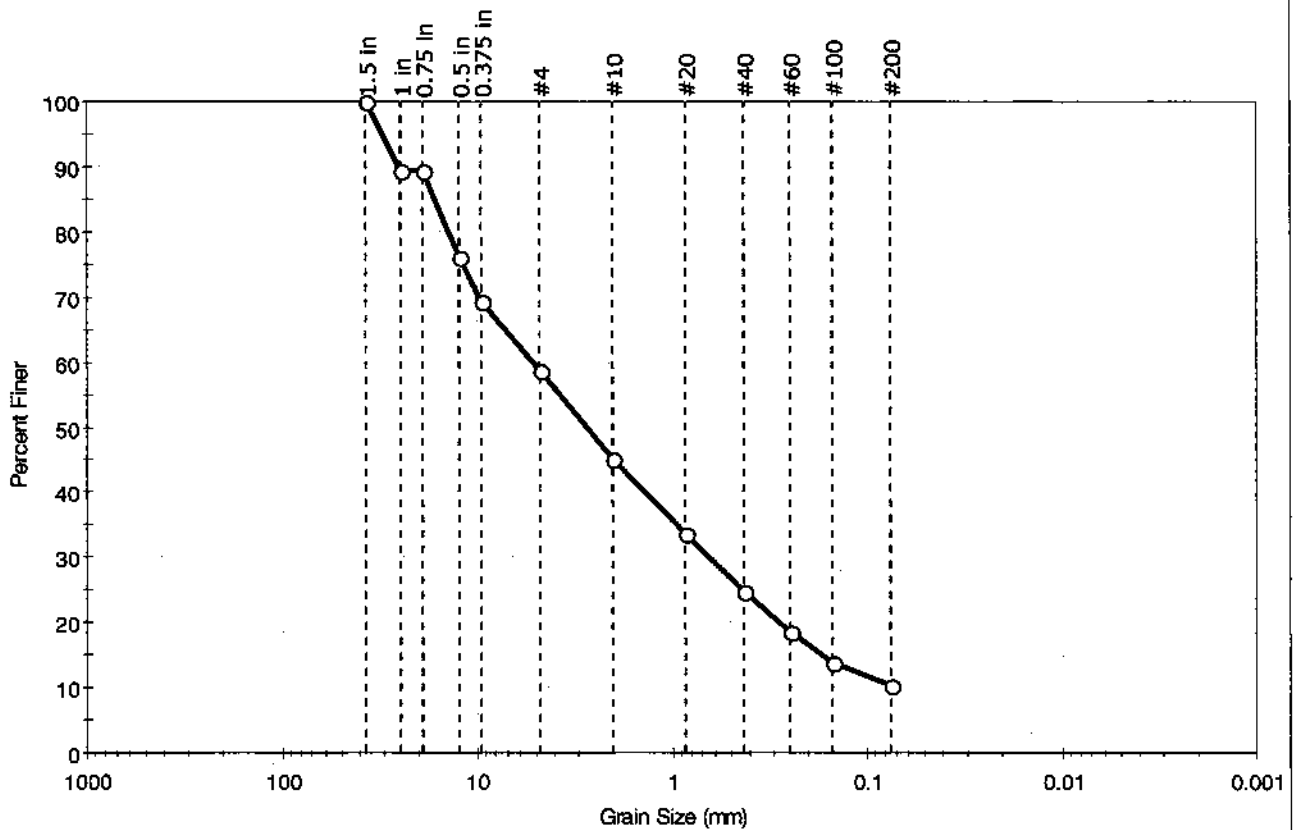
| Classification | |
|----------------|--|
| ASTM | N/A |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-a (0)) |

| Sample/Test Description | |
|------------------------------|---------|
| Sand/Gravel Particle Shape : | ROUNDED |
| Sand/Gravel Hardness : | HARD |



| | | | |
|-----------------------------|---|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-2 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228100 | |
| Depth: 36-38 ft | | | |
| Test Comment: --- | Sample Description: Moist, dark yellowish brown sand with silt and gravel | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 41.4 | 48.2 | 10.4 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 1.5 in | 37.50 | 100 | | |
| 1 in | 25.00 | 89 | | |
| 0.75 in | 19.00 | 89 | | |
| 0.5 in | 12.50 | 76 | | |
| 0.375 in | 9.50 | 69 | | |
| #4 | 4.75 | 59 | | |
| #10 | 2.00 | 45 | | |
| #20 | 0.85 | 34 | | |
| #40 | 0.42 | 25 | | |
| #60 | 0.25 | 18 | | |
| #100 | 0.15 | 14 | | |
| #200 | 0.075 | 10 | | |

| Coefficients | |
|------------------------------|-----------------------------|
| D ₈₅ = 16.5008 mm | D ₃₀ = 0.6398 mm |
| D ₆₀ = 5.2112 mm | D ₁₅ = 0.1685 mm |
| D ₅₀ = 2.7505 mm | D ₁₀ = 0.0691 mm |
| C _u = 75.415 | C _c = 1.137 |

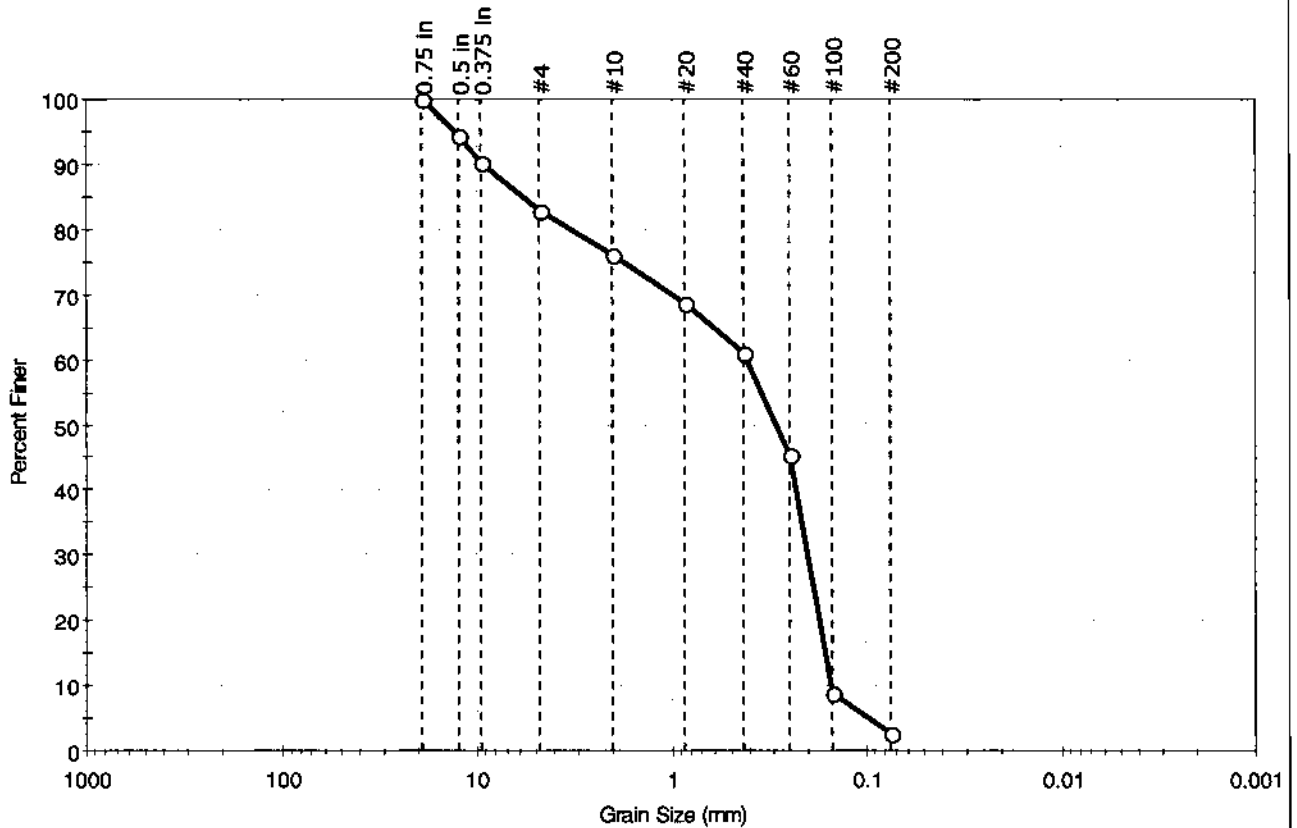
| Classification | |
|----------------|--|
| ASTM | N/A |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-a (0)) |

| Sample/Test Description | |
|----------------------------|-----------|
| Sand/Gravel Particle Shape | : ROUNDED |
| Sand/Gravel Hardness | : HARD |



| | | | |
|---|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-2 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228101 | |
| Depth: 30-32 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, olive sand with gravel | | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 17.1 | 80.2 | 2.7 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 0.75 in | 19.00 | 100 | | |
| 0.5 in | 12.50 | 94 | | |
| 0.375 in | 9.50 | 90 | | |
| #4 | 4.75 | 83 | | |
| #10 | 2.00 | 76 | | |
| #20 | 0.85 | 69 | | |
| #40 | 0.425 | 61 | | |
| #60 | 0.25 | 46 | | |
| #100 | 0.15 | 9 | | |
| #200 | 0.075 | 3 | | |

| Coefficients | |
|-----------------------------|-----------------------------|
| D ₈₅ = 5.7767 mm | D ₃₀ = 0.2012 mm |
| D ₆₀ = 0.4109 mm | D ₁₅ = 0.1632 mm |
| D ₅₀ = 0.2915 mm | D ₁₀ = 0.1522 mm |
| C _u = 2.700 | C _c = 0.647 |

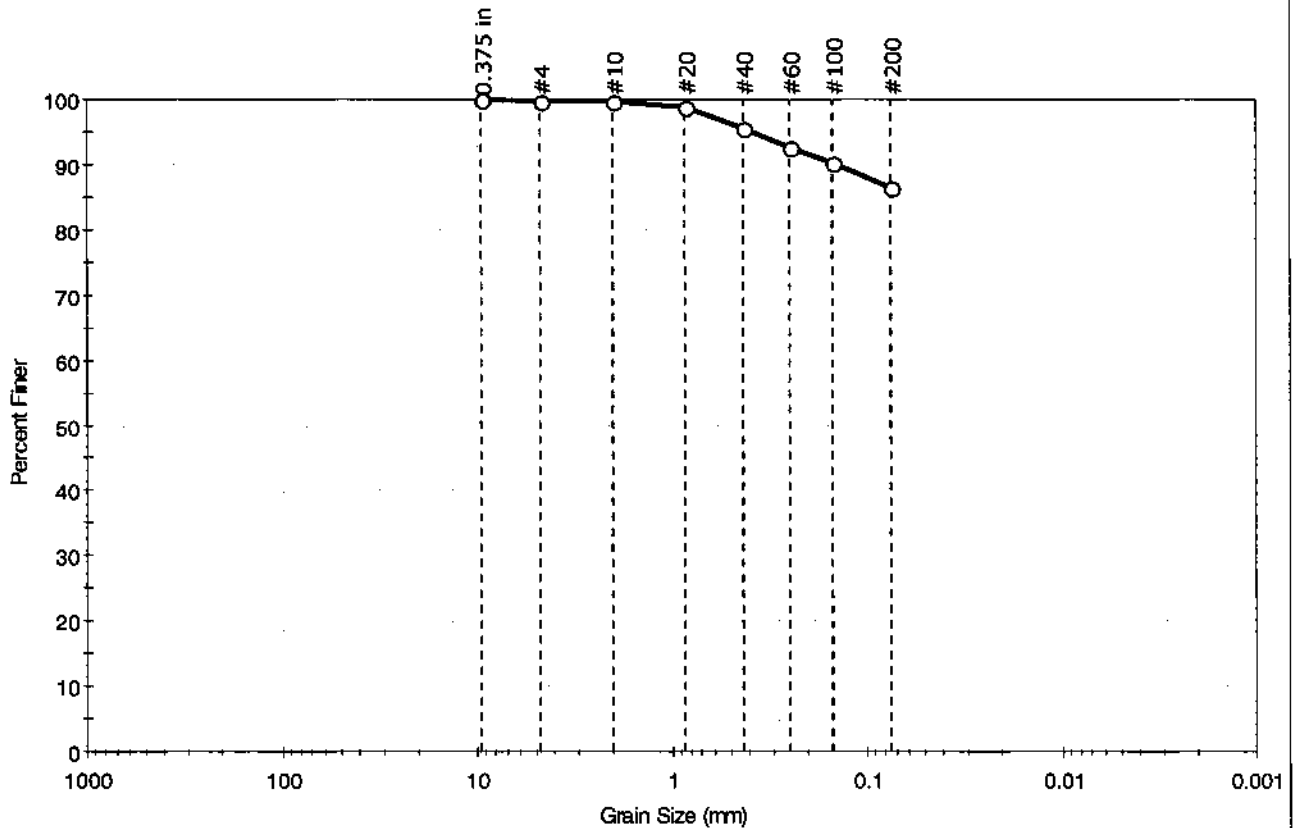
| Classification | |
|-----------------------|-------------------------------------|
| ASTM | Poorly graded sand with gravel (SP) |
| AASHTO | Fine Sand (A-3 (0)) |

| Sample/Test Description | |
|--------------------------------|---------|
| Sand/Gravel Particle Shape : | ROUNDED |
| Sand/Gravel Hardness : | HARD |



| | | | |
|-----------------------------|--|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-3 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228094 | |
| Depth: 8-10 ft | | | |
| Test Comment: --- | Sample Description: Wet, very dark gray clay | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 0.2 | 13.4 | 86.4 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 0.375 in | 9.50 | 100 | | |
| #4 | 4.75 | 100 | | |
| #10 | 2.00 | 100 | | |
| #20 | 0.85 | 99 | | |
| #40 | 0.42 | 95 | | |
| #60 | 0.25 | 93 | | |
| #100 | 0.15 | 90 | | |
| #200 | 0.075 | 86 | | |

| <u>Coefficients</u> | |
|-----------------------|-----------------------|
| D ₈₅ = N/A | D ₃₀ = N/A |
| D ₆₀ = N/A | D ₁₅ = N/A |
| D ₅₀ = N/A | D ₁₀ = N/A |
| C _u = N/A | C _c = N/A |

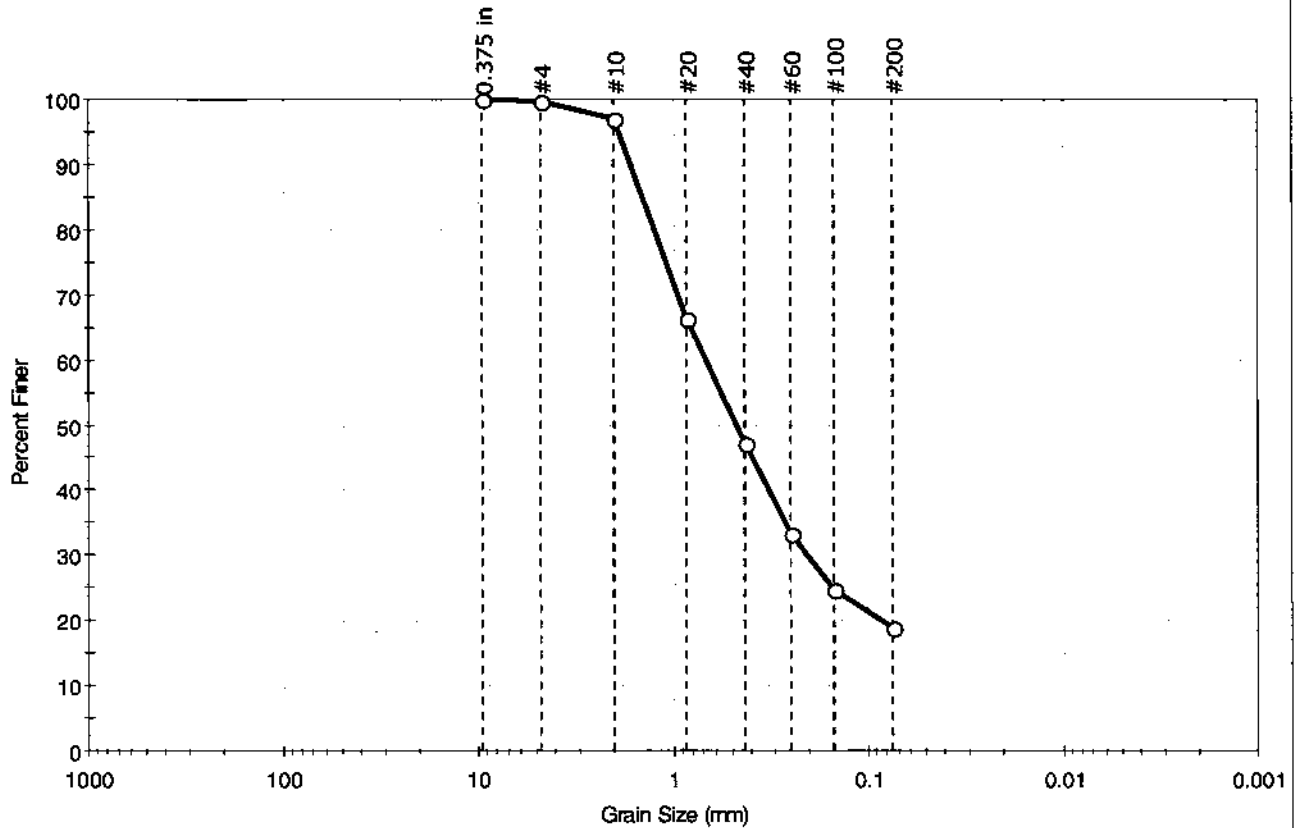
| <u>Classification</u> | |
|-----------------------|-----------------------|
| ASTM | N/A |
| AASHTO | Silty Soils (A-4 (0)) |

| <u>Sample/Test Description</u> |
|----------------------------------|
| Sand/Gravel Particle Shape : --- |
| Sand/Gravel Hardness : --- |



| | | | |
|-----------------------------|---|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-3 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228095 | |
| Depth: 18-20 ft | | | |
| Test Comment: --- | Sample Description: Wet, very dark brown silty sand | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 0.3 | 80.9 | 18.8 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 0.375 in | 9.50 | 100 | | |
| #4 | 4.75 | 100 | | |
| #10 | 2.00 | 97 | | |
| #20 | 0.85 | 66 | | |
| #40 | 0.42 | 47 | | |
| #60 | 0.25 | 33 | | |
| #100 | 0.15 | 25 | | |
| #200 | 0.075 | 19 | | |

| Coefficients | |
|-----------------------------|-----------------------------|
| D ₈₅ = 1.4270 mm | D ₃₀ = 0.2049 mm |
| D ₆₀ = 0.6736 mm | D ₁₅ = N/A |
| D ₅₀ = 0.4693 mm | D ₁₀ = N/A |
| C _u = N/A | C _c = N/A |

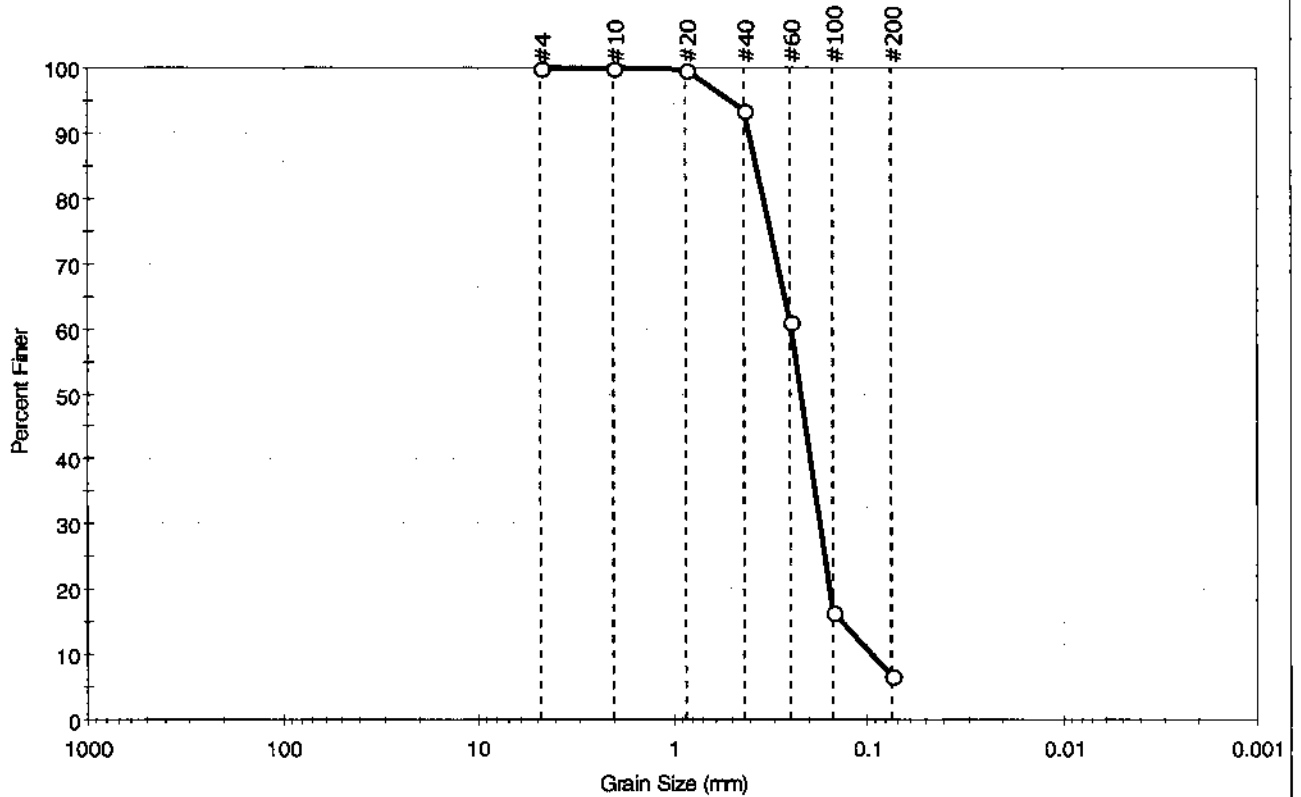
| Classification | |
|-----------------------|--|
| ASTM | N/A |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-b (0)) |

| Sample/Test Description | |
|--------------------------------|-------|
| Sand/Gravel Particle Shape | : --- |
| Sand/Gravel Hardness | : --- |



| | | | |
|---|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-3 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228096 | |
| Depth: 30-32 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, olive sand with silt | | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 0.0 | 93.3 | 6.7 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| #4 | 4.75 | 100 | | |
| #10 | 2.00 | 100 | | |
| #20 | 0.85 | 100 | | |
| #40 | 0.425 | 94 | | |
| #60 | 0.25 | 61 | | |
| #100 | 0.15 | 16 | | |
| #200 | 0.075 | 7 | | |

| Coefficients | |
|-----------------------------|-----------------------------|
| D ₈₅ = 0.3696 mm | D ₃₀ = 0.1752 mm |
| D ₆₀ = 0.2467 mm | D ₁₅ = 0.1358 mm |
| D ₅₀ = 0.2201 mm | D ₁₀ = 0.0949 mm |
| C _u = 2.600 | C _c = 1.311 |

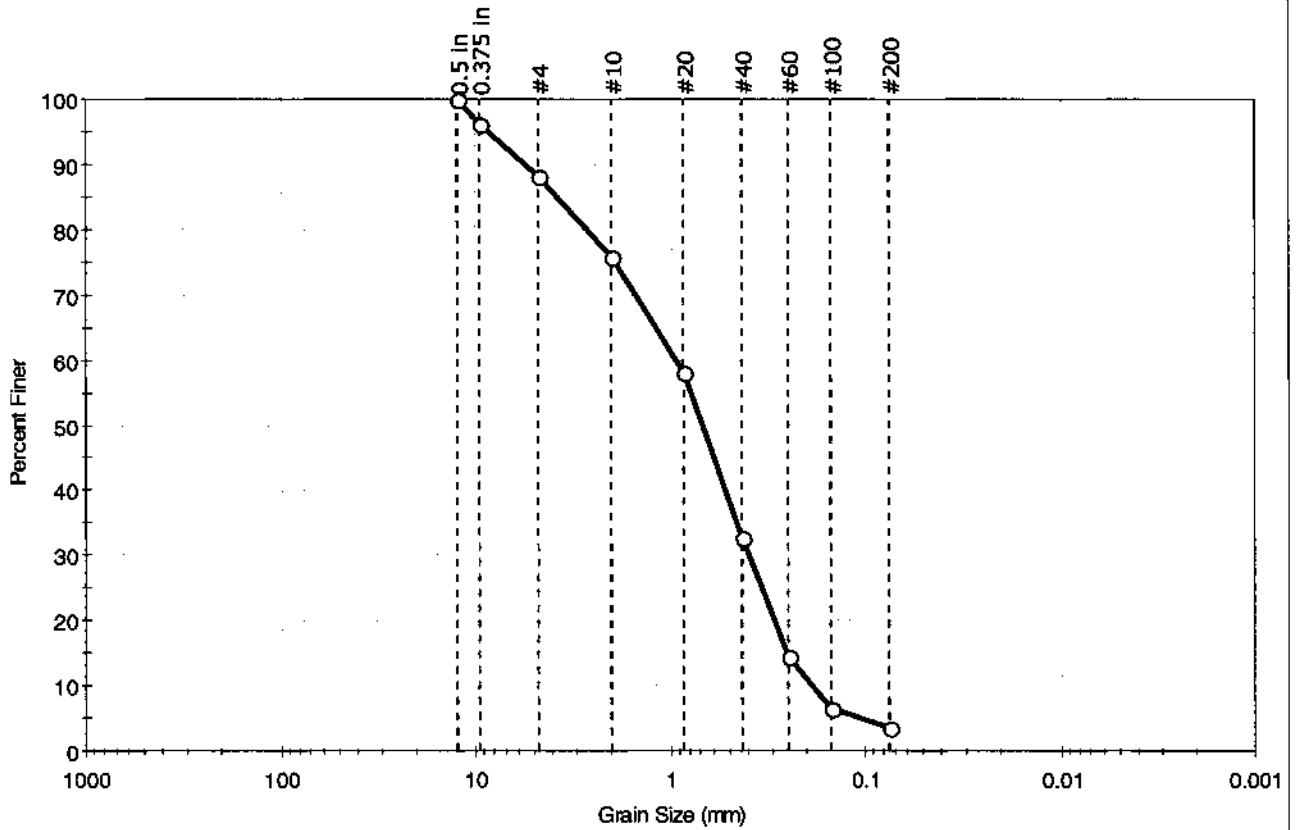
| Classification | |
|----------------|---------------------|
| ASTM | N/A |
| AASHTO | Fine Sand (A-3 (0)) |

| Sample/Test Description |
|----------------------------------|
| Sand/Gravel Particle Shape : --- |
| Sand/Gravel Hardness : --- |



| | | | |
|---|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-3 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228097 | |
| Depth: 38-40 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, grayish green sand | | | |
| Sample Comment: | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 11.7 | 84.8 | 3.5 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 0.5 in | 12.50 | 100 | | |
| 0.375 in | 9.50 | 96 | | |
| #4 | 4.75 | 88 | | |
| #10 | 2.00 | 76 | | |
| #20 | 0.85 | 58 | | |
| #40 | 0.42 | 33 | | |
| #60 | 0.25 | 14 | | |
| #100 | 0.15 | 7 | | |
| #200 | 0.075 | 4 | | |

| Coefficients | |
|-----------------------------|-----------------------------|
| D ₈₅ = 3.7865 mm | D ₃₀ = 0.3926 mm |
| D ₆₀ = 0.9368 mm | D ₁₅ = 0.2541 mm |
| D ₅₀ = 0.6828 mm | D ₁₀ = 0.1879 mm |
| C _u = 4.986 | C _c = 0.876 |

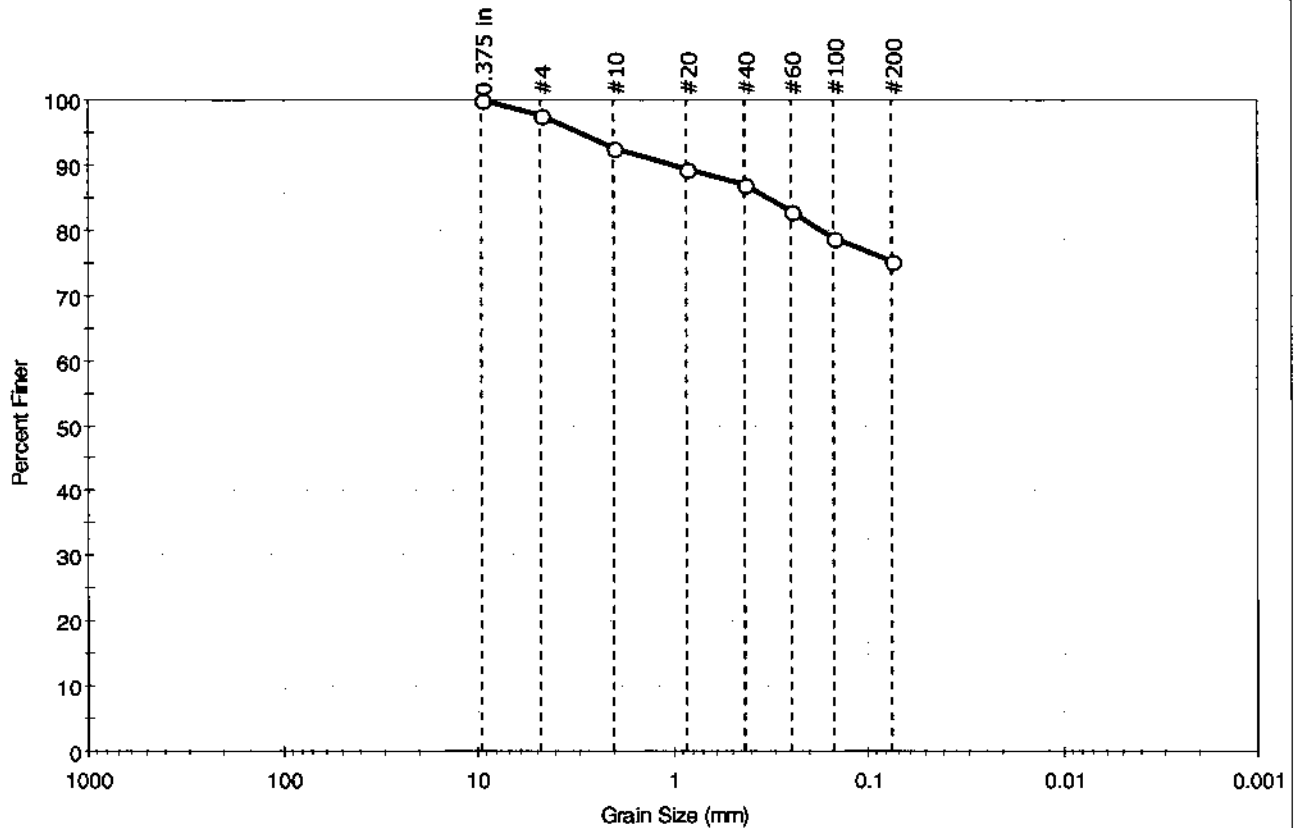
| Classification | |
|----------------|--|
| ASTM | Poorly graded sand (SP) |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-b (0)) |

| Sample/Test Description | |
|------------------------------|---------|
| Sand/Gravel Particle Shape : | ROUNDED |
| Sand/Gravel Hardness : | HARD |



| | | |
|--|--|-----------------|
| Client: Apex Companies, LLC | Project No: GTX-11493 | |
| Project: LHCC | Tested By: jbr | |
| Location: New Bedford, MA | Sample Type: bag | Checked By: jdt |
| Boring ID: B-4 | Test Date: 01/30/12 | Test Id: 228109 |
| Sample ID: A-2011-CAD4 | Test Comment: --- | |
| Depth: 2-4 ft | Sample Description: Wet, very dark gray clay with sand | |
| Sample Comment: Shells noted in sample | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 2.3 | 22.5 | 75.2 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 0.375 in | 9.50 | 100 | | |
| #4 | 4.75 | 98 | | |
| #10 | 2.00 | 93 | | |
| #20 | 0.85 | 89 | | |
| #40 | 0.42 | 87 | | |
| #60 | 0.25 | 83 | | |
| #100 | 0.15 | 79 | | |
| #200 | 0.075 | 75 | | |

Coefficients

| | |
|-----------------------------|-----------------------|
| D ₈₅ = 0.3290 mm | D ₃₀ = N/A |
| D ₆₀ = N/A | D ₁₅ = N/A |
| D ₅₀ = N/A | D ₁₀ = N/A |
| C _u = N/A | C _c = N/A |

Classification

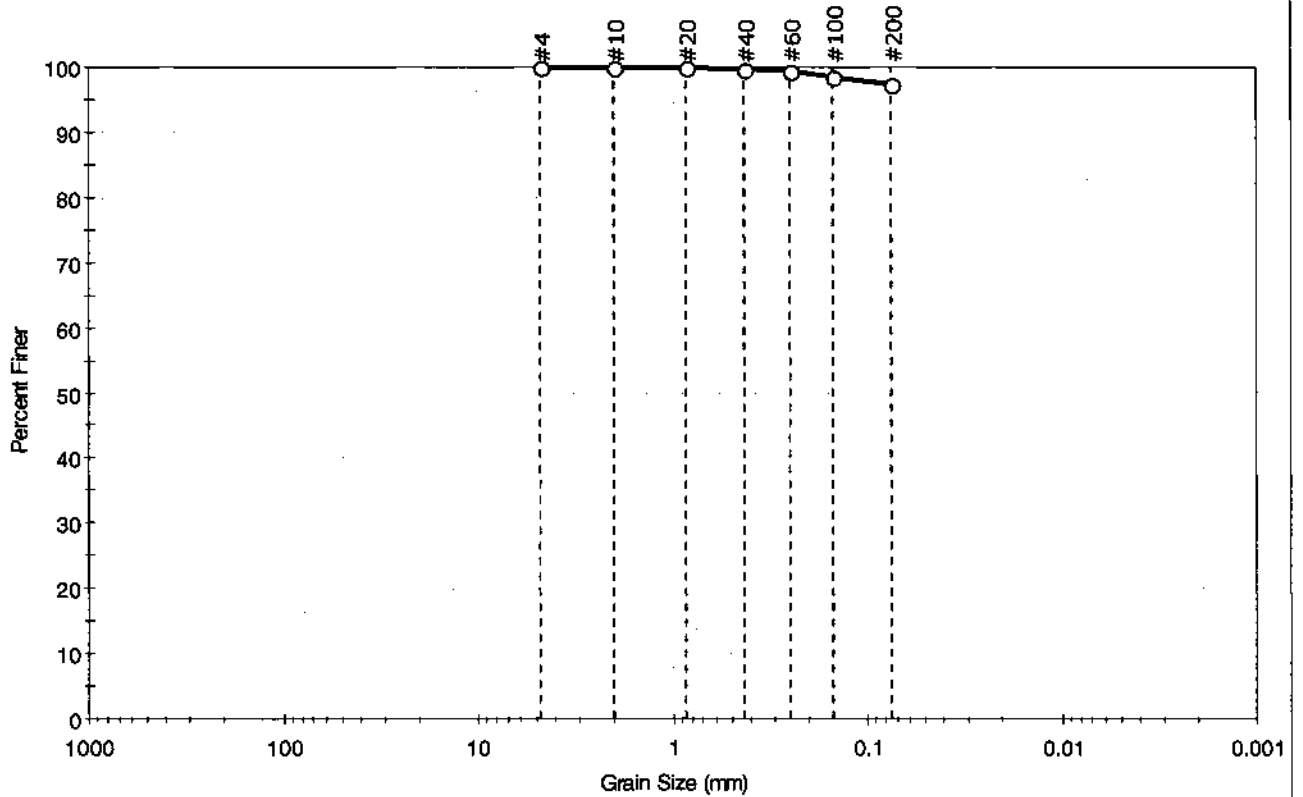
| | |
|--------|-----------------------|
| ASTM | N/A |
| AASHTO | Silty Soils (A-4 (0)) |

Sample/Test Description
 Sand/Gravel Particle Shape : ROUNDED
 Sand/Gravel Hardness : HARD



| | | | |
|--------------------------------------|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-4 | Sample Type: bag | Tested By: jbr | Checked By: n/a |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228110 | |
| Depth: 22-24 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, gray silt | | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| | | | |
|----------|----------|--------|--------------------|
| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
| — | 0.0 | 2.8 | 97.2 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| #4 | 4.75 | 100 | | |
| #10 | 2.00 | 100 | | |
| #20 | 0.85 | 100 | | |
| #40 | 0.42 | 100 | | |
| #60 | 0.25 | 99 | | |
| #100 | 0.15 | 96 | | |
| #200 | 0.075 | 97 | | |

| Coefficients | |
|-----------------------|-----------------------|
| D ₈₅ = N/A | D ₃₀ = N/A |
| D ₆₀ = N/A | D ₁₅ = N/A |
| D ₅₀ = N/A | D ₁₀ = N/A |
| C _u = N/A | C _c = N/A |

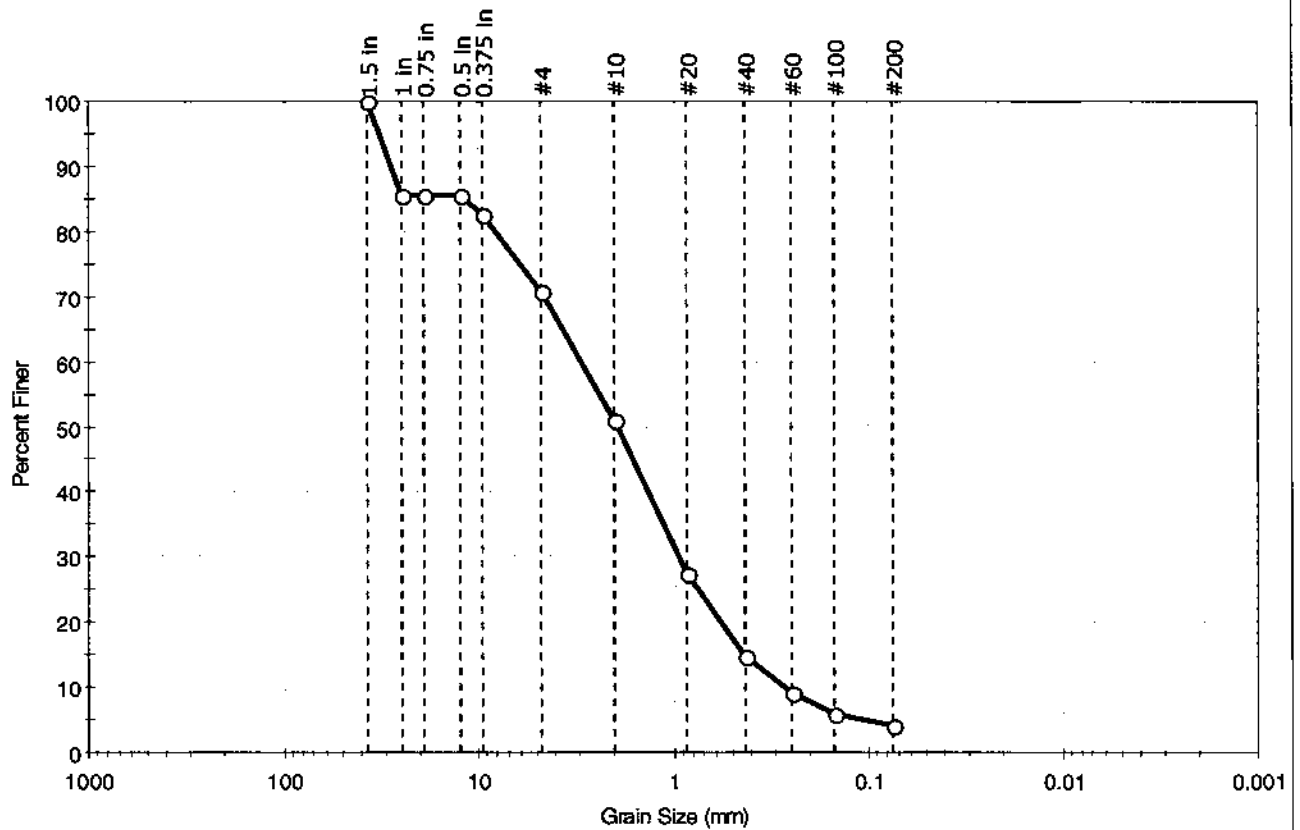
| Classification | |
|----------------|-----------------------|
| ASTM | N/A |
| AASHTO | Silty Soils (A-4 (0)) |

| Sample/Test Description |
|----------------------------------|
| Sand/Gravel Particle Shape : --- |
| Sand/Gravel Hardness : --- |



| | | | |
|--|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-4 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228111 | |
| Depth: 41-43 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, gray sand with gravel | | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| | | | |
|----------|----------|--------|--------------------|
| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
| — | 29.1 | 66.8 | 4.1 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 1.5 in | 37.50 | 100 | | |
| 1 in | 25.00 | 86 | | |
| 0.75 in | 19.00 | 86 | | |
| 0.5 in | 12.50 | 86 | | |
| 0.375 in | 9.50 | 83 | | |
| #4 | 4.75 | 71 | | |
| #10 | 2.00 | 51 | | |
| #20 | 0.85 | 27 | | |
| #40 | 0.42 | 15 | | |
| #60 | 0.25 | 9 | | |
| #100 | 0.15 | 6 | | |
| #200 | 0.075 | 4 | | |

| Coefficients | |
|------------------------------|-----------------------------|
| D ₈₅ = 11.7791 mm | D ₃₀ = 0.9321 mm |
| D ₆₀ = 2.9488 mm | D ₁₅ = 0.4286 mm |
| D ₅₀ = 1.9220 mm | D ₁₀ = 0.2721 mm |
| C _u = 10.837 | C _c = 1.083 |

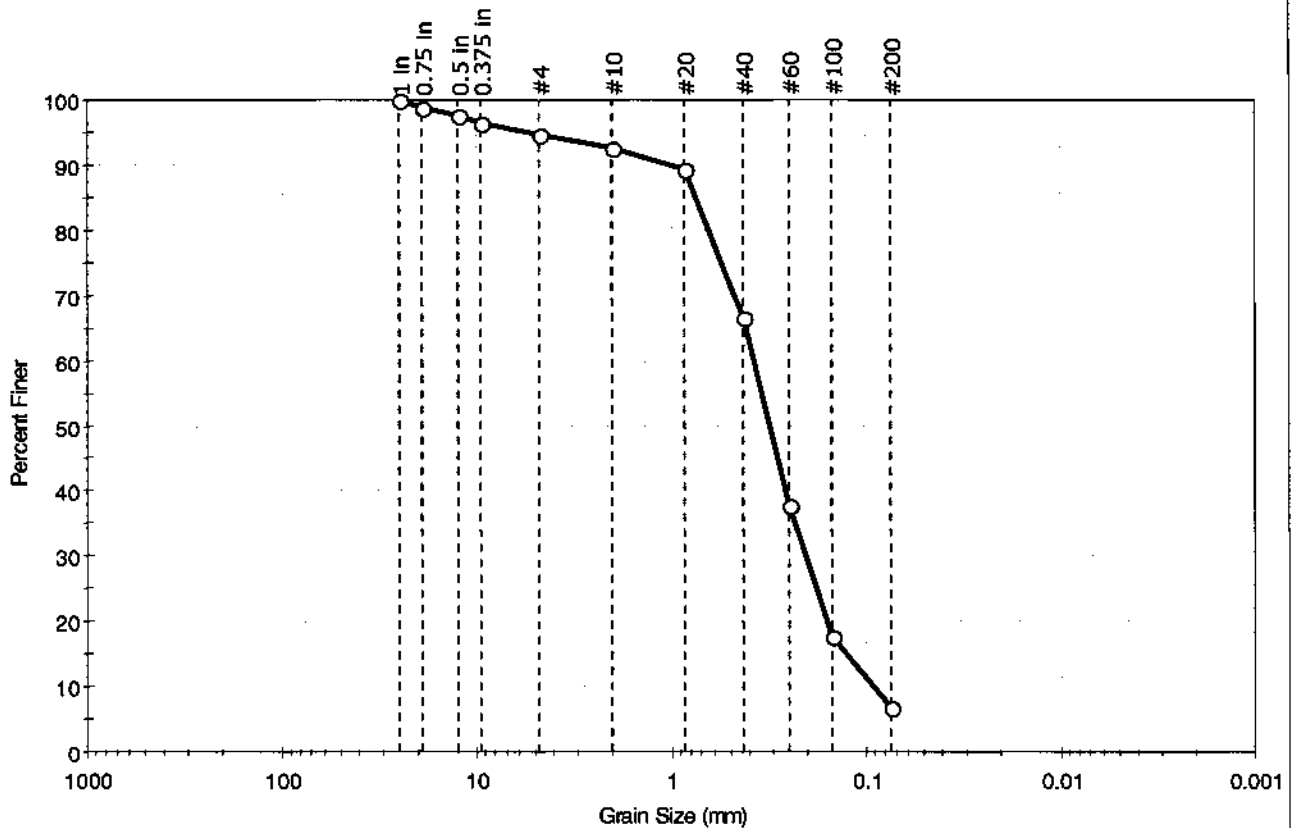
| Classification | |
|----------------|--|
| ASTM | Well-graded sand with gravel (SW) |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-b (0)) |

| Sample/Test Description | |
|----------------------------|-----------|
| Sand/Gravel Particle Shape | : ROUNDED |
| Sand/Gravel Hardness | : HARD |



| | | | |
|-----------------------------|--|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-5 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228102 | |
| Depth: 0-2 ft | | | |
| Test Comment: --- | Sample Description: Moist, very dark gray sand with silt | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| | | | |
|----------|----------|--------|--------------------|
| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
| — | 5.3 | 88.0 | 6.7 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 1 in | 25.00 | 100 | | |
| 0.75 in | 19.00 | 99 | | |
| 0.5 in | 12.50 | 98 | | |
| 0.375 in | 9.50 | 97 | | |
| #4 | 4.75 | 95 | | |
| #10 | 2.00 | 93 | | |
| #20 | 0.85 | 89 | | |
| #40 | 0.42 | 67 | | |
| #60 | 0.25 | 38 | | |
| #100 | 0.15 | 18 | | |
| #200 | 0.075 | 7 | | |

| Coefficients | |
|-----------------------------|-----------------------------|
| D ₈₅ = 0.7440 mm | D ₃₀ = 0.2056 mm |
| D ₆₀ = 0.3765 mm | D ₁₅ = 0.1265 mm |
| D ₅₀ = 0.3135 mm | D ₁₀ = 0.0924 mm |
| C _u = 4.075 | C _c = 1.215 |

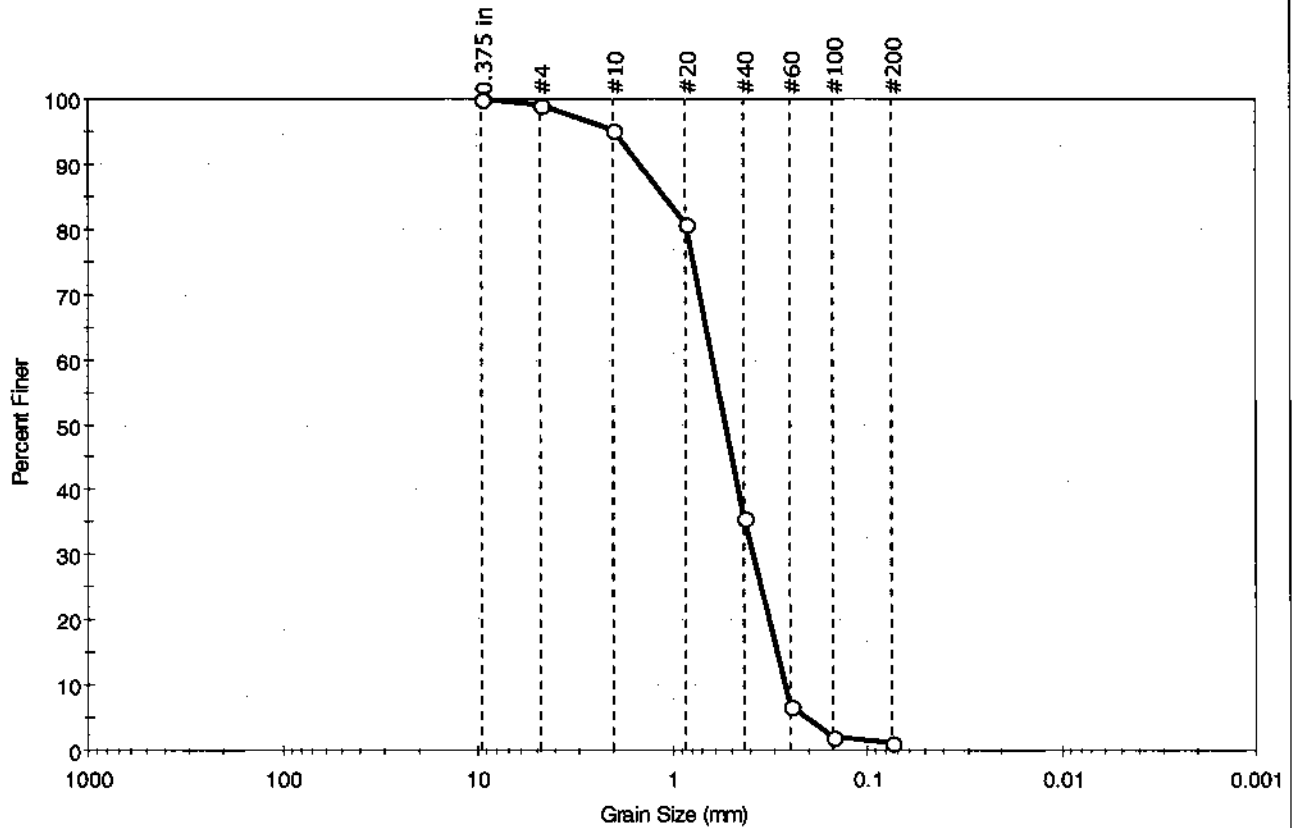
| Classification | |
|----------------|---------------------|
| ASTM | N/A |
| AASHTO | Fine Sand (A-3 (0)) |

| Sample/Test Description |
|---|
| Sand/Gravel Particle Shape : ROUNDED |
| Sand/Gravel Hardness : HARD |



| | | | |
|-----------------------------|---------------------------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-5 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 02/02/12 | Test Id: 228103 | |
| Depth: 8-10 ft | | | |
| Test Comment: --- | Sample Description: Moist, brown sand | Sample Comment: --- | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| | | | |
|----------|----------|--------|--------------------|
| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
| --- | 0.8 | 98.0 | 1.2 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 0.375 in | 9.50 | 100 | | |
| #4 | 4.75 | 99 | | |
| #10 | 2.00 | 95 | | |
| #20 | 0.85 | 81 | | |
| #40 | 0.42 | 36 | | |
| #60 | 0.25 | 7 | | |
| #100 | 0.15 | 2 | | |
| #200 | 0.075 | 1 | | |

| Coefficients | |
|-----------------------------|-----------------------------|
| D ₈₅ = 1.0883 mm | D ₃₀ = 0.3831 mm |
| D ₆₀ = 0.6175 mm | D ₁₅ = 0.2904 mm |
| D ₅₀ = 0.5297 mm | D ₁₀ = 0.2648 mm |
| C _u = 2.332 | C _c = 0.898 |

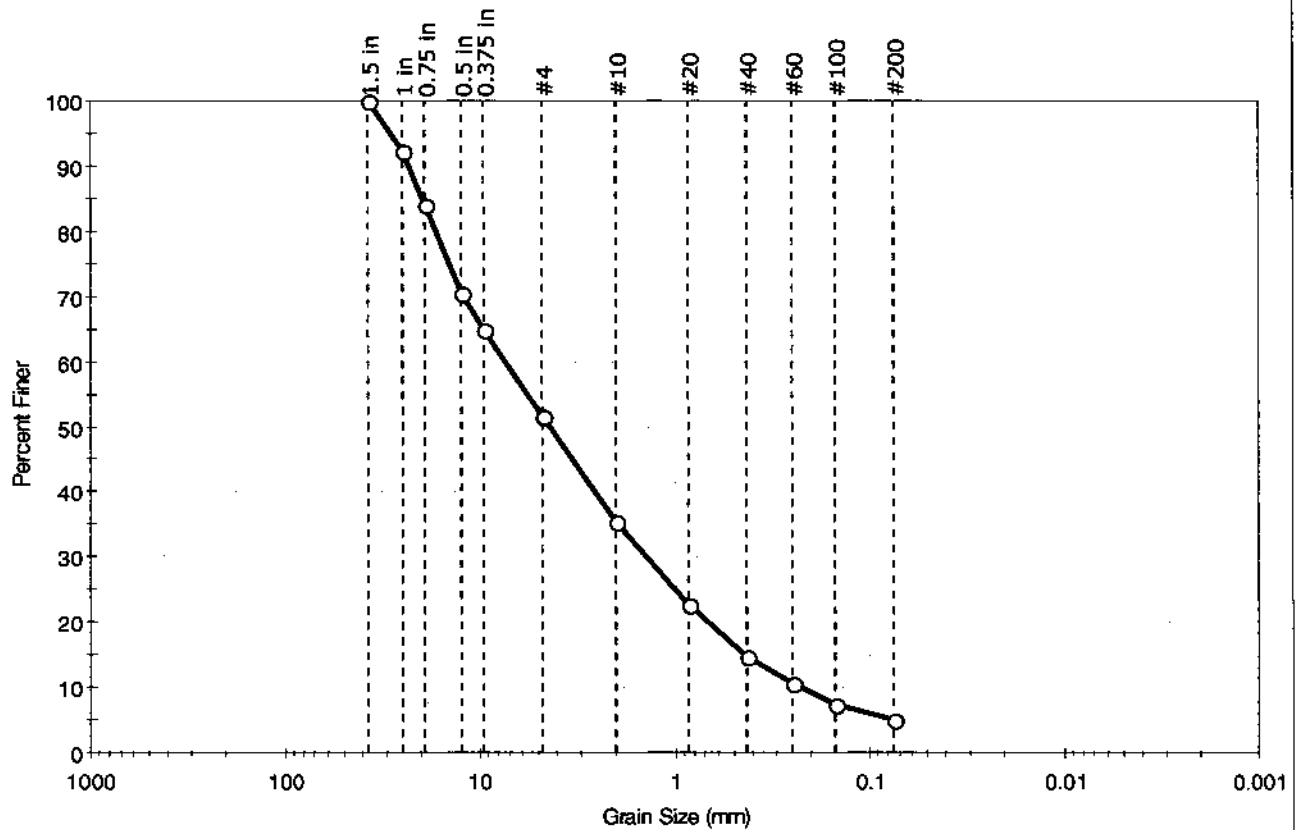
| Classification | |
|----------------|--|
| ASTM | Poorly graded sand (SP) |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-b (0)) |

| Sample/Test Description | |
|----------------------------|-------|
| Sand/Gravel Particle Shape | : --- |
| Sand/Gravel Hardness | : --- |



| | | | |
|-----------------------------|--|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-5 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID:A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228104 | |
| Depth : 25-27 ft | | | |
| Test Comment: --- | Sample Description: Moist, olive gravel with silt and sand | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| %Cobble | %Gravel | %Sand | %Silt & Clay Size |
|---------|---------|-------|-------------------|
| — | 48.5 | 46.4 | 5.1 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 1.5 in | 37.50 | 100 | | |
| 1 in | 25.00 | 92 | | |
| 0.75 in | 19.00 | 84 | | |
| 0.5 in | 12.50 | 70 | | |
| 0.375 in | 9.50 | 65 | | |
| #4 | 4.75 | 51 | | |
| #10 | 2.00 | 36 | | |
| #20 | 0.85 | 23 | | |
| #40 | 0.42 | 15 | | |
| #60 | 0.25 | 11 | | |
| #100 | 0.15 | 7 | | |
| #200 | 0.075 | 5 | | |

| Coefficients | |
|------------------------------|-----------------------------|
| D ₈₅ = 19.6765 mm | D ₃₀ = 1.3863 mm |
| D ₆₀ = 7.4045 mm | D ₁₅ = 0.4328 mm |
| D ₅₀ = 4.3829 mm | D ₁₀ = 0.2306 mm |
| C _u = 32.110 | C _c = 1.126 |

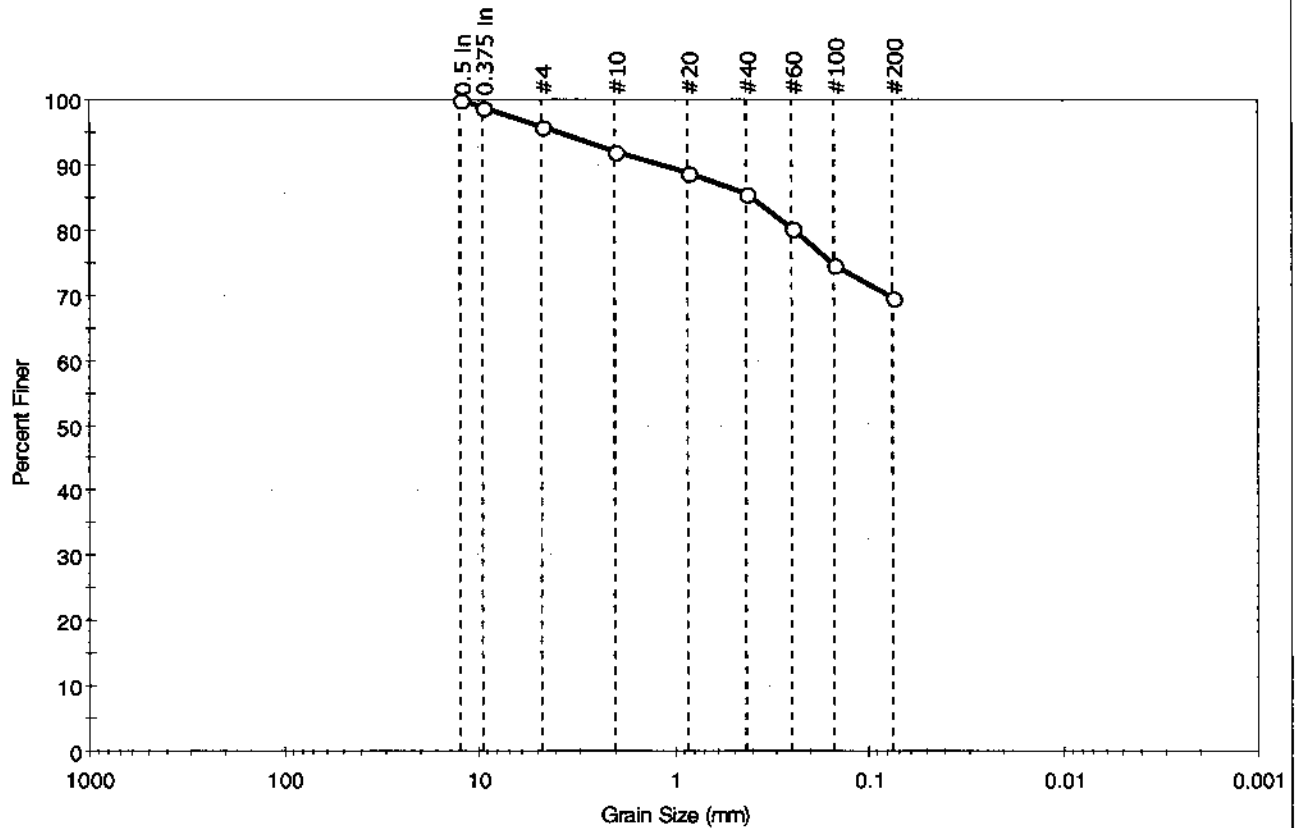
| Classification | |
|----------------|--|
| ASTM | N/A |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-a (0)) |

| Sample/Test Description | |
|----------------------------|-----------|
| Sand/Gravel Particle Shape | : ROUNDED |
| Sand/Gravel Hardness | : HARD |



| | | | |
|--|---|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-6 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/27/12 | Test Id: 228089 | |
| Depth: 2-4 ft | | | |
| Test Comment: --- | Sample Description: Wet, very dark grayish brown sandy silt | | |
| Sample Comment: Shells noted in sample | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 4.2 | 26.3 | 69.5 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 0.5 in | 12.50 | 100 | | |
| 0.375 in | 9.50 | 99 | | |
| #4 | 4.75 | 96 | | |
| #10 | 2.00 | 92 | | |
| #20 | 0.85 | 89 | | |
| #40 | 0.42 | 85 | | |
| #60 | 0.25 | 80 | | |
| #100 | 0.15 | 75 | | |
| #200 | 0.075 | 70 | | |

| Coefficients | |
|-----------------------------|-----------------------|
| D ₈₅ = 0.4072 mm | D ₃₀ = N/A |
| D ₆₀ = N/A | D ₁₅ = N/A |
| D ₅₀ = N/A | D ₁₀ = N/A |
| C _u = N/A | C _c = N/A |

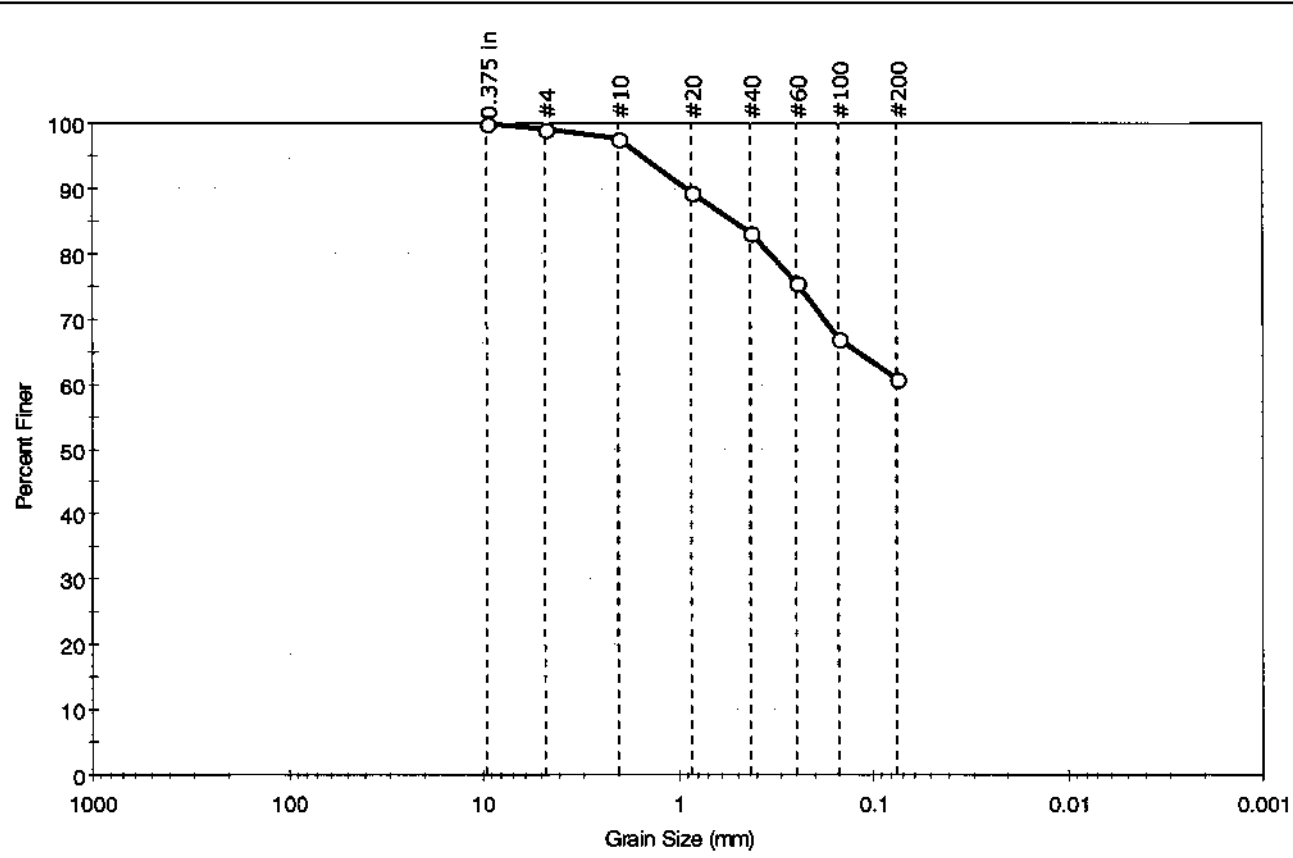
| Classification | |
|-----------------------|-----------------------|
| ASTM | N/A |
| AASHTO | Silty Soils (A-4 (0)) |

| Sample/Test Description |
|---|
| Sand/Gravel Particle Shape : ROUNDED |
| Sand/Gravel Hardness : HARD |



| | | | |
|-----------------------------|---|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-6 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228090 | |
| Depth: 8-10 ft | | | |
| Test Comment: --- | Sample Description: Wet, grayish brown sandy silt | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| | | | |
|----------|----------|--------|--------------------|
| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
| — | 0.9 | 38.4 | 60.7 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 0.375 in | 9.50 | 100 | | |
| #4 | 4.75 | 99 | | |
| #10 | 2.00 | 98 | | |
| #20 | 0.85 | 89 | | |
| #40 | 0.42 | 83 | | |
| #60 | 0.25 | 76 | | |
| #100 | 0.15 | 67 | | |
| #200 | 0.075 | 61 | | |

| Coefficients | |
|-----------------------------|-----------------------|
| D ₈₅ = 0.5196 mm | D ₃₀ = N/A |
| D ₆₀ = N/A | D ₁₅ = N/A |
| D ₅₀ = N/A | D ₁₀ = N/A |
| C _u = N/A | C _c = N/A |

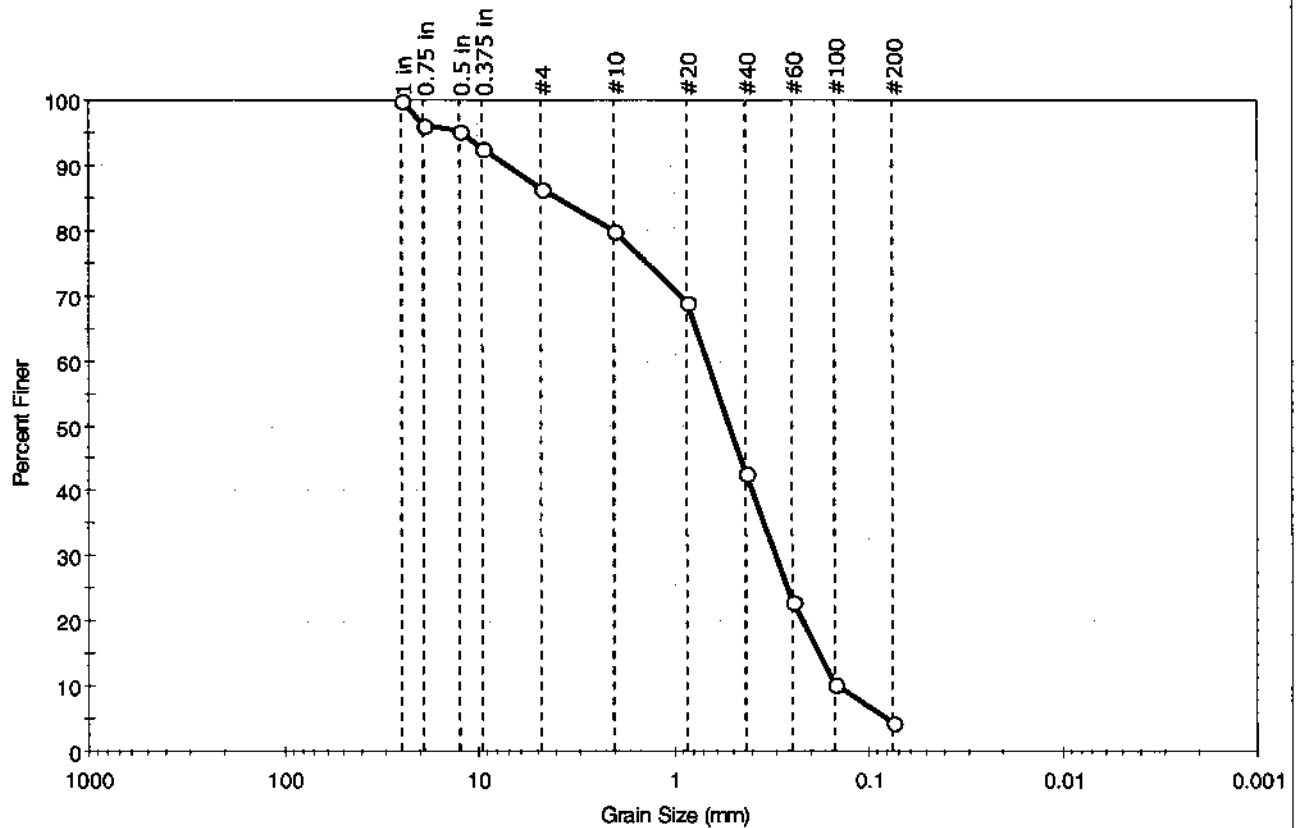
| Classification | |
|----------------|-----------------------|
| ASTM | N/A |
| AASHTO | Silty Soils (A-4 (0)) |

| Sample/Test Description |
|----------------------------------|
| Sand/Gravel Particle Shape : --- |
| Sand/Gravel Hardness : --- |



| | | | |
|---------------------------------------|---------------------|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-6 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228091 | |
| Depth: 36-38 ft | | | |
| Test Comment: --- | | | |
| Sample Description: Moist, olive sand | | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 13.6 | 82.0 | 4.4 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 1 in | 25.00 | 100 | | |
| 0.75 in | 19.00 | 96 | | |
| 0.5 in | 12.50 | 95 | | |
| 0.375 in | 9.50 | 93 | | |
| #4 | 4.75 | 86 | | |
| #10 | 2.00 | 80 | | |
| #20 | 0.85 | 69 | | |
| #40 | 0.42 | 43 | | |
| #60 | 0.25 | 23 | | |
| #100 | 0.15 | 10 | | |
| #200 | 0.075 | 4 | | |

| Coefficients | |
|-----------------------------|-----------------------------|
| D ₈₅ = 3.9244 mm | D ₃₀ = 0.3023 mm |
| D ₆₀ = 0.6690 mm | D ₁₅ = 0.1808 mm |
| D ₅₀ = 0.5148 mm | D ₁₀ = 0.1427 mm |
| C _u = 4.688 | C _c = 0.957 |

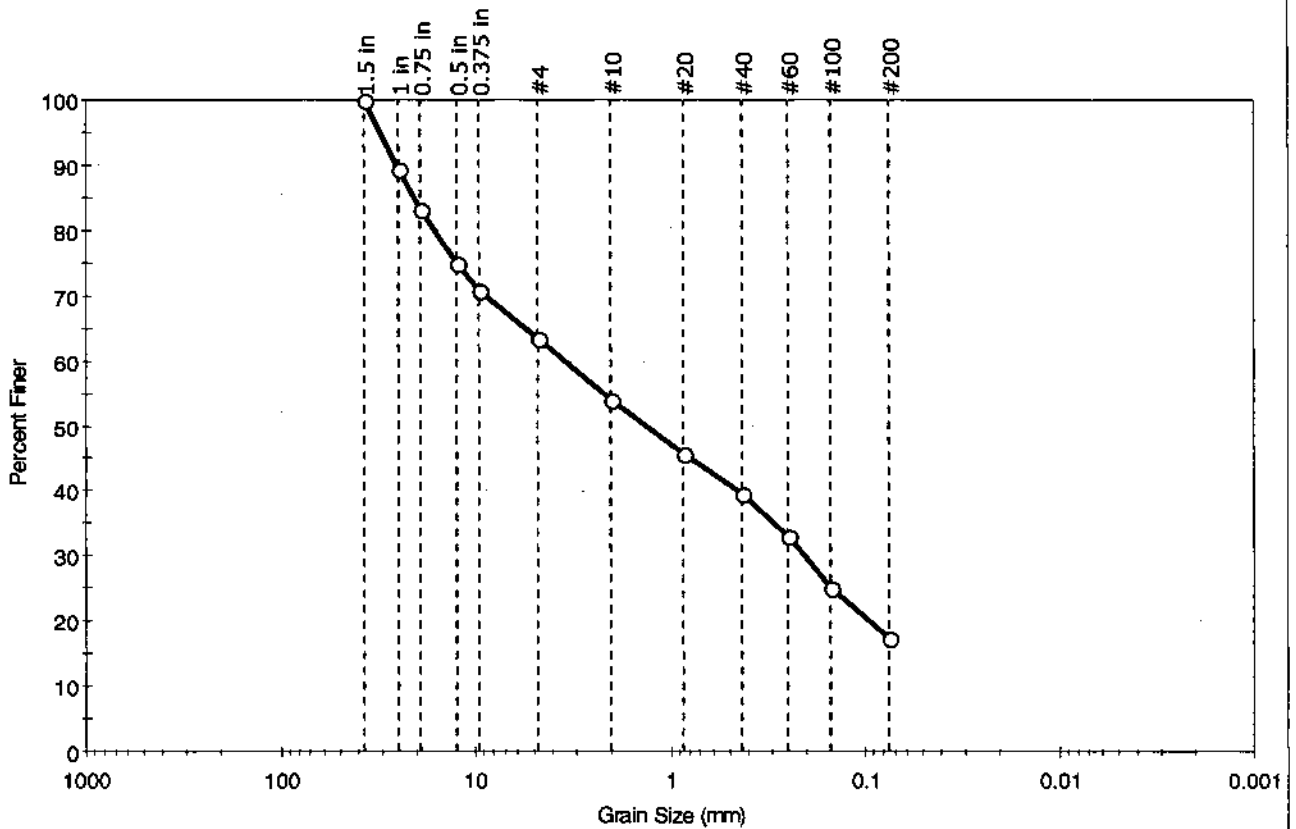
| Classification | |
|----------------|--|
| ASTM | Poorly graded sand (SP) |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-b (0)) |

| Sample/Test Description | |
|------------------------------|---------|
| Sand/Gravel Particle Shape : | ROUNDED |
| Sand/Gravel Hardness : | HARD |



| | | | |
|-----------------------------|---|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-6 | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228092 | |
| Depth: 47-49 ft | | | |
| Test Comment: --- | Sample Description: Moist, yellowish brown silty sand with gravel | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| | | | |
|----------|----------|--------|--------------------|
| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
| — | 36.8 | 45.7 | 17.5 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 1.5 in | 37.50 | 100 | | |
| 1 in | 25.00 | 89 | | |
| 0.75 in | 19.00 | 83 | | |
| 0.5 in | 12.50 | 75 | | |
| 0.375 in | 9.50 | 71 | | |
| #4 | 4.75 | 63 | | |
| #10 | 2.00 | 54 | | |
| #20 | 0.85 | 46 | | |
| #40 | 0.42 | 39 | | |
| #60 | 0.25 | 33 | | |
| #100 | 0.15 | 25 | | |
| #200 | 0.075 | 18 | | |

| Coefficients | |
|------------------------------|-----------------------------|
| D ₈₅ = 20.5574 mm | D ₃₀ = 0.2053 mm |
| D ₆₀ = 3.5043 mm | D ₁₅ = N/A |
| D ₅₀ = 1.3268 mm | D ₁₀ = N/A |
| C _u = N/A | C _c = N/A |

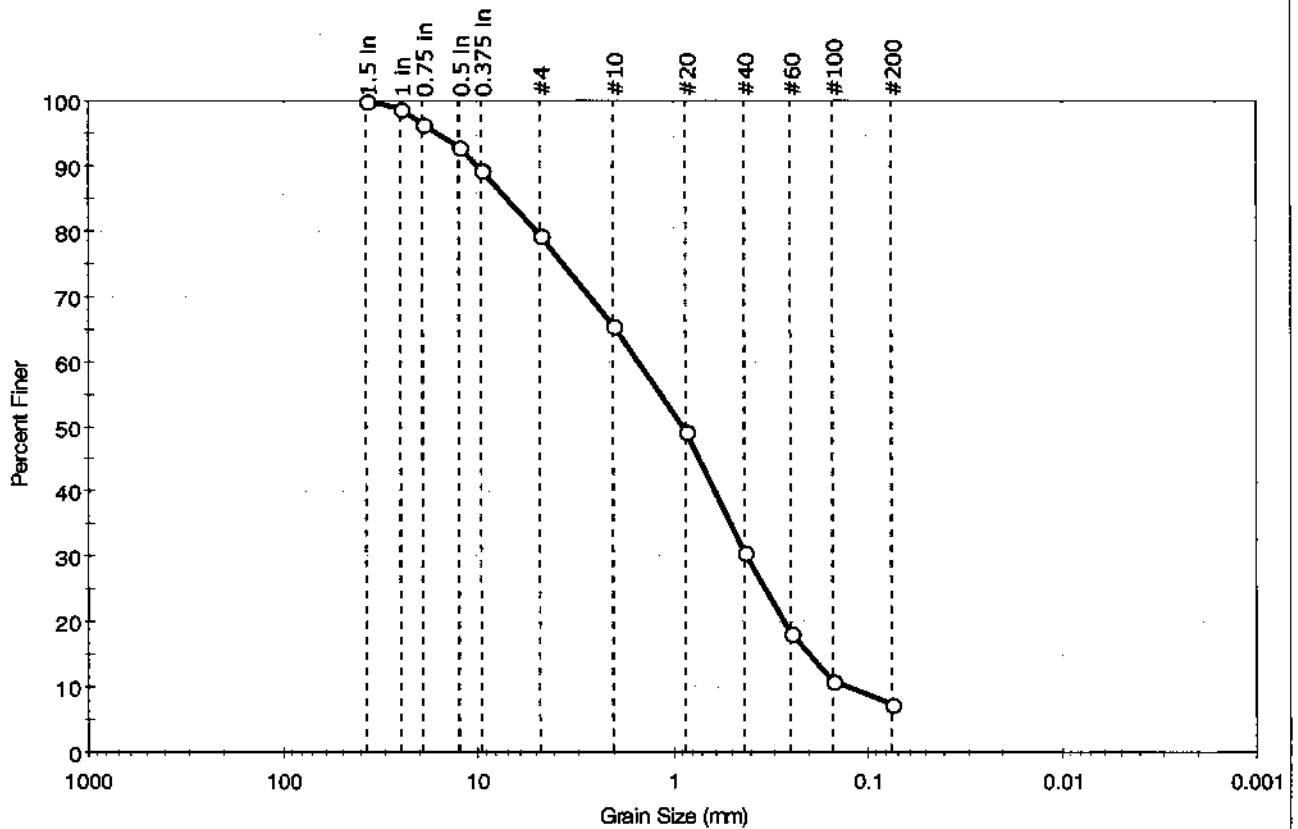
| Classification | |
|----------------|--|
| ASTM | N/A |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-b (0)) |

| Sample/Test Description | |
|----------------------------|-----------|
| Sand/Gravel Particle Shape | : ROUNDED |
| Sand/Gravel Hardness | : HARD |



| | | | |
|-----------------------------|--|---------------------------|-----------------------|
| Client: Apex Companies, LLC | Project: LHCC | Location: New Bedford, MA | Project No: GTX-11493 |
| Boring ID: B-6 (COMP) | Sample Type: bag | Tested By: jbr | Checked By: jdt |
| Sample ID: A-2011-CAD4 | Test Date: 01/30/12 | Test Id: 228093 | |
| Depth: 20-44 ft | | | |
| Test Comment: --- | Sample Description: Moist, yellowish brown sand with silt and gravel | | |
| Sample Comment: --- | | | |

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



| % Cobble | % Gravel | % Sand | % Silt & Clay Size |
|----------|----------|--------|--------------------|
| — | 20.7 | 72.0 | 7.3 |

| Sieve Name | Sieve Size, mm | Percent Finer | Spec. Percent | Complies |
|------------|----------------|---------------|---------------|----------|
| 1.5 in | 37.50 | 100 | | |
| 1 in | 25.00 | 99 | | |
| 0.75 in | 19.00 | 96 | | |
| 0.5 in | 12.50 | 93 | | |
| 0.375 in | 9.50 | 89 | | |
| #4 | 4.75 | 79 | | |
| #10 | 2.00 | 65 | | |
| #20 | 0.85 | 49 | | |
| #40 | 0.42 | 31 | | |
| #60 | 0.25 | 18 | | |
| #100 | 0.15 | 11 | | |
| #200 | 0.075 | 7 | | |

| Coefficients | |
|-----------------------------|-----------------------------|
| D ₈₅ = 7.0701 mm | D ₃₀ = 0.4124 mm |
| D ₆₀ = 1.5013 mm | D ₁₅ = 0.1985 mm |
| D ₅₀ = 0.8807 mm | D ₁₀ = 0.1262 mm |
| C _u = 11.896 | C _c = 0.898 |

| Classification | |
|----------------|--|
| ASTM | N/A |
| AASHTO | Stone Fragments, Gravel and Sand (A-1-b (0)) |

| Sample/Test Description | |
|----------------------------|-----------|
| Sand/Gravel Particle Shape | : ROUNDED |
| Sand/Gravel Hardness | : HARD |



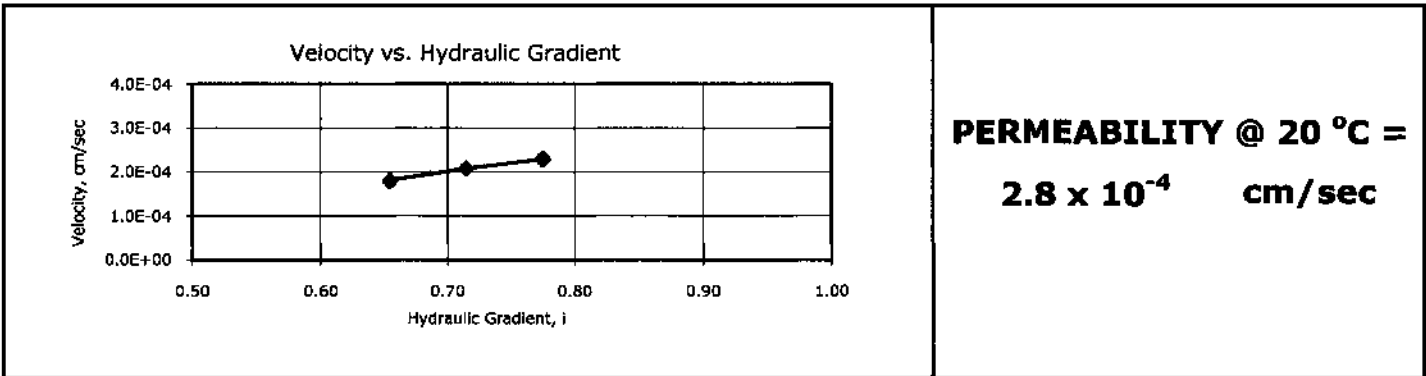
| | | | |
|---------------------|---|-------------|-----|
| Client: | Apex Companies LLC | | |
| Project Name: | LHCC | | |
| Project Location: | New Bedford, MA | | |
| GTX #: | 11493 | | |
| Start Date: | 01/30/12 | Tested By: | rm |
| End Date: | 02/01/12 | Checked By: | jdt |
| Boring #: | B-1 (COMP) | | |
| Sample #: | A-2011-CAD4 | | |
| Depth: | 20-32 ft. | | |
| Visual Description: | Moist, light grayish brown silt with sand | | |

Permeability of Granular Soils (Constant Head) by ASTM D 2434

| | | | |
|----------------------------------|---|------|-----|
| Sample Type: | Remolded | | |
| Sample Information: | Maximum Dry Density: | --- | pcf |
| | Optimum Moisture Content: | --- | % |
| | Compaction Test Method: | --- | |
| | Classification (ASTM D 2487): | --- | |
| | Assumed Specific Gravity: | 2.65 | |
| Sample Preparation / Test Setup: | Test specimen compacted with maximum effort at air-dried moisture content. Material >3/8-inch screened out of sample prior to testing (0% of sample). 5.27 lb surcharge | | |

| Parameter | Initial | Final |
|-------------------------|---------|-------|
| Height, in | 4.03 | 4.03 |
| Diameter, in | 3.98 | 3.98 |
| Area, in ² | 12.4 | 12.4 |
| Volume, in ³ | 50.1 | 50.1 |
| Mass, g | 1289 | 1606 |
| Bulk Density, pcf | 97.9 | 122 |
| Moisture Content, % | 1.3 | 26.2 |
| Dry Density, pcf | 96.7 | 96.7 |
| Degree of Saturation, % | --- | 97.6 |
| Void Ratio, e | --- | 0.71 |

| Date | Reading # | Volume of Flow, cc | Time of Flow, sec | Flow Rate, cc/sec | Gradient | Permeability, cm/sec | Temp., °C | Correction Factor | Permeability @ 20 °C, cm/sec |
|------|-----------|--------------------|-------------------|-------------------|----------|----------------------|-----------|-------------------|------------------------------|
| 1/31 | 1 | 0.9 | 60 | 0.01 | 0.66 | 2.7E-04 | 20.7 | 0.983 | 2.7E-04 |
| 1/31 | 2 | 0.9 | 60 | 0.01 | 0.66 | 2.7E-04 | 20.7 | 0.983 | 2.7E-04 |
| 1/31 | 3 | 0.9 | 60 | 0.01 | 0.66 | 2.8E-04 | 20.7 | 0.983 | 2.7E-04 |
| 1/31 | 4 | 1.0 | 60 | 0.02 | 0.72 | 2.9E-04 | 20.7 | 0.983 | 2.9E-04 |
| 1/31 | 5 | 1.0 | 60 | 0.02 | 0.72 | 2.9E-04 | 20.7 | 0.983 | 2.9E-04 |
| 1/31 | 6 | 1.0 | 60 | 0.02 | 0.72 | 2.9E-04 | 20.7 | 0.983 | 2.9E-04 |
| 1/31 | 7 | 1.1 | 60 | 0.02 | 0.78 | 3.0E-04 | 20.7 | 0.983 | 2.9E-04 |
| 1/31 | 8 | 1.1 | 60 | 0.02 | 0.78 | 3.0E-04 | 20.7 | 0.983 | 2.9E-04 |
| 1/31 | 9 | 1.1 | 60 | 0.02 | 0.78 | 3.0E-04 | 20.7 | 0.983 | 2.9E-04 |





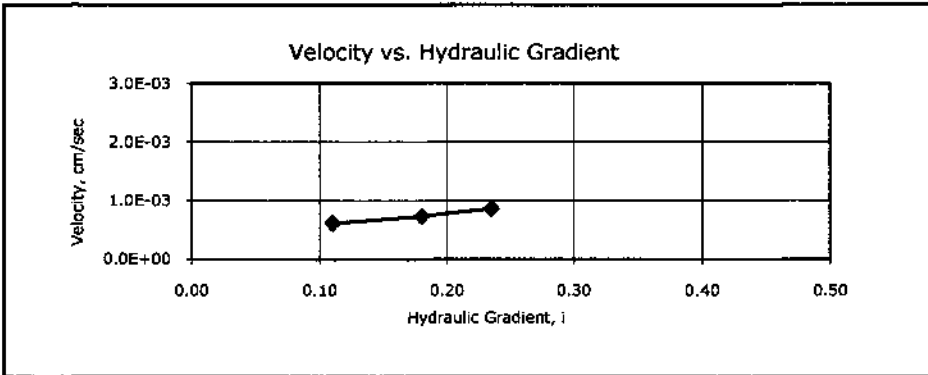
| | | | |
|---------------------|-----------------------------------|-------------|-----|
| Client: | Apex Companies, LLC | | |
| Project Name: | LHCC | | |
| Project Location: | New Bedford, MA | | |
| GTX #: | 11493 | | |
| Start Date: | 01/30/12 | Tested By: | rm |
| End Date: | 01/31/12 | Checked By: | jdt |
| Boring #: | B-2 (COMP) | | |
| Sample #: | A-2011-CAD4 | | |
| Depth: | 22-34 ft. | | |
| Visual Description: | Moist, olive brown sand with silt | | |

Permeability of Granular Soils (Constant Head) by ASTM D 2434

| | | | |
|----------------------------------|--|------|-----|
| Sample Type: | Remolded | | |
| Sample Information: | Maximum Dry Density: | --- | pcf |
| | Optimum Moisture Content: | --- | % |
| | Compaction Test Method: | --- | |
| | Classification (ASTM D 2487): | --- | |
| | Assumed Specific Gravity: | 2.65 | |
| Sample Preparation / Test Setup: | Test specimen compacted with maximum effort at air-dried moisture content. Material >3/8-inch screened out of sample prior to testing (~4% of sample). 5.27 lb surcharge | | |

| Parameter | Initial | Final |
|-------------------------|---------|-------|
| Height, in | 4.03 | 4.03 |
| Diameter, in | 3.98 | 3.98 |
| Area, in ² | 12.4 | 12.4 |
| Volume, in ³ | 50.1 | 50.1 |
| Mass, g | 1435 | 1701 |
| Bulk Density, pcf | 109 | 129 |
| Moisture Content, % | 0.1 | 18.7 |
| Dry Density, pcf | 109 | 109 |
| Degree of Saturation, % | --- | 95.4 |
| Void Ratio, e | --- | 0.52 |

| Date | Reading # | Volume of Flow, cc | Time of Flow, sec | Flow Rate, cc/sec | Gradient | Permeability, cm/sec | Temp., °C | Correction Factor | Permeability @ 20 °C, cm/sec |
|------|-----------|--------------------|-------------------|-------------------|----------|----------------------|-----------|-------------------|------------------------------|
| 1/30 | 1 | 1.5 | 30 | 0.05 | 0.11 | 5.6E-03 | 20.7 | 0.983 | 5.5E-03 |
| 1/30 | 2 | 1.5 | 30 | 0.05 | 0.11 | 5.6E-03 | 20.7 | 0.983 | 5.5E-03 |
| 1/30 | 3 | 1.5 | 30 | 0.05 | 0.11 | 5.6E-03 | 20.7 | 0.983 | 5.5E-03 |
| 1/30 | 4 | 1.8 | 30 | 0.06 | 0.18 | 4.1E-03 | 20.7 | 0.983 | 4.0E-03 |
| 1/30 | 5 | 1.8 | 30 | 0.06 | 0.18 | 4.1E-03 | 20.7 | 0.983 | 4.0E-03 |
| 1/30 | 6 | 1.8 | 30 | 0.06 | 0.18 | 4.1E-03 | 20.7 | 0.983 | 4.0E-03 |
| 1/30 | 7 | 2.1 | 30 | 0.07 | 0.24 | 3.7E-03 | 20.7 | 0.983 | 3.6E-03 |
| 1/30 | 8 | 2.1 | 30 | 0.07 | 0.24 | 3.7E-03 | 20.7 | 0.983 | 3.6E-03 |
| 1/30 | 9 | 2.1 | 30 | 0.07 | 0.24 | 3.7E-03 | 20.7 | 0.983 | 3.6E-03 |



PERMEABILITY @ 20 °C =

4.4 x 10⁻³ cm/sec



| | | | |
|---------------------|-------------------------------|-------------|-----|
| Client: | Apex Companies, LLC | | |
| Project Name: | LHCC | | |
| Project Location: | New Bedford, MA | | |
| GTX #: | 11493 | | |
| Start Date: | 1/27/2012 | Tested By: | ema |
| End Date: | 1/31/2012 | Checked By: | jdt |
| Boring #: | B-3 (COMP) | | |
| Sample #: | A-2011-CAD4 | | |
| Depth: | 0-18 ft. | | |
| Visual Description: | Wet, grayish brown silty clay | | |

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D 5084 Constant Volume

| | | | |
|---------------------|---|-----------------|--------------------|
| Sample Type: | Remolded | Permeant Fluid: | de-aired tap water |
| Orientation: | Vertical | Cell #: | 2/2/4 |
| Sample Preparation: | Test specimen compacted with maximum effort at the as-received moisture content. Values specified by client. Trimmings moisture content = 86.3% | | |

| Parameter | Initial | Final |
|-------------------------|---------|-------|
| Height, in | 2.37 | 2.08 |
| Diameter, in | 2.85 | 2.70 |
| Area, in ² | 6.38 | 5.73 |
| Volume, in ³ | 15.1 | 11.9 |
| Mass, g | 377 | 323 |
| Bulk Density, pcf | 94.8 | 103 |
| Moisture Content, % | 87.6 | 60.4 |
| Dry Density, pcf | 50.5 | 64.2 |
| Degree of Saturation, % | --- | 99 |

B COEFFICIENT DETERMINATION

| | | | |
|-----------------------|------|--------------------------|------|
| Cell Pressure, psi: | 95.1 | Pressure Increment, psi: | 5.02 |
| Sample Pressure, psi: | 90.4 | B Coefficient: | 0.96 |

FLOW DATA

| Date | Trial # | Pressure, psi | | Manometer Readings | | | Elapsed Time, sec | Gradient | Permeability K, cm/sec | Temp, °C | R _t | Permeability K @ 20 °C, cm/sec |
|------|---------|---------------|--------|--------------------|----------------|--------------------------------|-------------------|----------|------------------------|----------|----------------|--------------------------------|
| | | Cell | Sample | Z ₁ | Z ₂ | Z ₁ -Z ₂ | | | | | | |
| 1/30 | 1 | 90 | 85 | 8.0 | 7.9 | 0.1 | 39 | 19.1 | 1.2E-07 | 20 | 1.000 | 1.2E-07 |
| 1/30 | 2 | 90 | 85 | 8.0 | 7.9 | 0.1 | 44 | 19.1 | 1.0E-07 | 20 | 1.000 | 1.0E-07 |
| 1/30 | 3 | 90 | 85 | 8.0 | 7.9 | 0.1 | 44 | 19.1 | 1.0E-07 | 20 | 1.000 | 1.0E-07 |
| 1/30 | 4 | 90 | 85 | 8.0 | 7.9 | 0.1 | 45 | 19.1 | 1.0E-07 | 20 | 1.000 | 1.0E-07 |

PERMEABILITY AT 20° C: 1.1 x 10⁻⁷ cm/sec (@ 5 psi effective stress)



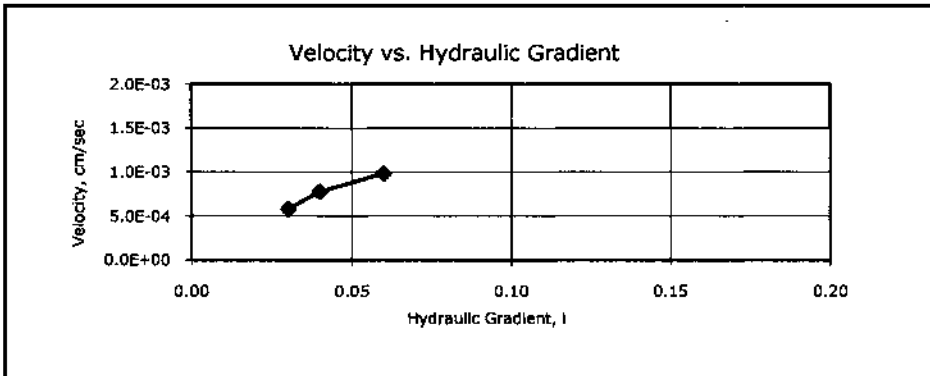
| | | | |
|---------------------|---------------------------------------|-------------|-----|
| Client: | Apex Companies, LLC | | |
| Project Name: | LHCC | | |
| Project Location: | New Bedford, MA | | |
| GTX #: | 11493 | | |
| Start Date: | 01/30/12 | Tested By: | rm |
| End Date: | 01/31/12 | Checked By: | jdt |
| Boring #: | B-3 (COMP) | | |
| Sample #: | A-2011-CAD4 | | |
| Depth: | 26-38 ft. | | |
| Visual Description: | Moist, light grayish brown silty sand | | |

Permeability of Granular Soils (Constant Head) by ASTM D 2434

| | | | |
|----------------------------------|--|------|-----|
| Sample Type: | Remolded | | |
| Sample Information: | Maximum Dry Density: | --- | pcf |
| | Optimum Moisture Content: | --- | % |
| | Compaction Test Method: | --- | |
| | Classification (ASTM D 2487): | --- | |
| | Assumed Specific Gravity: | 2.65 | |
| Sample Preparation / Test Setup: | Test specimen compacted with maximum effort at air-dried moisture content. Material >3/8-inch screened out of sample prior to testing (<1% of sample). 5.27 lb surcharge | | |

| Parameter | Initial | Final |
|-------------------------|---------|-------|
| Height, in | 4.03 | 4.03 |
| Diameter, in | 3.98 | 3.98 |
| Area, in ² | 12.4 | 12.4 |
| Volume, in ³ | 50.1 | 50.1 |
| Mass, g | 1407 | 1684 |
| Bulk Density, pcf | 107 | 128 |
| Moisture Content, % | 0.1 | 19.8 |
| Dry Density, pcf | 107 | 107 |
| Degree of Saturation, % | --- | 95.6 |
| Void Ratio, e | --- | 0.55 |

| Date | Reading # | Volume of Flow, cc | Time of Flow, sec | Flow Rate, cc/sec | Gradient | Permeability, cm/sec | Temp., °C | Correction Factor | Permeability @ 20 °C, cm/sec |
|------|-----------|--------------------|-------------------|-------------------|----------|----------------------|-----------|-------------------|------------------------------|
| 1/30 | 1 | 1.4 | 30 | 0.05 | 0.03 | 1.9E-02 | 19.4 | 1.015 | 2.0E-02 |
| 1/30 | 2 | 1.4 | 30 | 0.05 | 0.03 | 1.9E-02 | 19.4 | 1.015 | 2.0E-02 |
| 1/30 | 3 | 1.4 | 30 | 0.05 | 0.03 | 1.9E-02 | 19.4 | 1.015 | 2.0E-02 |
| 1/30 | 4 | 1.9 | 30 | 0.06 | 0.04 | 1.9E-02 | 19.4 | 1.015 | 2.0E-02 |
| 1/30 | 5 | 1.9 | 30 | 0.06 | 0.04 | 1.9E-02 | 19.4 | 1.015 | 2.0E-02 |
| 1/30 | 6 | 1.9 | 30 | 0.06 | 0.04 | 1.9E-02 | 19.4 | 1.015 | 2.0E-02 |
| 1/30 | 7 | 2.4 | 30 | 0.08 | 0.06 | 1.6E-02 | 19.4 | 1.015 | 1.7E-02 |
| 1/30 | 8 | 2.4 | 30 | 0.08 | 0.06 | 1.6E-02 | 19.4 | 1.015 | 1.7E-02 |
| 1/30 | 9 | 2.4 | 30 | 0.08 | 0.06 | 1.6E-02 | 19.4 | 1.015 | 1.7E-02 |



PERMEABILITY @ 20 °C =

1.9 x 10⁻² cm/sec



| | | | |
|---------------------|---|-------------|-----|
| Client: | Apex Companies, LLC | | |
| Project Name: | LHCC | | |
| Project Location: | New Bedford, MA | | |
| GTX #: | 11493 | | |
| Start Date: | 01/27/12 | Tested By: | rm |
| End Date: | 02/01/12 | Checked By: | jdt |
| Boring #: | B-3/B-4 (COMP) | | |
| Sample #: | A-2011-CAD4 | | |
| Depth: | 32-50/65-72 ft. | | |
| Visual Description: | Dry, light brown silty sand with gravel | | |

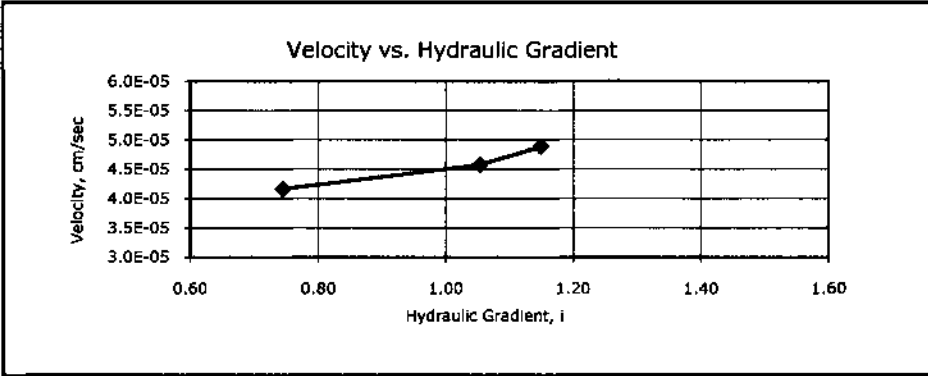
Permeability of Granular Soils (Constant Head) by ASTM D 2434

| | | | |
|---------------------|-------------------------------|------|-----|
| Sample Type: | Remolded | | |
| Sample Information: | Maximum Dry Density: | --- | pcf |
| | Optimum Moisture Content: | --- | % |
| | Compaction Test Method: | --- | |
| | Classification (ASTM D 2487): | --- | |
| | Assumed Specific Gravity: | 2.65 | |

Sample Preparation / Test Setup: Test specimen compacted with maximum effort at air-dried moisture content. Material >3/8-inch screened out of sample prior to testing (~18% of sample). 5.27 lb surcharge

| Parameter | Initial | Final |
|-------------------------|---------|-------|
| Height, in | 4.03 | 4.03 |
| Diameter, in | 3.98 | 3.98 |
| Area, in ² | 12.4 | 12.4 |
| Volume, in ³ | 50.1 | 50.1 |
| Mass, g | 1689 | 1868 |
| Bulk Density, pcf | 128 | 142 |
| Moisture Content, % | 0.2 | 10.8 |
| Dry Density, pcf | 128 | 128 |
| Degree of Saturation, % | --- | 98.0 |
| Void Ratio, e | --- | 0.29 |

| Date | Reading # | Volume of Flow, cc | Time of Flow, sec | Flow Rate, cc/sec | Gradient | Permeability, cm/sec | Temp., °C | Correction Factor | Permeability @ 20 °C, cm/sec |
|------|-----------|--------------------|-------------------|-------------------|----------|----------------------|-----------|-------------------|------------------------------|
| 1/31 | 1 | 0.4 | 120 | 0.00 | 0.75 | 5.6E-05 | 19.3 | 1.018 | 5.7E-05 |
| 1/31 | 2 | 0.4 | 120 | 0.00 | 0.75 | 5.6E-05 | 19.3 | 1.018 | 5.7E-05 |
| 1/31 | 3 | 0.4 | 120 | 0.00 | 0.75 | 5.6E-05 | 19.3 | 1.018 | 5.7E-05 |
| 1/31 | 4 | 0.4 | 120 | 0.00 | 1.06 | 4.3E-05 | 19.3 | 1.018 | 4.4E-05 |
| 1/31 | 5 | 0.4 | 120 | 0.00 | 1.06 | 4.3E-05 | 19.3 | 1.018 | 4.4E-05 |
| 1/31 | 6 | 0.4 | 120 | 0.00 | 1.06 | 4.3E-05 | 19.3 | 1.018 | 4.4E-05 |
| 1/31 | 7 | 0.5 | 120 | 0.00 | 1.15 | 4.3E-05 | 19.3 | 1.018 | 4.3E-05 |
| 1/31 | 8 | 0.5 | 120 | 0.00 | 1.15 | 4.3E-05 | 19.3 | 1.018 | 4.3E-05 |
| 1/31 | 9 | 0.5 | 120 | 0.00 | 1.15 | 4.3E-05 | 19.3 | 1.018 | 4.3E-05 |



PERMEABILITY @ 20 °C =
4.8 x 10⁻⁵ cm/sec



| | | | |
|---------------------|---------------------|-------------|-----|
| Client: | Apex Companies, LLC | | |
| Project Name: | LHCC | | |
| Project Location: | New Bedford, MA | | |
| GTX #: | 11493 | | |
| Start Date: | 1/27/2012 | Tested By: | ema |
| End Date: | 2/1/2012 | Checked By: | jdt |
| Boring #: | B-4 (COMP) | | |
| Sample #: | A-2011-CAD4 | | |
| Depth: | 24-30 ft. | | |
| Visual Description: | Moist, gray silt | | |

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D 5084 Constant Volume

| | | | |
|---------------------|---|-----------------|--------------------|
| Sample Type: | Remolded | Permeant Fluid: | de-aired tap water |
| Orientation: | Vertical | Cell #: | 19/5 |
| Sample Preparation: | Test specimen compacted with maximum effort at the as-received moisture content. Values specified by client. Trimmings moisture content = 20.1% | | |

| Parameter | Initial | Final |
|-------------------------|---------|-------|
| Height, in | 2.29 | 2.23 |
| Diameter, in | 2.85 | 2.84 |
| Area, in ² | 6.38 | 6.33 |
| Volume, in ³ | 14.6 | 14.1 |
| Mass, g | 492 | 486 |
| Bulk Density, pcf | 128 | 131 |
| Moisture Content, % | 21.6 | 20.1 |
| Dry Density, pcf | 105 | 109 |
| Degree of Saturation, % | --- | 99 |

B COEFFICIENT DETERMINATION

| | | | |
|-----------------------|------|--------------------------|------|
| Cell Pressure, psi: | 95.2 | Pressure Increment, psi: | 5.01 |
| Sample Pressure, psi: | 90.2 | B Coefficient: | 0.96 |

FLOW DATA

| Date | Trial # | Pressure, psi | | Manometer Readings | | | Elapsed Time, sec | Gradient | Permeability K, cm/sec | Temp, °C | R _t | Permeability K @ 20 °C, cm/sec |
|------|---------|---------------|--------|--------------------|----------------|--------------------------------|-------------------|----------|------------------------|----------|----------------|--------------------------------|
| | | Cell | Sample | Z ₁ | Z ₂ | Z ₁ -Z ₂ | | | | | | |
| 1/31 | 1 | 90 | 85 | 8.0 | 7.0 | 1.0 | 14 | 17.8 | 3.3E-06 | 20 | 1.000 | 3.3E-06 |
| 1/31 | 2 | 90 | 85 | 8.0 | 7.0 | 1.0 | 14 | 17.8 | 3.3E-06 | 20 | 1.000 | 3.3E-06 |
| 1/31 | 3 | 90 | 85 | 8.0 | 7.0 | 1.0 | 15 | 17.8 | 3.1E-06 | 20 | 1.000 | 3.1E-06 |
| 1/31 | 4 | 90 | 85 | 8.0 | 7.0 | 1.0 | 18 | 17.8 | 2.6E-06 | 20 | 1.000 | 2.6E-06 |

PERMEABILITY AT 20° C: 3.1 x 10⁻⁶ cm/sec (@ 5 psi effective stress)

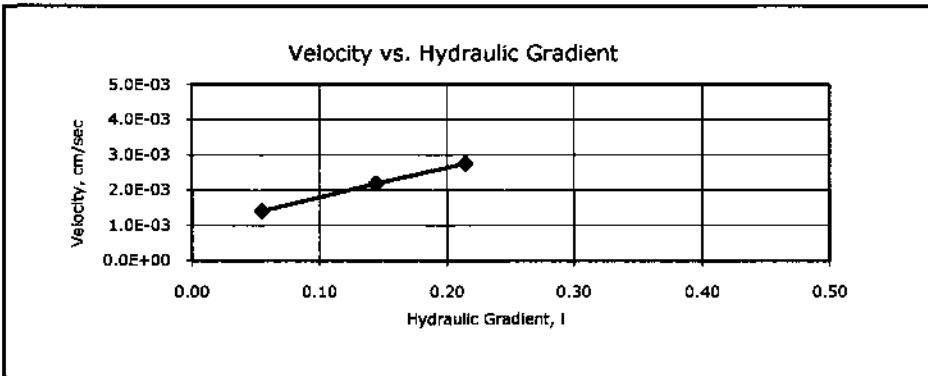


| | | | |
|---------------------|------------------------------------|-------------|-----|
| Client: | Apex Companies, LLC | | |
| Project Name: | LHCC | | |
| Project Location: | New Bedford, MA | | |
| GTX #: | 11493 | | |
| Start Date: | 02/02/12 | Tested By: | rm |
| End Date: | 02/03/12 | Checked By: | jdt |
| Boring #: | B-5 (COMP) | | |
| Sample #: | A-2011-CAD4 | | |
| Depth: | 19-39 ft. | | |
| Visual Description: | Dry light brown and tan silty sand | | |

Permeability of Granular Soils (Constant Head) by ASTM D 2434

| Sample Type: | Remolded | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-------|-----|-----------|---------|-------|------------|------|------|--------------|------|------|-----------------------|------|------|-------------------------|------|------|---------|------|------|-------------------|-----|-----|---------------------|-----|----|------------------|-----|-----|-------------------------|-----|------|---------------|-----|------|
| Sample Information: | Maximum Dry Density: | --- | pcf | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Optimum Moisture Content: | --- | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Compaction Test Method: | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Classification (ASTM D 2487): | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Assumed Specific Gravity: | 2.65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample Preparation / Test Setup: | Test specimen compacted with maximum effort at air-dried moisture content. Material >3/8-inch screened out of sample prior to testing (31% of sample). 5.27 lb surcharge | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Parameter</th> <th style="width: 25%;">Initial</th> <th style="width: 25%;">Final</th> </tr> </thead> <tbody> <tr> <td>Height, in</td> <td>4.03</td> <td>4.03</td> </tr> <tr> <td>Diameter, in</td> <td>3.98</td> <td>3.98</td> </tr> <tr> <td>Area, in²</td> <td>12.4</td> <td>12.4</td> </tr> <tr> <td>Volume, in³</td> <td>50.1</td> <td>50.1</td> </tr> <tr> <td>Mass, g</td> <td>1616</td> <td>1780</td> </tr> <tr> <td>Bulk Density, pcf</td> <td>123</td> <td>135</td> </tr> <tr> <td>Moisture Content, %</td> <td>0.1</td> <td>10</td> </tr> <tr> <td>Dry Density, pcf</td> <td>123</td> <td>123</td> </tr> <tr> <td>Degree of Saturation, %</td> <td>---</td> <td>77.4</td> </tr> <tr> <td>Void Ratio, e</td> <td>---</td> <td>0.35</td> </tr> </tbody> </table> | | | | Parameter | Initial | Final | Height, in | 4.03 | 4.03 | Diameter, in | 3.98 | 3.98 | Area, in ² | 12.4 | 12.4 | Volume, in ³ | 50.1 | 50.1 | Mass, g | 1616 | 1780 | Bulk Density, pcf | 123 | 135 | Moisture Content, % | 0.1 | 10 | Dry Density, pcf | 123 | 123 | Degree of Saturation, % | --- | 77.4 | Void Ratio, e | --- | 0.35 |
| Parameter | Initial | Final | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Height, in | 4.03 | 4.03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Diameter, in | 3.98 | 3.98 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Area, in ² | 12.4 | 12.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volume, in ³ | 50.1 | 50.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mass, g | 1616 | 1780 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bulk Density, pcf | 123 | 135 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Moisture Content, % | 0.1 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dry Density, pcf | 123 | 123 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Degree of Saturation, % | --- | 77.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Void Ratio, e | --- | 0.35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Date | Reading # | Volume of Flow, cc | Time of Flow, sec | Flow Rate, cc/sec | Gradient | Permeability, cm/sec | Temp., °C | Correction Factor | Permeability @ 20 °C, cm/sec |
|------|-----------|--------------------|-------------------|-------------------|----------|----------------------|-----------|-------------------|------------------------------|
| 2/2 | 1 | 3.4 | 30 | 0.11 | 0.06 | 2.5E-02 | 23.8 | 0.914 | 2.3E-02 |
| 2/2 | 2 | 3.4 | 30 | 0.11 | 0.06 | 2.5E-02 | 23.8 | 0.914 | 2.3E-02 |
| 2/2 | 3 | 3.4 | 30 | 0.11 | 0.06 | 2.5E-02 | 23.8 | 0.914 | 2.3E-02 |
| 2/2 | 4 | 5.3 | 30 | 0.18 | 0.15 | 1.5E-02 | 23.8 | 0.914 | 1.4E-02 |
| 2/2 | 5 | 5.3 | 30 | 0.18 | 0.15 | 1.5E-02 | 23.8 | 0.914 | 1.4E-02 |
| 2/2 | 6 | 5.3 | 30 | 0.18 | 0.15 | 1.5E-02 | 23.8 | 0.914 | 1.4E-02 |
| 2/2 | 7 | 6.6 | 30 | 0.22 | 0.22 | 1.3E-02 | 23.8 | 0.914 | 1.2E-02 |
| 2/2 | 8 | 6.6 | 30 | 0.22 | 0.22 | 1.3E-02 | 23.8 | 0.914 | 1.2E-02 |
| 2/2 | 9 | 6.6 | 30 | 0.22 | 0.22 | 1.3E-02 | 23.8 | 0.914 | 1.2E-02 |



PERMEABILITY @ 20 °C =

1.6 x 10⁻² cm/sec



| | | | |
|---------------------|--|-------------|-----|
| Client: | Apex Companies, LLC | | |
| Project Name: | LHCC | | |
| Project Location: | New Bedford, MA | | |
| GTX #: | 11493 | | |
| Start Date: | 01/27/12 | Tested By: | rm |
| End Date: | 01/30/12 | Checked By: | jdt |
| Boring #: | B-6 (COMP) | | |
| Sample #: | A-2011-CAD4 | | |
| Depth: | 20-44 ft. | | |
| Visual Description: | Moist, yellowish brown sand with silt and gravel | | |

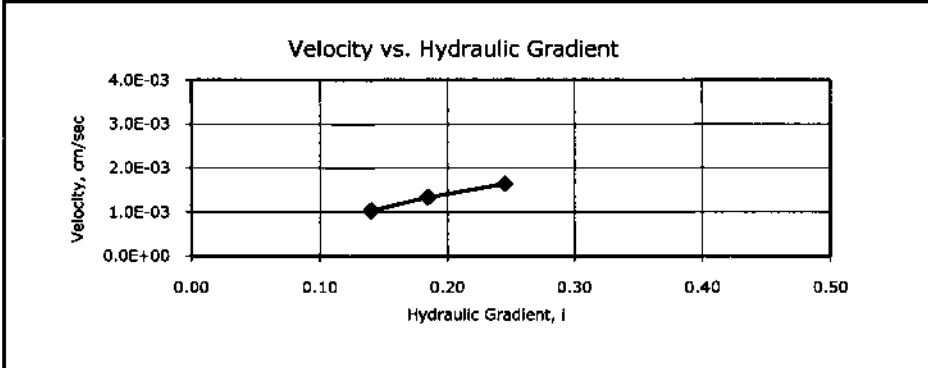
Permeability of Granular Soils (Constant Head) by ASTM D 2434

| | | | |
|---------------------|-------------------------------|------|-----|
| Sample Type: | Remolded | | |
| Sample Information: | Maximum Dry Density: | --- | pcf |
| | Optimum Moisture Content: | --- | % |
| | Compaction Test Method: | --- | |
| | Classification (ASTM D 2487): | --- | |
| | Assumed Specific Gravity: | 2.65 | |

Sample Preparation / Test Setup: Test specimen compacted with maximum effort at air-dried moisture content. Material >3/8-inch screened out of sample prior to testing (11% of sample). 5.27 lb surcharge

| Parameter | Initial | Final |
|-------------------------|---------|-------|
| Height, in | 4.03 | 4.03 |
| Diameter, in | 3.98 | 3.98 |
| Area, in ² | 12.4 | 12.4 |
| Volume, in ³ | 50.1 | 50.1 |
| Mass, g | 1611 | 1806 |
| Bulk Density, pcf | 122 | 137 |
| Moisture Content, % | 0.9 | 13.1 |
| Dry Density, pcf | 121 | 121 |
| Degree of Saturation, % | --- | 95.5 |
| Void Ratio, e | --- | 0.36 |

| Date | Reading # | Volume of Flow, cc | Time of Flow, sec | Flow Rate, cc/sec | Gradient | Permeability, cm/sec | Temp., °C | Correction Factor | Permeability @ 20 °C, cm/sec |
|------|-----------|--------------------|-------------------|-------------------|----------|----------------------|-----------|-------------------|------------------------------|
| 1/27 | 1 | 2.5 | 30 | 0.08 | 0.14 | 7.4E-03 | 21.1 | 0.974 | 7.2E-03 |
| 1/27 | 2 | 2.5 | 30 | 0.08 | 0.14 | 7.4E-03 | 21.1 | 0.974 | 7.2E-03 |
| 1/27 | 3 | 2.5 | 30 | 0.08 | 0.14 | 7.3E-03 | 21.1 | 0.974 | 7.1E-03 |
| 1/27 | 4 | 3.2 | 30 | 0.11 | 0.19 | 7.2E-03 | 21.1 | 0.974 | 7.0E-03 |
| 1/27 | 5 | 3.2 | 30 | 0.11 | 0.19 | 7.2E-03 | 21.1 | 0.974 | 7.0E-03 |
| 1/27 | 6 | 3.2 | 30 | 0.11 | 0.19 | 7.2E-03 | 21.1 | 0.974 | 7.0E-03 |
| 1/27 | 7 | 4.0 | 30 | 0.13 | 0.25 | 6.7E-03 | 21.1 | 0.974 | 6.5E-03 |
| 1/27 | 8 | 4.0 | 30 | 0.13 | 0.25 | 6.7E-03 | 21.1 | 0.974 | 6.5E-03 |
| 1/27 | 9 | 3.9 | 30 | 0.13 | 0.25 | 6.7E-03 | 21.1 | 0.974 | 6.5E-03 |



PERMEABILITY @ 20 °C =
6.9 x 10⁻³ cm/sec



ANALYTICAL REPORT

| | |
|-----------------|--|
| Lab Number: | L1201485 |
| Client: | Geo Testing Express 125 Nagog Park Acton, MA 01720 |
| ATTN: | Joe Tomei |
| Phone: | (978) 893-1241 |
| Project Name: | LHCC |
| Project Number: | GTX-11493 |
| Report Date: | 02/01/12 |

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), PA (68-02089), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), DOD (L2217.01), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

| Alpha Sample ID | Client ID | Sample Location | Collection Date/Time |
|----------------------------|----------------------------|----------------------------|---------------------------------|
| L1201485-01 | A-2011-CAD4, B-6, 47-49 FT | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-02 | A-2011-CAD4, B-3, 30-32 FT | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-03 | A-2011-CAD4, B-3, 38-40 FT | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-04 | A-2011-CAD4, B-2, 36-38 FT | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-05 | A-2011-CAD4, B-2, 30-32 FT | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-06 | A-2011-CAD4, B-5, 47-49FT | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-07 | A-2011-CAD4, B-1, 25-27 FT | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-08 | A-2011-CAD4, B-1, 48-50 FT | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-09 | A-2011-CAD4, B-4, 22-24 FT | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-10 | A-2011-CAD4, B-4, 41-43 T | NEW BEDFORD, MA | 01/27/12 00:00 |
| L1201485-11 | A-2011-CAD4, B-6, 36-38 FT | NEW BEDFORD, MA | 01/27/12 00:00 |

Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEX data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

Total Organic Carbon

The WG515880-3 Laboratory Duplicate RPD, performed on L1201485-01, is outside the acceptance criteria for Total Organic Carbon (rep2) (32%). The elevated RPD has been attributed to the non-homogeneous nature of the sample utilized for the laboratory duplicate. An additional burn was run with similar results.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Peter Henriksen

Title: Technical Director/Representative

Date: 02/01/12

INORGANICS & MISCELLANEOUS

Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-01
Client ID: A-2011-CAD4, B-6, 47-49 FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.021 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.021 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-02
Client ID: A-2011-CAD4, B-3, 30-32 FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.031 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.034 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-03
Client ID: A-2011-CAD4, B-3, 38-40 FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.034 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.033 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-04
Client ID: A-2011-CAD4, B-2, 36-38 FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.046 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.042 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-05
Client ID: A-2011-CAD4, B-2, 30-32 FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.022 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.023 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-06
Client ID: A-2011-CAD4, B-5, 47-49FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.031 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.034 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-07
Client ID: A-2011-CAD4, B-1, 25-27 FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.028 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.031 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-08
Client ID: A-2011-CAD4, B-1, 48-50 FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.044 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.037 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-09
Client ID: A-2011-CAD4, B-4, 22-24 FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.146 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.137 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-10
Client ID: A-2011-CAD4, B-4, 41-43 T
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.039 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.035 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

SAMPLE RESULTS

Lab ID: L1201485-11
Client ID: A-2011-CAD4, B-6, 36-38 FT
Sample Location: NEW BEDFORD, MA
Matrix: Soil

Date Collected: 01/27/12 00:00
Date Received: 01/27/12
Field Prep: Not Specified

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.024 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | 0.027 | | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |



Project Name: LHCC
 Project Number: GTX-11493

Lab Number: L1201485
 Report Date: 02/01/12

Method Blank Analysis
Batch Quality Control

| Parameter | Result Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|------------------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| Total Organic Carbon - Mansfield Lab for sample(s): 01-11 Batch: WG515880-1 | | | | | | | | | |
| Total Organic Carbon (Rep1) | ND | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |
| Total Organic Carbon (Rep2) | ND | % | 0.010 | -- | 1 | - | 01/31/12 04:00 | 1,9060 | NR |

Matrix Spike Analysis
Batch Quality Control

Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

| Parameter | Native Sample | MS Added | MS Found | MS %Recovery | MSD Qual | MSD Found | MSD %Recovery | MSD Qual | Recovery Limits | RPD | RPD Qual | RPD Limits |
|---|---------------|----------|----------|--------------|----------|-----------|---------------|----------|-----------------|-----|----------|------------|
| Total Organic Carbon - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG515880-4 QC Sample: L1201485-01 Client ID: A-2011-CAD4, B-6, 47-49 FT | | | | | | | | | | | | |
| Total Organic Carbon (Rep1) | 0.021 | 0.801 | 0.817 | 99 | - | - | - | - | 75-125 | - | - | 25 |
| Total Organic Carbon (Rep2) | 0.021 | 0.836 | 0.858 | 100 | - | - | - | - | 75-125 | - | - | 25 |

Lab Duplicate Analysis

Batch Quality Control

Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

| Parameter | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---------------|------------------|-------|-----|------|------------|
| Total Organic Carbon - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG515880-3 QC Sample: L1201485-01 Client ID: A-2011-CAD4, B-6, 47-49 FT | | | | | | |
| Total Organic Carbon (Rep1) | 0.021 | 0.023 | % | 9 | | 25 |
| Total Organic Carbon (Rep2) | 0.021 | 0.029 | % | 32 | Q | 25 |

Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

S.R.M. Standard Quality Control

Standard Reference Material (SRM): WG515880-2

| Parameter | % Recovery | Qual | QC Criteria |
|-----------------------------|-------------------|-------------|--------------------|
| Total Organic Carbon (Rep1) | 117 | | 75-125 |
| Total Organic Carbon (Rep2) | 106 | | 75-125 |

Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler

A Absent

Container Information

| Container ID | Container Type | Cooler | pH | Temp deg C | Pres | Seal | Analysis(*) |
|--------------|-------------------------|--------|-----|------------|------|--------|-----------------------|
| L1201485-01A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-02A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-03A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-04A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-05A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-06A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-07A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-08A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-09A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-10A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |
| L1201485-11A | Glass 100ml unpreserved | A | N/A | | Y | Absent | A2-TOC-9060-2REPS(28) |

*Values in parentheses indicate holding time in days

Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

GLOSSARY

Acronyms

| | |
|------|--|
| EPA | -Environmental Protection Agency. |
| LCS | -Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. |
| LCSD | -Laboratory Control Sample Duplicate: Refer to LCS. |
| LFB | -Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. |
| MDL | -Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. |
| MS | -Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. |
| MSD | -Matrix Spike Sample Duplicate: Refer to MS. |
| NA | -Not Applicable. |
| NC | -Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit. |
| NI | -Not Ignitable. |
| RL | -Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable. |
| RPD | -Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report. |
| SRM | -Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples. |

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- | | |
|-----------|--|
| A | -Spectra identified as "Aldol Condensation Product". |
| B | -The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. |
| C | -Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses. |
| D | -Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte. |
| E | -Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument. |
| G | -The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated. |
| H | -The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection. |
| I | -The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference. |
| M | -Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte. |
| NJ | -Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search. |

Report Format: Data Usability Report



Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

Data Qualifiers

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

Project Name: LHCC
Project Number: GTX-11493

Lab Number: L1201485
Report Date: 02/01/12

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certificate/Approval Program Summary

Last revised January 30, 2012 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0141.

Wastewater/Non-Potable Water (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

Solid Waste/Soil (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Florida Department of Health Certificate/Lab ID: E87814. NELAP Accredited.

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, SM2540G.)

Solid & Chemical Materials (Inorganic Parameters: 6020, 7470, 7471, 9045. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

Air & Emissions (EPA TO-15.)

Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. NELAP Accredited.

Non-Potable Water (Inorganic Parameters: EPA 180.1, 245.7, 1631E, 3020, 6020A, 7470A, 9040, 9050A, SM2320B, 2540D, 2540G, 4500H-B, Organic Parameters: EPA 3510C, 3580A, 3630C, 3640A, 3660B, 3665A, 5030B, 8015D, 3570, 8081B, 8082A, 8260B, 8270C, 8270D.)

Solid & Chemical Materials (Inorganic Parameters: EPA 1311, 3050, 3051A, 3060A, 6020A, 7196A, 7470A, 7471B, 7474, 9040B, 9045C, 9060. Organic Parameters: EPA 3540C, 3570B, 3580A, 3630C, 3640A, 3660, 3665A, 5035, 8015D, 8081B, 8082A, 8260B, 8270C, 8270D.)

Biological Tissue (Inorganic Parameters: EPA 6020A. Organic Parameters: EPA 3570, 3510C, 3610B, 3630C, 3640A, 8270C, 8270D.)

Air & Emissions (EPA TO-15.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. NELAP Accredited.

Non-Potable Water (Inorganic Parameters: EPA 245.7, 1631E, 6020A, 7470A, 9040B, 9050A, SM2540D, 2540G, 4500H+B, 2320B. Organic Parameters: EPA 8081B, 8082A, 8260B, 8270C, 8015D.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 1311, 1312, 3050B, 3051A, 3060A, 6020A, 7471A, 9040B, 9045C, 7196A. Organic Parameters: SW-846 3540C, 3580A, 3630C, 3640A, 3660B, 3665A, 5035, 8260B, 8270C, 8015D, 8082A, 8081B.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. NELAP Accredited.

Non-Potable Water (Inorganic Parameters: SW-846 1312, 3010, 3020A, SM2320B, SM2540D, 2540G, EPA 180.1, 1631E, SW-846 7470A, 9040B, 6020, 9050A. Organic Parameters: SW-846 3510C, 3580A, 5030B, 5035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8015B 8081A, 8082, 8260B, 8270C)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6020, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 7474, 9040B, 9045C, 9060. Organic Parameters: SW-846 3540C, 3570, 3580A, 5030B, 5035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 8015B.)

Atmospheric Organic Parameters (EPA TO-15)

Biological Tissue (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610C, 3630C, 3640A)

New York Department of Health Certificate/Lab ID: 11627. *NELAP Accredited.*

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 245.7, 7470A, 9014, 9040B, 9050, 120.1, 4500CN-E, 4500H-B, EPA 376.2, 180.1, 3020A. Organic Parameters: EPA 8260B, 8270C, 8081A, 8082, 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 6020, 7196A, 3060A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 1312, 3050B, 3580, 3570, 3051, 5035, 5030B.)

Air & Emissions (EPA TO-15.)

Pennsylvania Certificate/Lab ID: 68-02089 *NELAP Accredited*

Solid & Hazardous Waste (Inorganic Parameters: EPA 6020A, 7471B, 7474. Organic Parameters: EPA 3050B, 3540C, 3630C, 8270C, 8081B, 8082A.)

Rhode Island Department of Health Certificate/Lab ID: LAO00299. *NELAP Accredited via LA-DEQ.*

Refer to LA-DEQ Certificate for Non-Potable Water.

Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. *NELAP Accredited.*

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

Air (Organic Parameters: EPA TO-15)

Washington State Department of Ecology Certificate/Lab ID: C954. *Non-Potable Water* (Inorganic Parameters: SM2540D, 180.1, 1631E.)

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 7474, 9045C, 9050A, 9060. Organic Parameters: EPA 8081, 8082, 8015 Mod, 8270.)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID: 460194. *NELAP Accredited.*

Non-Potable Water (Inorganic Parameters: EPA 3020A, 6020A, 245.7, 9040B, SM4500H-B. Organic Parameters: EPA 3510C, 3640A, 3660B, 3665A, 8270C, 8270D, 8082A, 8081B.)

Solid & Chemical Materials (Inorganic Parameters: EPA 6020A, 7470A, 7471B, 9040B, 9045C, 3050B, 3051. Organic Parameters: EPA 3540C, 3580A, 3630C, 3640A, 3660B, 3665A, 3570, 8270C, 8270D, 8081B, 8082A, 8015D.)

U.S. Army Corps of Engineers

Department of Defense, L-A-B Certificate/Lab ID: L2217.01.

Non-Potable Water (Inorganic Parameters: EPA 6020A, SM4500H-B. Organic Parameters: 3020A, 3510C, 5030B, 8260B, 8270C, 8270C-ALK-PAH, 8082, 8081A, 8015D-SHC, 8015D.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 3050B, 6020A, 7471A, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580A, 3570, 3540C, 5035A, 8260B, 8270C, 8270-ALK-PAH, 8082, 8081A, 8015D-SHC, 8015D.)

Air & Emissions (EPA TO-15.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl. **TO-15**: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 2-Methylnaphthalene, 1-Methylnaphthalene.



CHAIN OF CUSTODY

PAGE 1 OF 1

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Project Information

Project Name: LHCL
Project Location: New Bedford, MA
Project #: GTX-11495
Project Manager: Joe Tomei
ALPHA Quote #:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved!)

Date Due: 2/2/12 Time:

Date Rec'd in Lab:

Report Information - Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

ALPHA Job #: L1201485

Billing Information

Same as Client info PO #:

Client Information

Client: Geo Testing Express
Address: 125 Nagog Park
Ashon, MA
Phone: 978 635 0424
Fax:

Email: jst@geotesting.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

If MS is required, indicate in Sample Specific Comments which samples and what tests MS to be performed.
(Note: All CAM methods for inorganic analyses require MS every 20 soil samples)

Regulatory Requirements/Report Limits

State /Fed Program Criteria

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTO

Yes No Are MCP Analytical Methods Required?
 Yes No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)
 Yes No Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS
EPA 9060 - TOC

SAMPLE HANDLING

Filtration _____
 Done
 Not needed
 Lab to do Preservation
 Lab to do
(Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID (Lab Use Only) | Sample ID | Collection | | Sample Matrix | Sampler's Initials |
|--------------------------------|---------------------------|------------|------|---------------|--------------------|
| | | Date | Time | | |
| -01 | A-2011-CAD4, B-6, 47-49ft | | | | X |
| -02 | " " B-3, 30-32ft | | | | X |
| -03 | " " B-5, 38-40ft | | | | X |
| -04 | " " B-2, 36-38ft | | | | X |
| -05 | " " B-2, 30-32ft | | | | X |
| -06 | " " B-5, 25-27ft | | | | X |
| -07 | " " B-1, 26-28ft | | | | X |
| -08 | " " B-1, 48-50ft | | | | X |
| -09 | " " B-4, 22-24ft | | | | X |
| -10 | " " B-4, 41-43ft | | | | X |
| -11 | " " B-6, 36-38ft | | | | X |

MCD 1/27/12

MCD 1/27/12

PLEASE ANSWER QUESTIONS ABOVE

Container Type X
Preservative

IS YOUR PROJECT
MA MCP or CT RCP?

Relinquished By:

Date/Time

Received By:

Date/Time

Joe Tomei 1/27/12 12:30
Joe Tomei 1/27/12 1:35
Joe Tomei 1/27/12 1:35

Joe Tomei 1/27/12 12:25
Joe Tomei 1/27/12 1:35
Joe Tomei 1/27/12 1:55
Allen Sullivan 1/27/12 17:55

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.