

# LOG OF BORING

Project: Bolivar DMPA No. 36

Boring No.: PA 36-6

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 11/18/2009

Northing: 13,761,154.2

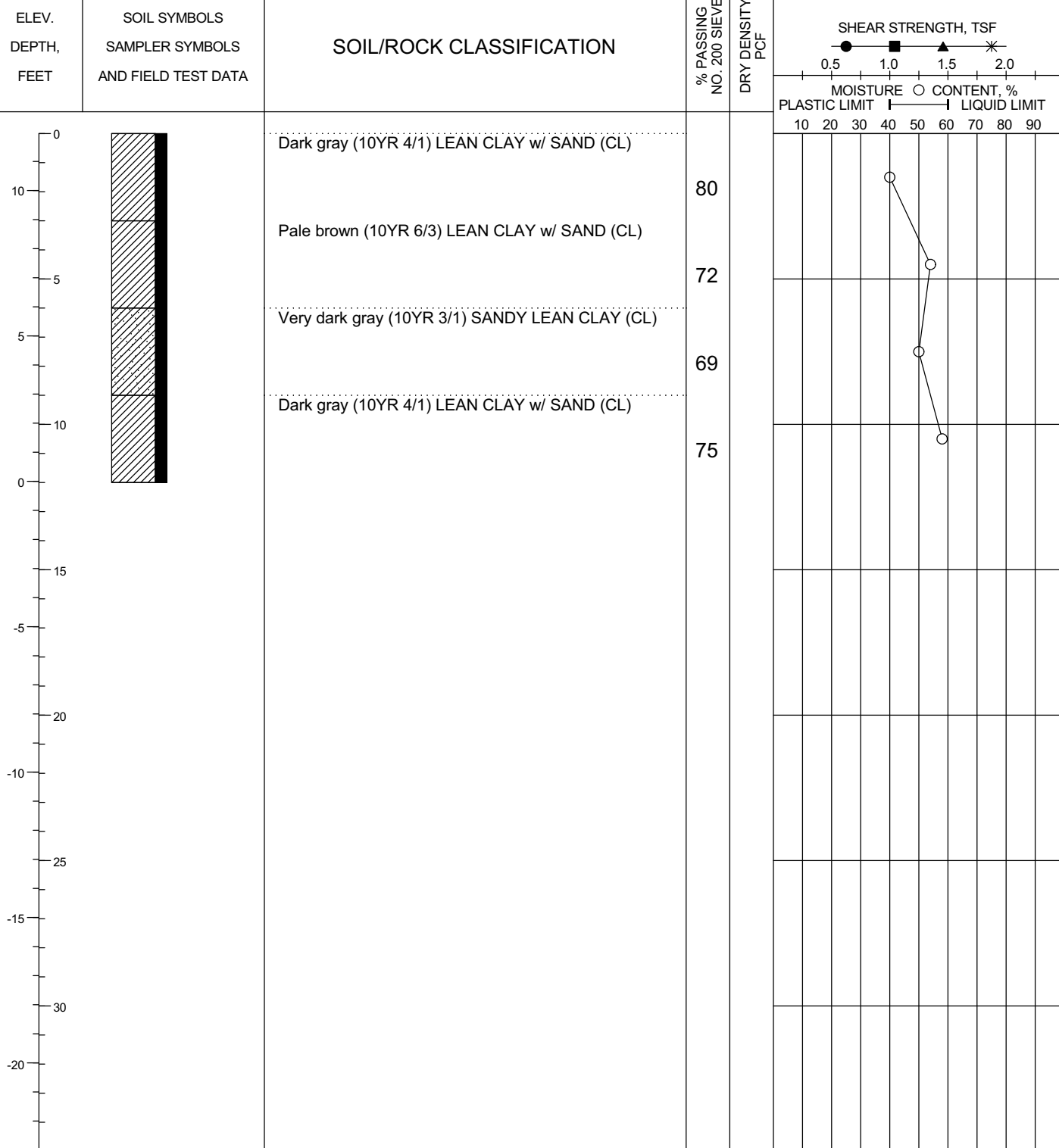
Easting: 3,389,739.6

Project No.: HG0915782

Elevation: 11.96 feet

Station: --

Offset: --



Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

\* = UU Triaxial

PLATE A-6

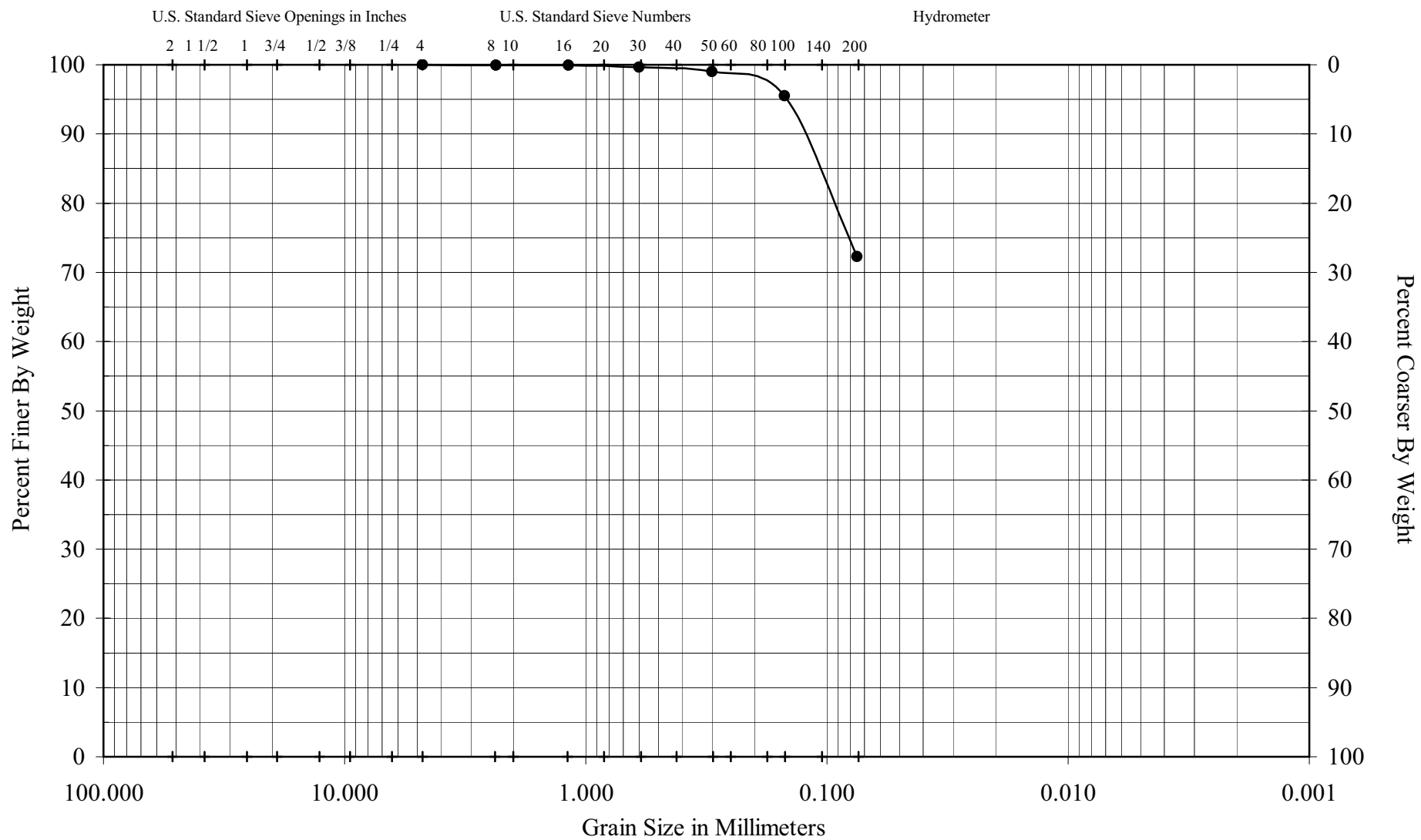
### SIEVE ANALYSIS DATA

Project: Bolivar DMPA No. 36 Job No. HG09-15782 Date: December 10, 2009  
Boring No. PA 36-6 Sample No. 2 Depth: 3'-6'  
Matl Desc. Pale Brown Lean Clay w/ Sand

|               |        |                    |        |             |              |
|---------------|--------|--------------------|--------|-------------|--------------|
| Tare No.      | 80     | Init Wt. - Tare    | 111.19 | % Ret.      | 27.74        |
| Tare Wt.      | 6.60   | Dry Wt. after test | 30.84  | % Pass #200 | <b>72.26</b> |
| Init. Dry Wt. | 117.79 | Wt. Ret. on #200   | 30.84  |             |              |

| Sieve Size/No. | Sieve Size (mm) | Weight Ret. | % Retained | % Passing |
|----------------|-----------------|-------------|------------|-----------|
| 4              | 4.750           | 0.00        | 0.00       | 100.00    |
| 8              | 2.360           | 0.04        | 0.04       | 99.96     |
| 16             | 1.180           | 0.10        | 0.09       | 99.91     |
| 30             | 0.600           | 0.42        | 0.38       | 99.62     |
| 50             | 0.300           | 1.10        | 0.99       | 99.01     |
| 100            | 0.150           | 4.97        | 4.47       | 95.53     |
| 200            | 0.075           | 30.84       | 27.74      | 72.26     |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |

Tested by: KK Computed by: NL Check by: SV  
Date: 12/10/09 Date: \_\_\_\_\_ Date: \_\_\_\_\_



Boring No.  
PA-36-6

Depth, Ft.  
3'-6'

Classification  
Pale Brown Lean Clay with Sand

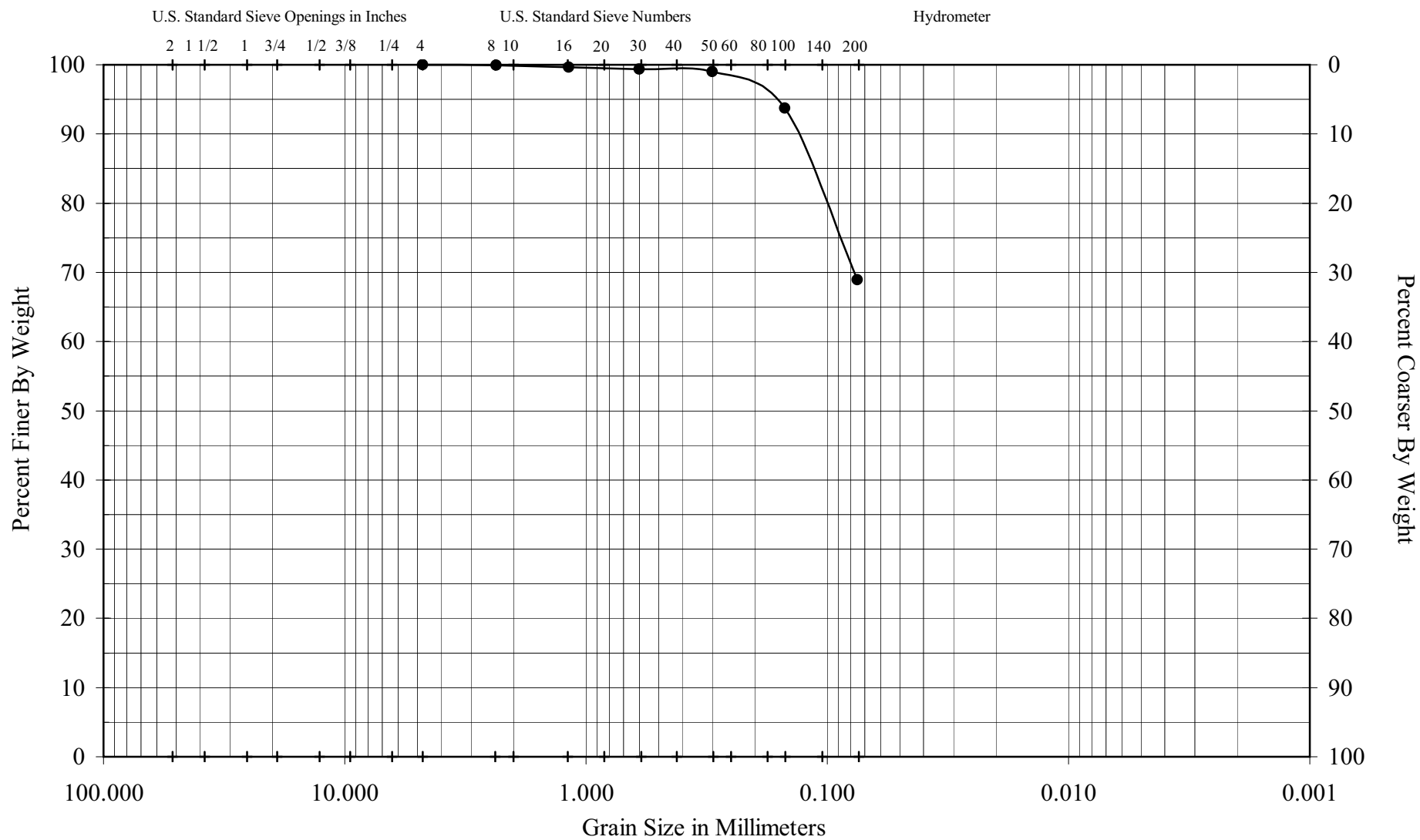
### SIEVE ANALYSIS DATA

Project: Bolivar DMPA No. 36 Job No. HG09-15782 Date: December 10, 2009  
Boring No. PA 36-6 Sample No. 3 Depth: 6'-9'  
Matl Desc. Very Dark Gray Sandy Clay

|               |        |                    |        |             |              |
|---------------|--------|--------------------|--------|-------------|--------------|
| Tare No.      | 67     | Init Wt. - Tare    | 110.36 | % Ret.      | 31.04        |
| Tare Wt.      | 6.57   | Dry Wt. after test | 34.26  | % Pass #200 | <b>68.96</b> |
| Init. Dry Wt. | 116.93 | Wt. Ret. on #200   | 34.26  |             |              |

| Sieve Size/No. | Sieve Size (mm) | Weight Ret. | % Retained | % Passing |
|----------------|-----------------|-------------|------------|-----------|
| 4              | 4.750           | 0.00        | 0.00       | 100.00    |
| 8              | 2.360           | 0.06        | 0.05       | 99.95     |
| 16             | 1.180           | 0.37        | 0.34       | 99.66     |
| 30             | 0.600           | 0.69        | 0.63       | 99.37     |
| 50             | 0.300           | 1.09        | 0.99       | 99.01     |
| 100            | 0.150           | 6.93        | 6.28       | 93.72     |
| 200            | 0.075           | 34.26       | 31.04      | 68.96     |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |

Tested by: KK Computed by: NL Check by: SV  
Date: 12/10/09 Date:  Date:



Boring No.  
PA-36-6

Depth, Ft.  
6'-9'

Classification  
Very Dark Gray Sandy Clay

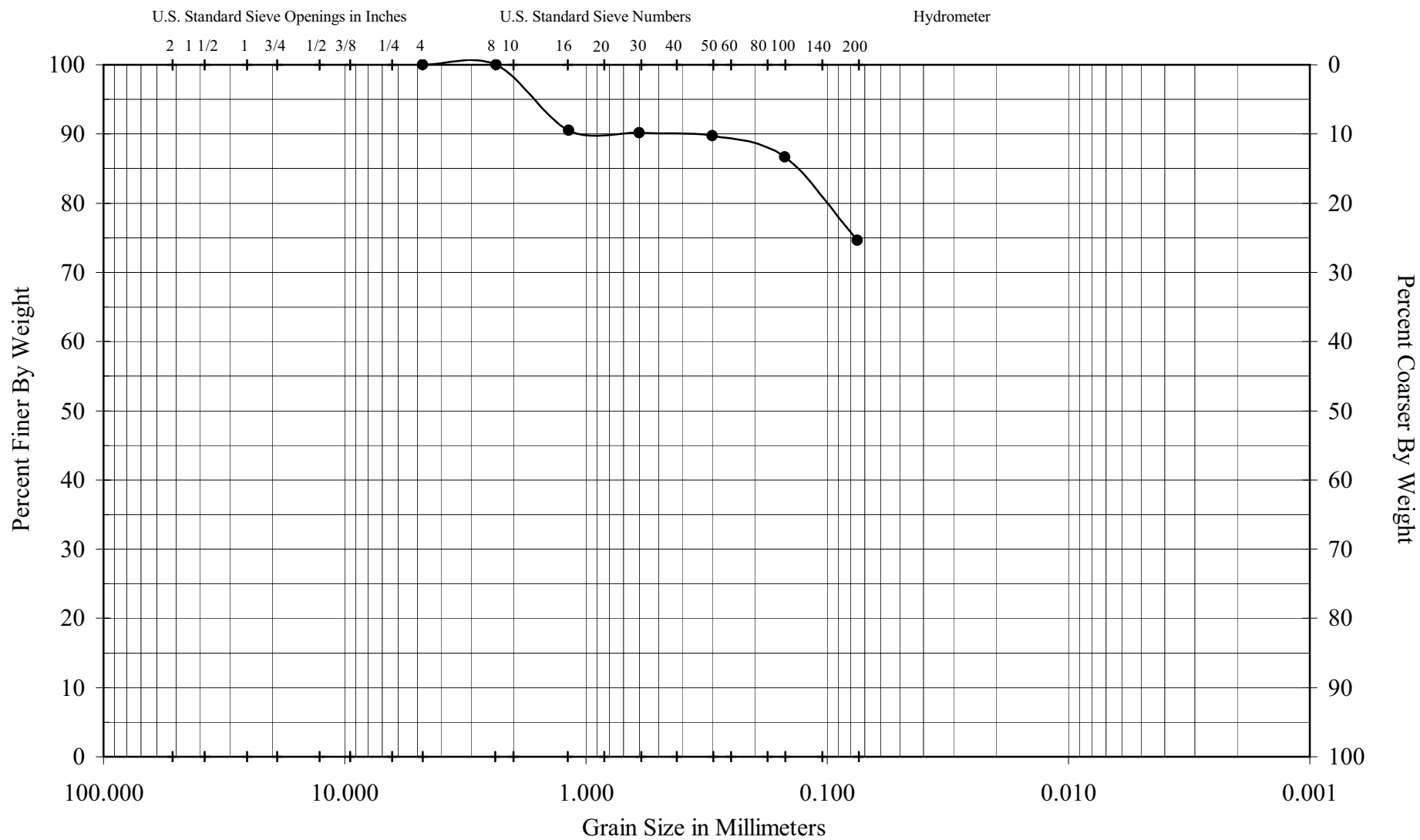
### SIEVE ANALYSIS DATA

Project: Bolivar DMPA No. 36 Job No. HG09-15782 Date: December 10, 2009  
Boring No. PA 36-6 Sample No. 4 Depth: 9'-12'  
Matl Desc. Dark Gray Lean Clay w/ Sand

|               |       |                    |       |             |              |
|---------------|-------|--------------------|-------|-------------|--------------|
| Tare No.      | 74    | Init Wt. - Tare    | 70.44 | % Ret.      | 25.37        |
| Tare Wt.      | 6.55  | Dry Wt. after test | 17.87 | % Pass #200 | <b>74.63</b> |
| Init. Dry Wt. | 76.99 | Wt. Ret. on #200   | 17.87 |             |              |

| Sieve Size/No. | Sieve Size (mm) | Weight Ret. | % Retained | % Passing |
|----------------|-----------------|-------------|------------|-----------|
| 4              | 4.750           | 0.00        | 0.00       | 100.00    |
| 8              | 2.360           | 0.00        | 0.00       | 100.00    |
| 16             | 1.180           | 6.69        | 9.50       | 90.50     |
| 30             | 0.600           | 6.95        | 9.87       | 90.13     |
| 50             | 0.300           | 7.22        | 10.25      | 89.75     |
| 100            | 0.150           | 9.37        | 13.30      | 86.70     |
| 200            | 0.075           | 17.87       | 25.37      | 74.63     |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |
|                |                 |             |            |           |

Tested by: KK Computed by: NL Check by: SV  
Date: 12/10/09 Date: \_\_\_\_\_ Date: \_\_\_\_\_

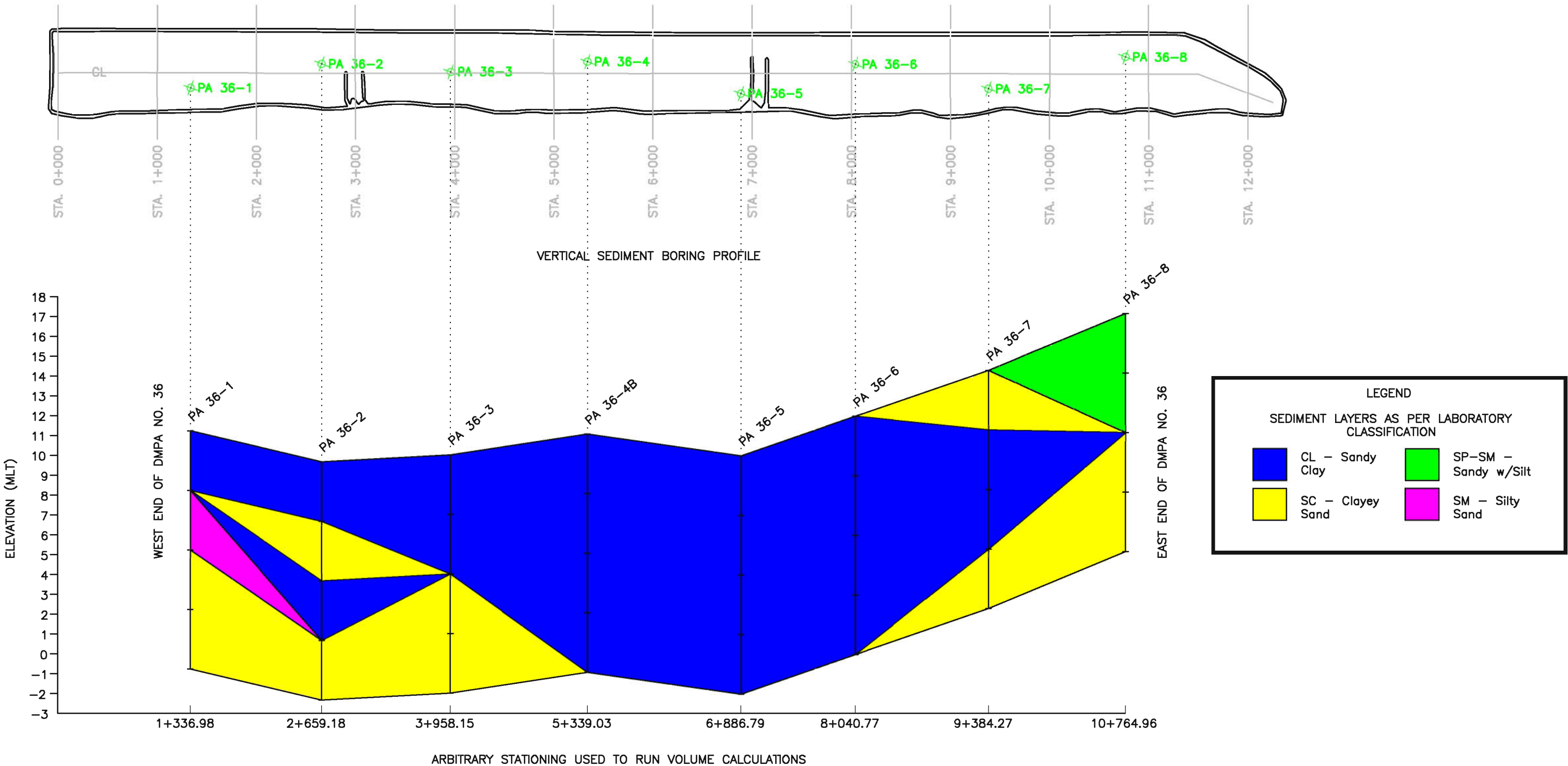


Boring No.  
PA-36-6

Depth, Ft.  
9'-12'

Classification  
Dark Gray Lean Clay with Sand

PLAN VIEW OF SEDIMENT BORING LOCATIONS  
CENTERLINE AND STATIONING USED TO CALCULATE VOLUMES



BOLIVAR SAND SEARCH  
PLACEMENT AREA NO. 36

VERTICAL BORING PROFILE

|                |                             |
|----------------|-----------------------------|
| Drawing Date:  | 14 JANUARY 2010             |
| Drawn By:      | S. HALPIN                   |
| Checked By:    | DLC                         |
| Drawing Name:  | BOL2009_PA36_BorProfile.DWG |
| Drawing Scale: | SEE DWG                     |
| Sheet Number:  | 7 OF 7                      |

|                        |                            |
|------------------------|----------------------------|
| CONDITION SURVEY       |                            |
| Survey Date:           | 18 NOVEMBER 2009           |
| Horizontal Projection: | U.S. State Plane, NAD 83   |
| Zone:                  | Texas South Central - 4204 |
| Vertical Reference:    | MLT                        |
| Survey Units:          | U.S. Survey Feet           |

NOTES:  
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES SHOWN AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING AT THAT TIME.



GAHAGAN & BRYANT ASSOCIATES, INC.  
10831 S. SAM HOUSTON PKWY., WEST  
SUITE 190  
HOUSTON, TEXAS 77071  
TEL: 632.518.2112  
HOUSTON@GBA-INC.COM  
TX REGISTERED ENGINEERING FIRM F-408



1. PA 36-6 looking West.



2. PA 36-6 looking East



1. PA36-6, 0'-3'ft: Dark Gray Lean Clay with Sand, W% 39.6



2. PA36-6, 0'-3'ft: Dark Gray Lean Clay with Sand, W% 39.6



3. PA36-6, 0'-3'ft: Dark Gray Lean Clay with Sand, W% 39.6



4. PA36-6, 6'-9'ft: Very Dark Gray Sandy Clay, W% 50.1



5. PA36-6, 6'-9'ft: Very Dark Gray Sandy Clay, W% 50.1



6. PA36-5, 3'-6'ft: Dark Grayish Brown Lean Clay with Sand, W% 57.5