

**FIELD COMPACTION SUMMARY**

**SPRINGHURST  
O'FALLON, MISSOURI**

**JHB PROPERTIES, INC.**

**JANUARY 2006**

**GEOTEST, INC  
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*David B. Barnes*  
*1/24/06*

## **FIELD COMPACTION SUMMARY**

# **SPRINGHURST O'FALLON, MISSOURI**

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At the request of JHB Properties we have continuously observed the placement of and tested the fill placed in the proposed Springhurst residential development. The existing structures and associated non-engineered fill encountered on this site were removed to virgin soil and replaced with an engineered fill. The site is located on the south side of Missouri Highway N just west of US 40/61 in O'Fallon, Missouri. The location of the site relative to the existing street pattern in the area, a detailed lot and street layout, and the cut and fill lines are shown on Figure 1. Grading and development plans were prepared and furnished by the Sterling Company.

During the various stages of the grading operation field samples were obtained of the materials being placed as fill to establish moisture-density relationships. The test used was the Modified Proctor Compaction Test (ASTM D 1557), and the results are shown on Figures 2-1 through 2-7. Atterberg limits were also determined for the soils placed as fill, and the results of these tests are shown on the same figures.

A field sample was not obtained of the fill mixtures nor of the granular fill placed as backfill for the street crossings to establish moisture-density relationships. Therefore, assumed control densities of 122.0, 130.0 and 135.0 pounds per cubic foot (pcf) were used for these materials. These assumptions were based upon previous experience with similar materials compacted under similar specifications and testing procedures.

Representatives of our office, **GeoTest, Inc.**, were on the site to observe and test the placement of the fill from March 31 to December 15, 2005. Our representatives were also present on the site during most of the clearing and stripping operation. During the grading operation the job was shut down occasionally due to inclement weather and/or equipment breakdown and for other phases of the construction agenda. It is our understanding the site grading is now essentially complete. The actual finish grades should be checked by a qualified surveyor to verify that they are in accordance with the approved grading plan.

In some places, due to the rocky nature of the fill, it was impossible to take in-place drive-tube density tests. Therefore, full-time visual observation of the grading operation was utilized to help verify that proper grading techniques were being used and that the fill was adequately compacted. Density tests were taken in the fill with the number of tests dependent upon the amount and the location of the fill placed. The time lag between field testing and resulting computations averaged less than 0.5 hr since a Troxler nuclear densometer was used. This time interval enabled the grader to be notified promptly when the fill placed did not meet the minimum densification requirements. Therefore, these areas were rerolled and/or retested before any appreciable amount of additional fill was placed.

This report summarizes all of the field density tests taken during the grading operation. Although the grading plans are not included in this report, it may be helpful to refer to them. The tests are listed chronologically by lot location, street name and stationing, or other fill area.

At various times, some difficulty was encountered in obtaining the required density of 90 percent of the maximum density as determined by the Modified Proctor Compaction Test. Consequently, some rerolling and retesting was required.

Based upon the density tests taken and the field observations made, the fill in the proposed building and street areas should be in compliance with the previously issued specifications and should therefore be satisfactory for the direct support of the proposed residential construction.

Based upon the density tests taken and the field observations made, the fill should have an allowable soil bearing pressure of at least 3,000 pounds per square foot (psf). This conclusion is based upon previous experience with fills compacted to a comparable density under similar specifications and testing procedures.

In general, the shallow soils available to be placed as fill did not have high plasticity characteristics. Therefore, significant volume changes with fluctuations in the soil moisture content for these materials are not anticipated. Where the soils placed as fill were moderately plastic rocky clays, the rock content of the clay/rock mixture should help mask their potential swelling capabilities. Where the clays placed as fill were void of rock, they were generally placed in deep fills and/or outside of buildings and street areas. However, since the available silty soils and rocky clays were eventually used up, plastic clays were placed as fill on Lot 76D to 87D, 111D to 114D, 80C to 82C, 91C to 95C and 115C to 119C. Plastic clay was also placed as the final lift in Lots 56B to 62B, 13C to 15C, 20 C to 28C, and 63C to 65C.

If there are any questions as to the suitability or plasticity characteristics of the bearing soils when the footing trenches for the houses are excavated, it is recommended that the footing trenches be observed by a geotechnical engineer prior to the placement of concrete to verify that a satisfactory non-plastic bearing stratum is present or to recommend remedial measures if necessary. **GeoTest, Inc.** will make the recommended tests and field observations provided these services are authorized. It is the developer's and/or contractor's responsibility to notify **GeoTest, Inc.** sufficiently in advance so these observations may be made at the proper time.

Our recommendations with respect to dealing with problems associated with plastic soils are as follows. It should be noted that the remedial measures listed begin with the most positive measures as far as structural stability is concerned.

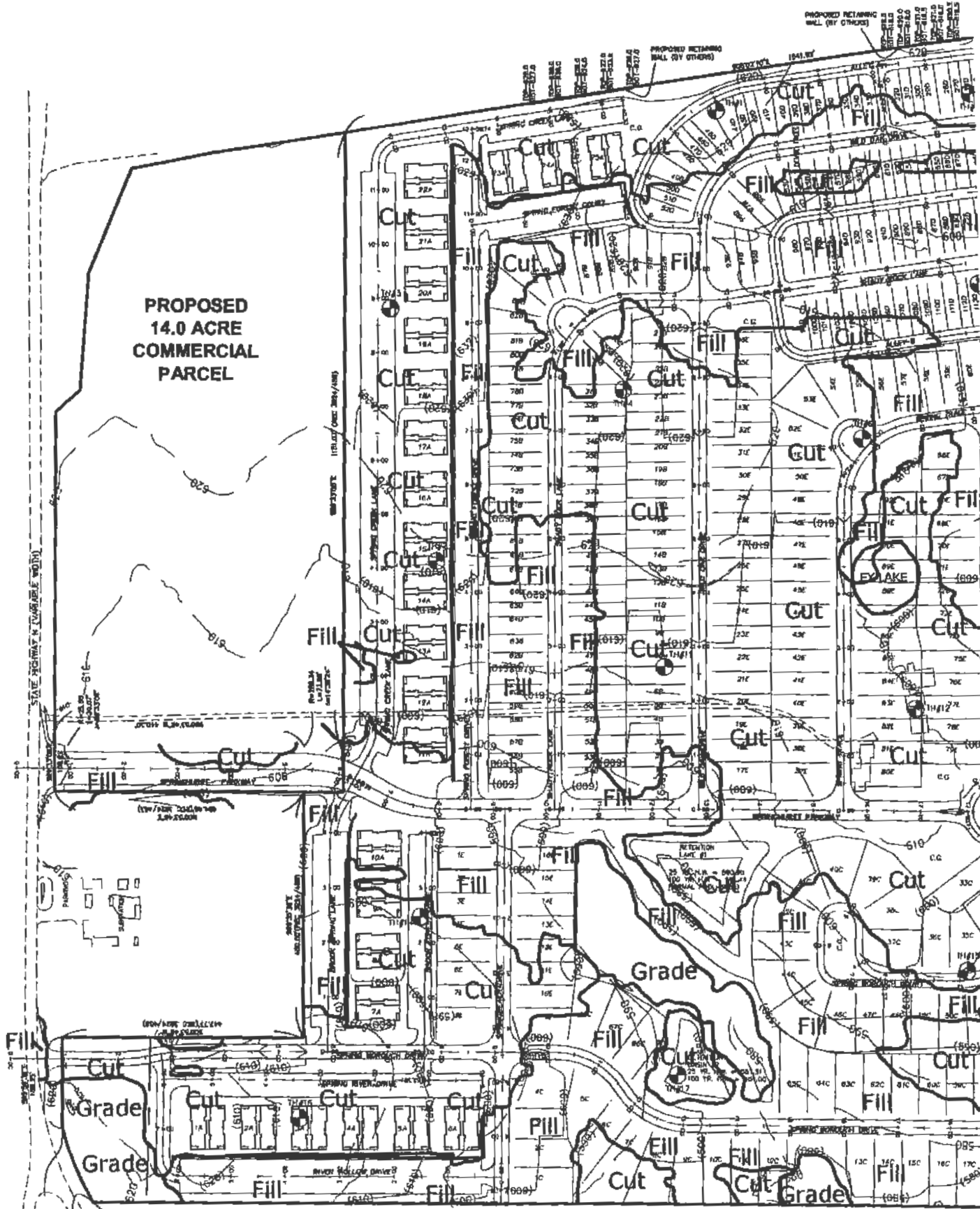
1. Remove the plastic clays below the design base of footing to a maximum depth of 3 ft and beyond the foundation walls a maximum distance of 5 ft, and replace the overexcavated areas with an engineered fill consisting of soils with a liquid limit less than 50. We understand that the availability of silty soils on some sites economically prohibit the use of this method.
2. Remove the plastic clays as discussed above. Treat them with hydrated lime at a concentration of 5 percent by weight, and replace this mixture into the overexcavated areas, compacting the mixture to a minimum density of 90 percent of the maximum density as determined by the Modified Proctor Compaction Test.
3. Remove the plastic clays as described above and replace them with an engineered fill consisting of minus crushed limestone, bringing this material up to the design base of footing elevation and compacting it to a minimum density of 90 percent of the maximum density as determined by the Modified Proctor Compaction Test. If this method is used with clean crushed limestone, testing is not possible and minimal compactive effort is required. However, a sump and pump should be installed below the basement floor slab at the base of the clean crushed limestone to help keep water from ponding on the underlying plastic soils, and the base of the excavation should slope toward the sump.
4. If clean crushed limestone is used or if none of the above are implemented, a variety of minor adjustments to the construction design will help prevent major structural damage from occurring if the underlying plastic soils undergo volume changes due to fluctuations in their moisture content. These are as follows:
  - a. Provide an approved perimeter drain around the unexposed portions of the foundation, keeping the drains at or just below the design base of footing elevation.

- b. Tamp the backfill along the foundation walls to help minimize the infiltration of water into the underlying soils.
- c. Wet down the soils in the basement area thoroughly prior to pouring the basement floor slab or prior to placing clean crushed limestone into the overexcavation.
- d. Leave the basement floor slab independent of the walls and columns so that volume changes in the clays will result in less structural damage to the floor and adjacent walls.
- e. Increase the steel in the foundation walls and increase the thickness of and reinforce the concrete floor slab with welded wire mesh or its equivalent.
- f. Provide positive fall away from the foundation in all directions during the final grading of each individual lot.

Implementation of any of these measures will help prevent the occurrence of major structural damage if the underlying plastic clays change volume, but it should be emphasized again that the remedial measures listed are listed in order of decreasing cost and effectiveness.

The opinions in this report are based upon the topography and street and lot layout shown on the grading plan dated March 22, 2005 which was provided to us. **GeoTest, Inc.** is not responsible for any adverse consequences resulting from changes in this plan that were not brought to our attention. Additionally, it must be noted that as of December 15, 2005, Lots 60E to 65E (the temporary siltation basin) had not been brought to grade as well as Lots 115C to 119C, the Daffodil Trails cul-de-sac, and the burn pit on Lot 49C.

PROPOSED  
14.0 ACRE  
COMMERCIAL  
PARCEL



PROPOSED RETAINING WALL (BY OTHERS)

STATE HIGHWAY 44 (VARIEBLE WIDTH)

EXISTING UTILITIES (SEE SHEET 10/11)

PROPOSED RETAINING WALL (BY OTHERS)

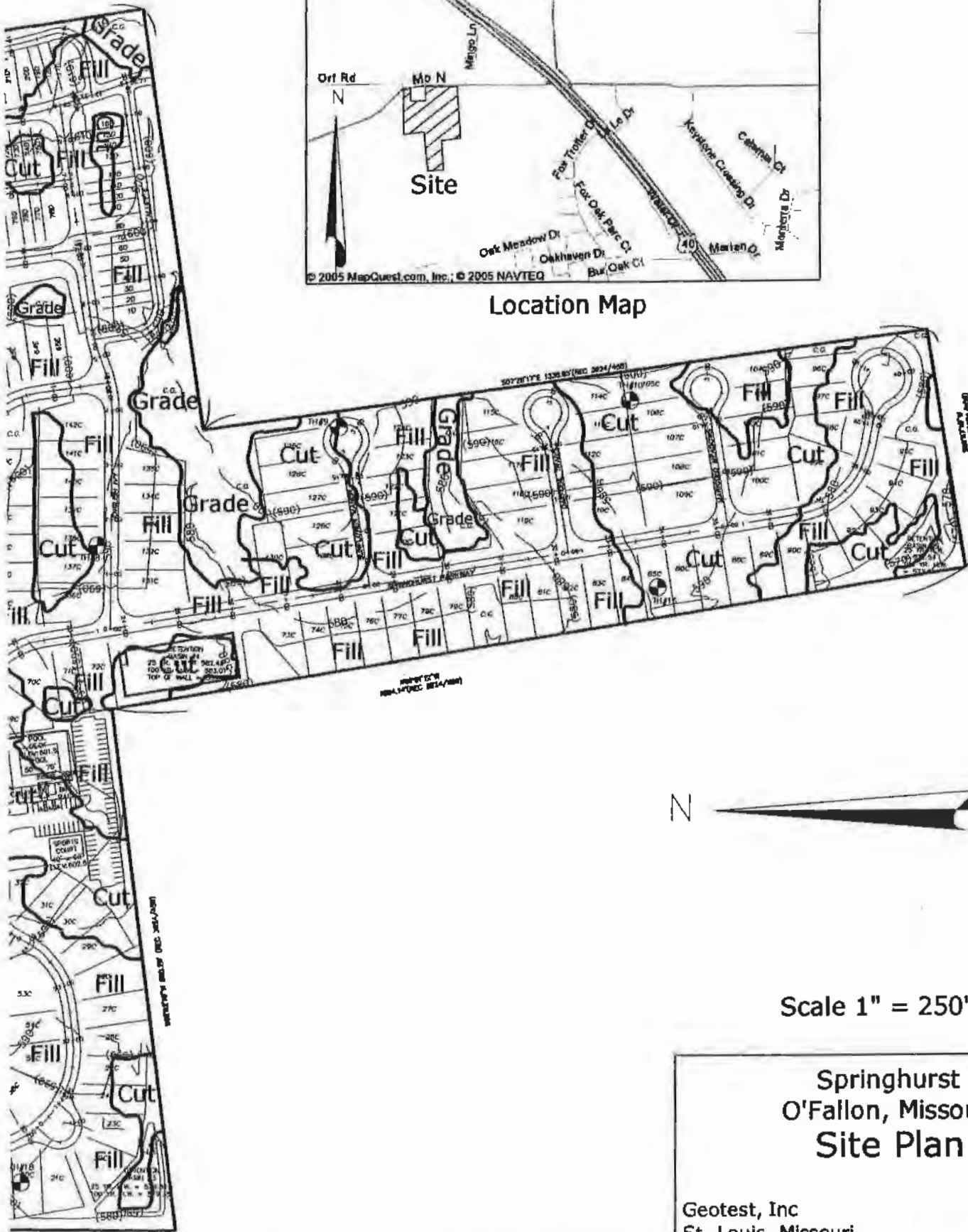
RETENTION LAKE (PI)

000 / 000 724.00 000 2.00 0.00 000





Location Map



Scale 1" = 250'

Springhurst  
O'Fallon, Missouri  
Site Plan

Geotest, Inc  
St. Louis, Missouri

March  
2005

Lab: D (max) = 114.6 pct  
W (opt) = 12.7 %

ASTM D 1557

46 1323

10  
KELUFFEL & ESSER CO. MADE IN U.S.A.

115  
110  
105

D = Dry Unit Weight (pct)

Field Sample  
Grey clayey silt  
Depth - 1 1/2' - 2'  
LL = 30  
PL = 22

*Handwritten notes:*  
Springhurst  
Grey clayey silt  
Depth - 1 1/2' - 2'

Springhurst  
O'Fallon, Missouri  
COMBACTON CURVE  
GeoTest, Inc.  
St. Louis, MO  
June 2004

8 10 12 14 16 18 20 22  
Moisture Content (%)

Figure 2-1



Lab: D (max) = 108.3 pcf  
W (opt) = 16.2 %

AST, D. 1557

46 1323

10 1/2" X 10 1/2" INCHES  
KEUFFEL & ESSER CO. MADE IN U.S.A.

110

105

100

D = Dry Unit Weight (pcf)

Field Sample  
Grey silty clay  
Depth = 2 1/2' - 3'  
LL = 38  
PL = 21

*Field Sample*

*Springhurst*

*June 2004*

Springhurst  
O'Fallon, Missouri

COMPACTION CURVE

GeoTest, Inc.  
St. Louis, MO

June  
2004

10

12

14

16

18

20

22

24

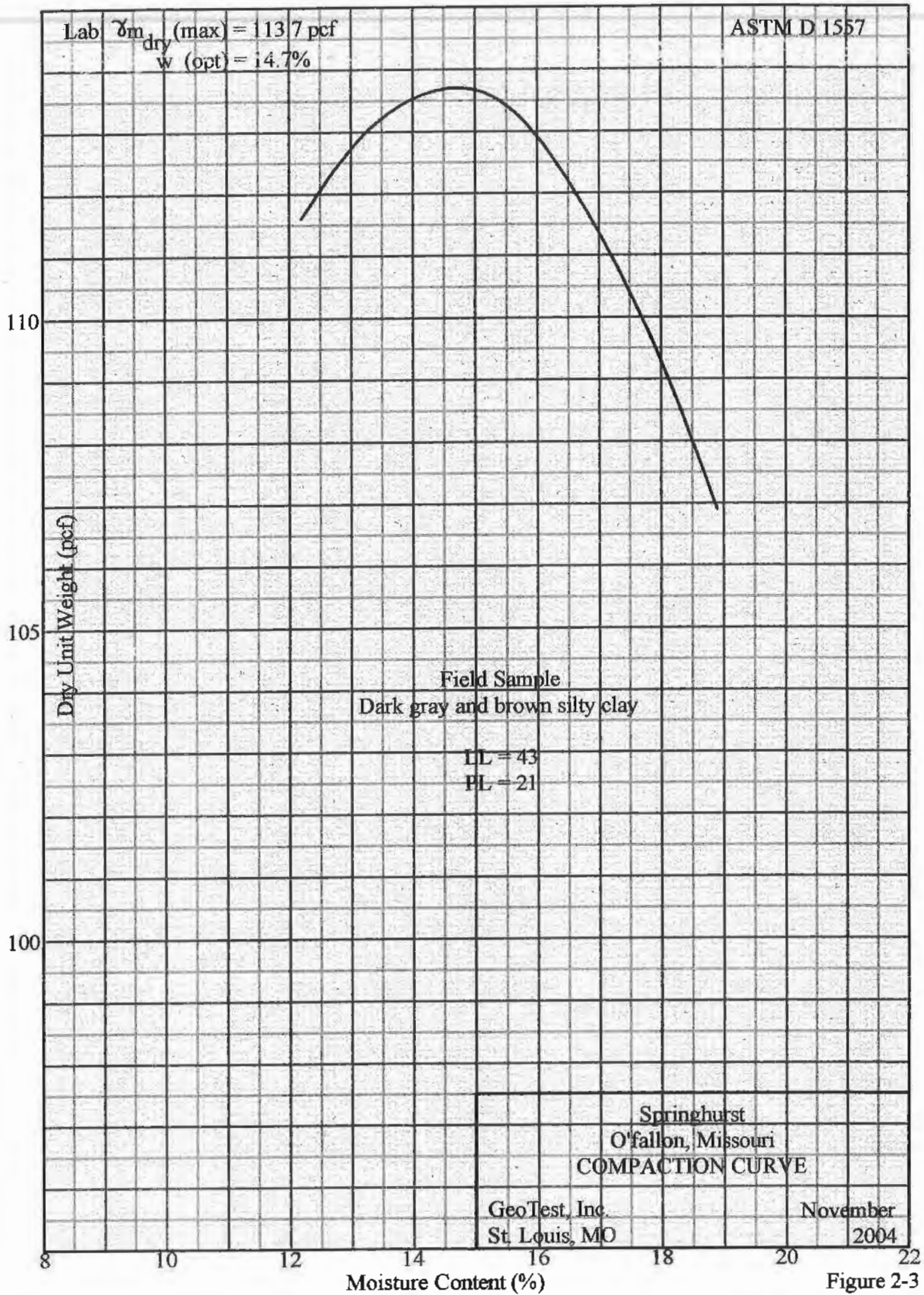
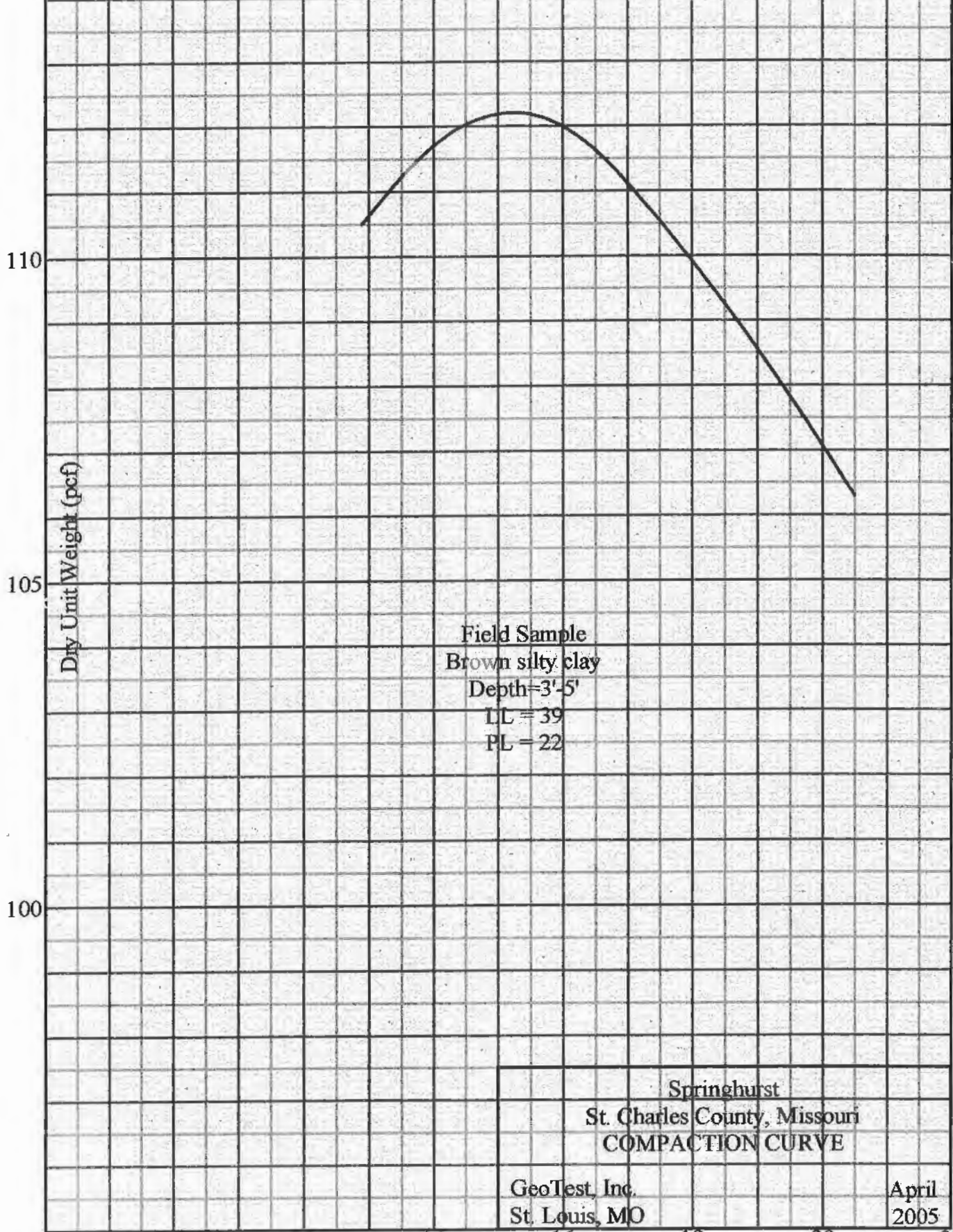


Figure 2-3



Lab  $\gamma_{m, dry} (max) = 112.2 \text{ pcf}$   
 $w (opt) = 15.2\%$

ASTM D 1557



Field Sample  
Brown silty clay  
Depth=3'-5'  
LL = 39  
PL = 22

Springhurst  
St. Charles County, Missouri  
COMPACTION CURVE

GeoTest, Inc.  
St. Louis, MO

April  
2005

Moisture Content (%)

Figure 2-4

Lab  $\gamma_{m, dry}$  (max) = 108.8 pcf  
w (opt) = 16.0%

ASTM D 1557

110

Dry Unit Weight (pcf)

105

Field Sample  
Reddish-brown highly plastic clay  
LL=76  
PL=19

Springhurst  
St. Charles County, Missouri  
COMPACTION CURVE

GeoTest, Inc.  
St. Louis, MO

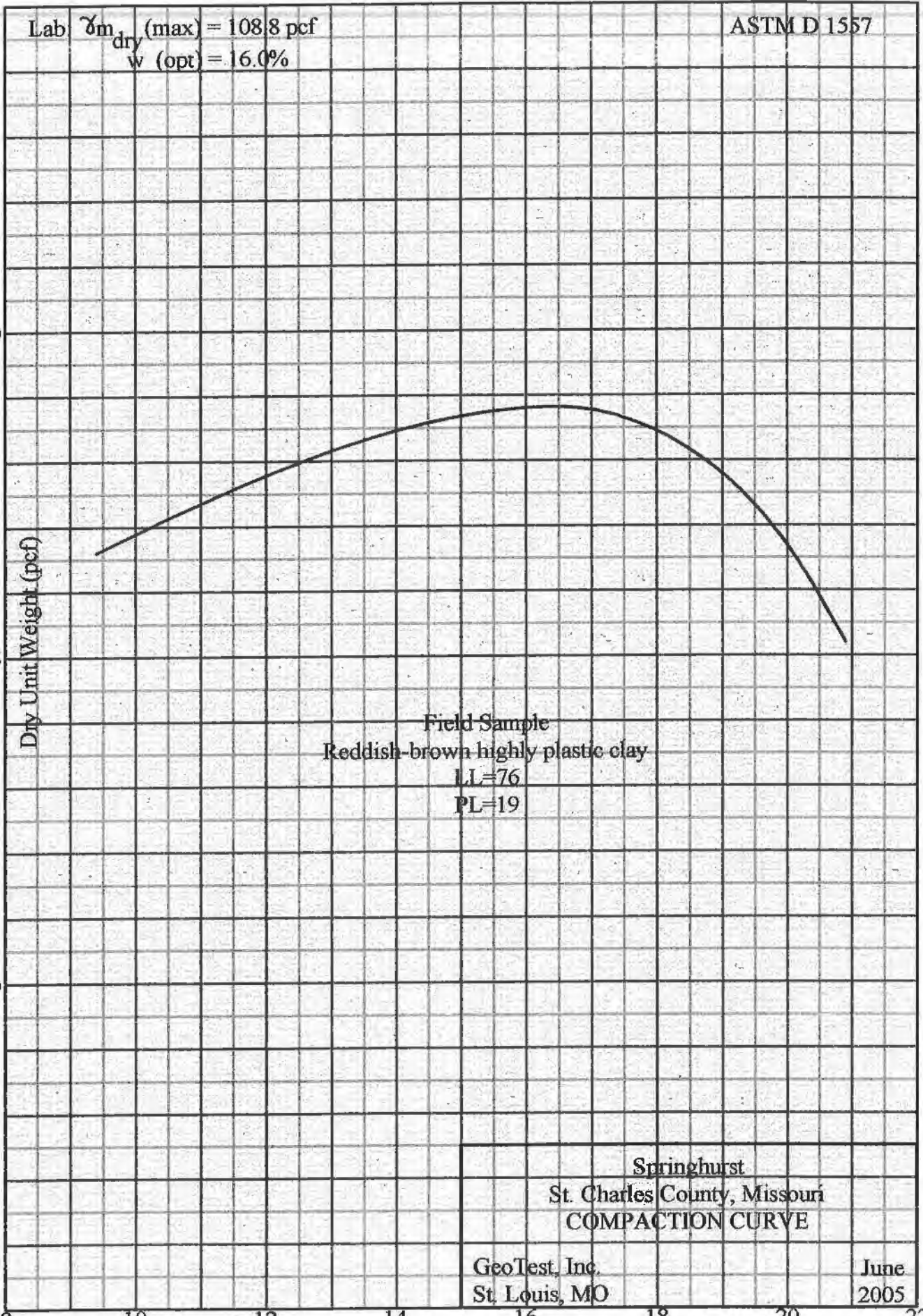
June  
2005

100

8 10 12 14 16 18 20 22

Moisture Content (%)

Figure 2-5



Lab  $\gamma_{m, dry}$  (max) = 132.5 pcf  
w (opt) = 8.3%

ASTM D 1557-B

130

125

120

Dry Unit Weight (pcf)

Field Sample  
1" crushed limestone minus

Springhurst  
St. Charles County, Missouri  
COMPACTION CURVE

GeoTest, Inc.  
St. Louis, MO

September  
2005

2

4

6

8

10

12

14

16

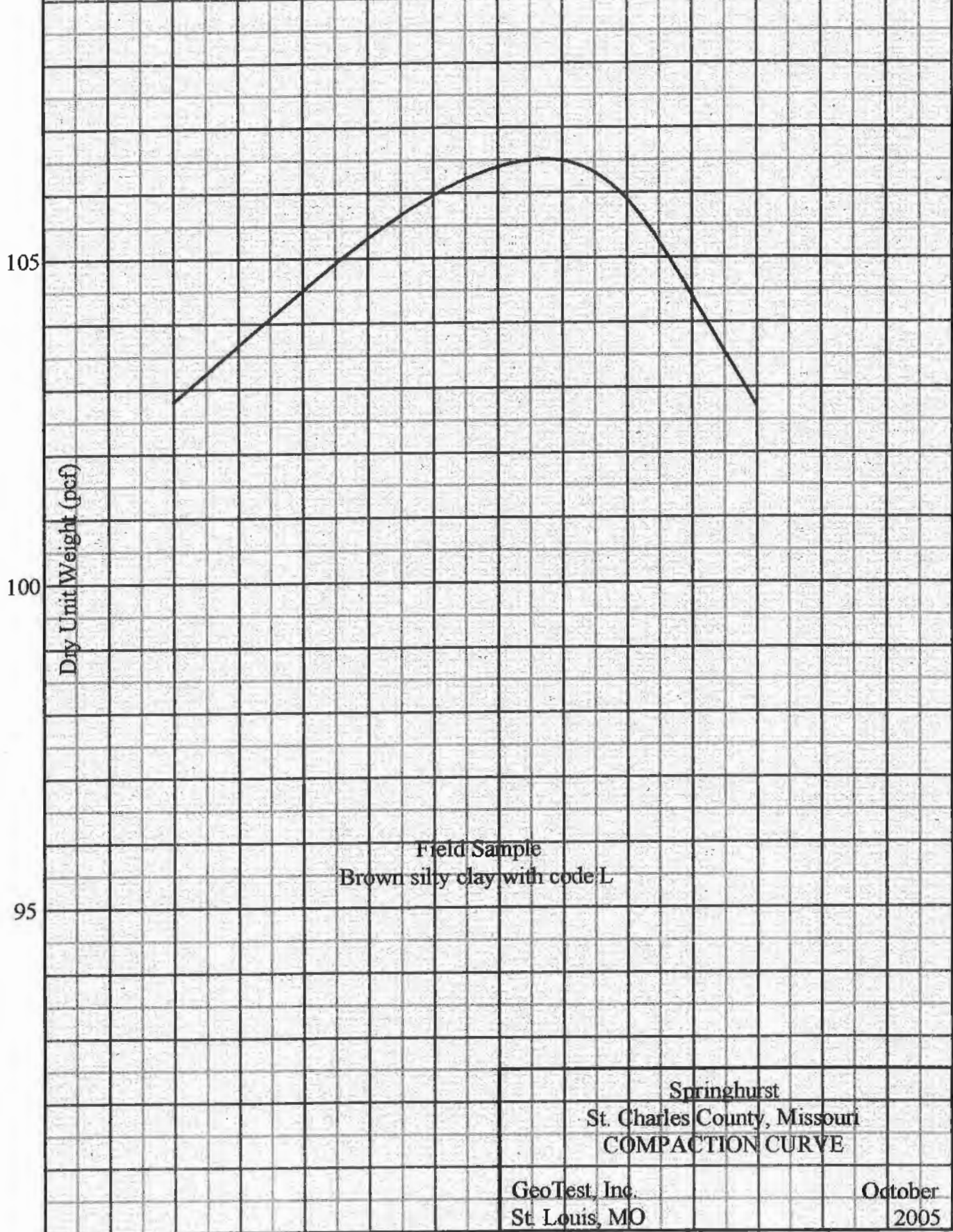
Moisture Content (%)

Figure 2-6



Lab  $\gamma_{m, dry} (max) = 106.5 \text{ pcf}$   
 $w (opt) = 17.6\%$

ASTM D 1557



Field Sample  
Brown silty clay with code L

Springhurst  
St. Charles County, Missouri  
COMPACTION CURVE

GeoTest, Inc.  
St. Louis, MO

October  
2005

## COMPACTION TEST SUMMARY

# SPRINGHURST O'FALLON, MISSOURI

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>_{mdry}</math></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
5/19	Lot 43B	100.6	16.6	112.2	89.8	Rerolled
5/23	Lot 44B	102.9	15.0		91.8	
5/19	Lot 45B	101.2	14.1		90.3	
5/23	Lot 46B	104.2	14.8		93.1	
5/19	Lot 47B	103.6	12.5		92.5	
5/23	Lot 48B	100.5	15.6		89.7	Rerolled
5/19	Lot 49B	104.5	14.6		93.3	
5/23	Lot 50B	100.3	16.8		89.6	Rerolled
5/19	Lot 51B	106.8	13.8		95.3	
5/23	Lot 52B	102.5	12.2		91.5	
5/19	Lot 53B	101.5	12.7		90.7	
5/23		105.6	12.7		94.3	
5/16	Lot 54B	113.3	11.2	122.0*	92.8	
	Lot 55B	113.9	11.3		93.4	
5/16	Lot 56B	108.2	13.9	112.2	96.6	
5/24		102.7	17.5	114.6	89.6	Rerolled

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u>γ<sub>m</sub></u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
5/19	Lot 58B	108.3	12.3	112.2	96.7	
5/24		104.5	11.4	114.6	91.2	
5/19	Lot 60B	100.5	17.8	112.2	89.8	Rerolled
5/24		104.4	12.4	114.6	91.1	
5/19	Lot 62B	103.3	16.9	112.2	92.2	
5/23		102.5	11.3		91.6	
5/24		106.3	9.7	114.6	92.7	
5/19	Lot 64B	102.9	17.5	112.2	91.9	
5/23		103.7	13.6		92.6	
5/19	Lot 66B	108.8	10.5		97.1	
5/23		102.1	15.6		91.2	
	Lot 68B	103.6	14.2		92.5	
5/18	Lot 1C	102.6	15.7		91.4	
5/17	Lot 2C	106.2	16.8	114.6	92.7	
	Lot 3C	104.2	18.6		90.9	
5/18		108.8	10.5	112.2	97.1	
5/17	Lot 4C	105.2	19.3	114.6	91.8	
	Lot 5C	108.1	18.4		94.4	
	Lot 6C	106.6	16.1		93.0	
		106.1	12.0		92.6	
5/12	Lot 7C	102.8	14.1		89.7	Rerolled
5/17		106.8	17.9		93.2	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
5/7	Lot 8C	101.9	16.3	112.2	91.0	
5/10		100.4	18.1		89.6	Rerolled
5/17		105.2 111.8	19.3 14.8	114.6	91.8 97.6	
5/12	Lot 9C	103.5	14.5		89.7	Rerolled
5/17		108.6	15.7		94.8	
5/7	Lot 10C	101.2	20.1	112.2	90.2	
5/10		104.4	14.4		93.2	
5/17		107.8 107.9	18.6 15.7	114.6	94.0 94.2	
5/12	Lot 11C	102.7	14.2		89.6	Rerolled
5/17		107.3 107.3	14.3 14.8		93.6 93.6	
5/6	Lot 13C	101.0	20.1	112.2	90.0	
5/18		111.7	12.2	114.6	97.5	
5/24		106.8	18.8		93.2	
4/6	Lot 14C	98.4 102.5	22.9 17.2		85.9 89.5	Rerolled and Retested Retest of Above, Rerolled
4/18		100.6	17.2	108.3	92.9	
5/6		92.6	15.9	112.2	82.6	Rerolled and Retested
5/10		106.1	14.4		94.8	Retest of Above
5/18		106.4	13.6	114.6	92.8	
	Lot 15C	109.0	11.3		95.1	
5/24		106.3	15.6		92.8	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	$\gamma$ <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
4/6	Lot 16C	103.7 103.3	19.1 19.6	114.6	90.5 90.2	
4/16		104.6	20.8		91.3	
4/18		101.1	17.3	108.3	92.9	
5/10		100.3	16.9	112.2	89.6	Rerolled
4/19	Lot 17C	104.3	17.2	114.6	91.0	
4/6	Lot 18C	102.3 103.1	19.8 20.7		89.2 90.0	Rerolled and Retested Retest of Above
4/16		102.6	19.7		89.6	Rerolled
4/18		100.3	21.8		92.6	
5/10		109.2	16.2		97.5	
4/5	Lot 19C	103.9	14.7		90.7	
4/19		109.4	12.8		95.5	
4/5	Lot 20C	103.0	15.3		89.9	Rerolled
4/6		102.2 104.8	20.7 20.6		89.2 91.5	Rerolled and Retested Retest of Above
4/16		105.7	17.8		92.3	
4/18		101.8	19.0	112.2	90.7	
5/10		107.6	15.6		96.1	
5/24		109.3	12.3	114.6	95.4	
4/5	Lot 21C	103.1	17.7		90.0	
4/19		104.9	13.1		91.5	
5/4		102.0	19.2	112.2	90.9	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u>m<sup>3</sup>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>ilon</u>	<u>Remarks</u>
5/5	Lot 21C	101.1	19.1	112.2	90.1	
5/6		101.5	22.2		90.5	
5/17		107.5	17.0	114.6	93.8	
5/5	Lot 22C	102.4	19.8	112.2	91.3	
5/6		102.5	18.8		91.3	
5/10		111.1	12.4		99.2	
5/17		103.1	17.7	114.6	89.9	Rerolled
5/24		109.1	15.8		95.2	
		105.5	18.0		92.1	
5/5	Lot 23C	102.0	19.8	112.2	90.9	
5/6		102.7	23.3		91.1	
5/17		103.9	19.2	114.6	90.7	
5/13	Lot 24C	98.8	18.4	108.8	90.8	
5/17		104.4	17.5	114.6	91.1	
5/24		105.5	11.9		92.1	
		105.0	19.6		91.7	
	Lot 26C	104.1	18.0		90.9	
	Lot 28C	110.6	13.4		96.5	
4/4	Lot 42C	103.2	11.8		90.0	
4/7		108.4	15.2		94.6	
4/9		104.6	17.1		91.3	
5/3		101.6	20.8	112.2	90.6	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u>γ</u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
5/10	Lot 42C	106.5	11.4	114.6	92.9	
5/13		108.2	14.9	108.8	99.4	
4/9	Lot 43C	104.7	18.9	114.6	91.4	
4/16		102.6	19.8		89.5	Rerolled
5/4		101.0	21.2	112.2	90.1	
5/11		104.6	15.4	114.6	91.3	
4/4	Lot 44C	103.8	17.0		90.6	
4/9		105.0	15.5		91.6	
4/19		101.6	19.4	112.2	90.6	
5/10		106.2	12.1		94.7	
5/13		104.5	17.9	108.8	96.0	
4/4	Lot 45C	103.8	15.0	114.6	90.6	
4/9		90.7 102.7	21.4 18.1		79.2 89.6	Rerolled and Retested Retest of Above, Rerolled
4/19		101.5	14.8	112.2	90.5	
5/11		109.4	14.9	114.6	95.4	
5/24		109.1	9.0		95.2	
4/7	Lot 46C	102.8	19.2		89.7	Rerolled
4/9		105.5	11.7		92.1	
4/16		103.8	20.1		90.6	
5/10		111.1	12.1		96.8	
4/4	Lot 47C	103.0	18.0		89.9	Rerolled

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	$\gamma$ <u>m<sub>dry</sub></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
4/7	Lot 47C	103.7	16.1	114.6	90.5	
4/9		103.4	15.4		90.2	
5/11		107.1	16.2		93.4	
5/24		106.5	14.0		92.9	
	Lot 49C	102.8	17.9		89.7	Rerolled
	(Burn Pit Backfill)					
12/23		98.2	22.7	108.8	90.3	
		98.2	24.4		90.3	
		102.2	22.2		93.9	
		100.1	23.3		92.0	
		103.9	18.7		95.5	
		101.2	22.7		93.0	
		101.1	20.8		92.9	
		103.3	19.0		95.0	
5/24	Lot 51C	108.4	15.7	114.6	94.6	
	Lot 53C	106.0	12.1		92.5	
		103.0	17.7		89.9	Rerolled
4/9	Lot 54C	105.2	18.8		91.8	
5/24		105.1	15.1		91.7	
	Lot 55C	102.6	16.5		89.6	Rerolled
		103.9	14.7		90.6	
	Lot 56C	107.0	14.5		93.4	
	Lot 57C	105.4	17.8		92.0	
4/19	Lot 63C	102.2	13.6	112.2	91.1	
5/24		103.4	12.6	114.6	90.2	
4/4	Lot 64C	94.8	20.5		82.7	Rerolled and Retested

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <b>2005</b>	<u>Location</u>	<u>γ</u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
4/19	Lot 64C	102.5	16.7	112.2	91.4	Retest of Above
5/7		101.5	18.0	108.8	93.3	
5/18		103.1	12.0	112.2	92.0	
	(Burnpit Backfill)					
5/7		104.1	15.5	114.6	90.8	
		106.4	15.9		92.8	
		105.9	14.2	112.2	94.6	
		100.7	17.8		89.9	Rerolled
		99.0	22.4	108.8	91.0	
		100.3	16.9	112.2	89.6	Rerolled
		101.2	18.7		90.4	
5/9		101.5	17.7		90.6	
		100.3	19.3		89.6	Rerolled
5/18	Lot 65C	106.7	17.4		95.3	
5/24		110.3	15.6	114.6	96.3	
5/16	Lot 66C	105.7	15.6	112.2	94.2	
	Lot 67C	102.6	16.7		91.5	
	Lot 68C	104.3	14.1		92.9	
6/3	Lot 73C	104.2	17.9	114.6	90.9	
		104.2	15.9	112.2	92.8	
6/9		101.0	19.1		90.2	
6/3	Lot 74C	103.8	17.9	114.6	90.6	
6/10		104.6	15.6	112.2	93.4	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u>γ<sub>m</sub></u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pas-</u> <u>sion</u>	<u>Remarks</u>
6/3	Lot 75C	104.4	17.5	114.6	91.1	
		106.5	13.3	112.2	94.9	
6/9		101.2	20.1		90.4	
6/3	Lot 76C	101.9	18.6		91.0	
6/10		105.5	14.5		94.2	
6/3	Lot 77C	101.4	17.8		90.5	
		101.3	14.5		90.3	
6/9		101.4	16.9		90.5	
6/10	78C	101.0	15.9		90.1	
6/3	79C	104.0	16.0		92.7	
6/9		100.3	18.9		89.6	Rerolled
6/10	Lot 80C	100.4	13.8		89.7	Rerolled
6/11		107.4	16.2	114.6	93.7	
6/10	Lot 81C	102.9	15.0	112.2	91.9	
		100.3	15.0		89.6	Rerolled
6/11		101.3	18.4		90.5	
		106.7	15.9	114.6	93.1	
6/16		107.4	12.6		93.7	
6/10	Lot 82C	101.8	15.2	112.2	90.9	
6/11		105.9	14.1	114.6	92.4	
	Lot 83C	102.1	19.3	112.2	91.1	
		105.1	14.9	114.6	91.7	
6/16		105.4	13.8		92.0	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><sup>m</sup>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
6/9	Lot 115C	103.8	15.1	112.2	92.7	
6/10		101.5	19.6	108.3	93.7	
10/27		101.9	12.7	112.2	90.8	
		104.5	14.9		93.1	
10/28		111.7	13.2		99.5	
6/9	Lot 116C	103.9	18.5		92.6	
		102.7	15.6		91.5	
10/27		103.1	15.0		91.9	
		101.4	12.2		90.4	
10/28		104.2	17.2		92.8	
6/9	Lot 117C	104.1	15.2		92.8	
6/10		97.4	16.1	108.3	90.0	
6/16		102.1	17.0	112.2	91.0	
10/27		104.1	16.8		92.8	
		107.1	15.0		95.5	
10/28		111.1	10.0		99.1	
6/9	Lot 118C	103.3	16.8		92.0	
		102.9	15.0		91.7	
10/27		105.4	15.2		93.9	
		106.2	15.0		94.7	
10/28		104.2	16.0		92.9	
6/10	Lot 119C	102.9	13.8	108.3	95.0	
6/16		101.9	19.3	112.2	90.8	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>^m</math>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
10/27	Lot 119C	104.8 105.9	15.8 15.6	112.2	93.4 94.4	
10/28		101.6	15.5		90.5	
4/20	Lot 131C	101.2	20.8		90.2	
5/2		101.2	17.2		90.2	
5/7		104.2	13.2	114.6	90.9	
5/11		109.2	13.5	112.2	97.5	
5/10	Lot 132C	111.0	9.2	114.6	96.8	
4/20	Lot 133C	106.2	17.1	112.2	94.7	
5/2		104.3	16.0		93.0	
5/7		106.9	15.0	114.6	93.2	
5/11		101.0	18.0	112.2	90.2	
5/10	Lot 134C	102.9	18.0	114.6	89.8	Rerolled
4/20	Lot 135C	103.2	13.1	112.2	92.0	
5/2		95.5	24.3		85.2	Rerolled and Retested
5/7		105.6	11.7		94.1	Retest of Above
5/11		98.7	22.6		88.0	Rerolled, Final Grade
6/9	Lot 143C	102.6	15.4		91.0	
5/13	Lot 144C	95.6	21.6	108.8	87.9	Rerolled and Retested
6/1		102.7	12.0	114.6	89.6	Retest of Above, Rerolled
6/9	Lot 145C	100.5	16.1	112.2	89.6	Rerolled
6/1	Lot 146C	102.7	12.0	114.6	89.6	Rerolled

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><sup>m</sup>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
5/13	Lot 147C	101.1	17.5	108.8	92.9	
6/9		102.4	14.3	112.2	91.3	
6/1	Lot 148C	103.3	11.0	114.6	90.1	
6/9	Lot 149C	102.9	16.5	112.2	91.7	
10/25	Lot 1D	102.7	14.7		91.5	
		107.5	14.5		95.8	
10/26		101.2	16.0	106.5	95.0	
		102.4	16.1	112.2	91.3	
		102.7	14.6		91.5	
10/25	Lot 2D	101.4	19.4		90.4	
		102.9	12.5		91.7	
10/26		96.7	15.5	106.5	90.8	
		108.8	14.7	112.2	97.0	
		102.8	17.7		91.6	
10/25	Lot 3D	100.9	15.6		90.0	
10/26		105.2	15.2	106.5	90.1	
		101.1	15.4	112.2	90.1	
		100.9	14.1		89.9	Rerolled
6/7	Lot 4D	105.9	19.0	114.6	92.4	
	Lot 7D	103.0	15.8		89.9	Rerolled
	Lot 10D	104.1	17.9		90.8	
	Lot 13D	103.1	16.8		90.0	
6/8	Lot 76D	104.2	18.4		90.9	
6/20	Lot 77D	104.3	15.4	112.2	93.0	
6/8	Lot 78D	109.7	10.1	114.6	95.7	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u>γ</u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
7/5	Lot 78D	99.2	16.1	114.6	86.6	Rerolled and Retested
		101.9	14.1	112.2	91.0	Retest of Above
6/20	Lot 79D	103.4	17.0		92.2	
6/8	Lot 80D	103.0	19.4	114.6	89.9	Rerolled
6/1	Lot 81D	106.3	15.0		92.8	
6/20		102.5	16.3	112.2	91.3	
6/1	Lot 82D	104.4	15.8		93.2	
6/8		106.3	10.3	114.6	92.7	
6/1	Lot 83D	104.5	15.5		91.2	
6/20		102.0	16.2	112.2	90.9	
6/2	Lot 84D	105.4	14.4		94.1	
6/8		104.8	13.4	114.6	91.5	
7/5		111.3	8.3		97.1	
6/1	Lot 85D	107.5	17.2		93.8	
6/20		100.9	17.7	112.2	89.9	Rerolled
6/2	Lot 86D	102.7	17.3		91.7	
6/8		103.4	9.0	114.6	90.2	
6/1	Lot 87D	106.0	17.3		92.5	
6/2	Lot 90D	105.3	14.3	112.2	94.0	
6/2	Lot 92D	103.0	15.3		92.0	
5/10	Lot 1E	106.7	14.5	114.6	93.1	

SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u>γ<sub>m</sub></u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
5/11	Lot 1E	102.0	14.3	112.2	91.0	
5/13		101.9	19.1	108.8	93.7	
5/17		104.8	17.9	114.6	91.4	
6/6		102.1	15.0	112.2	91.0	
5/17	Lot 2E	108.2	17.8	114.6	94.4	
6/6		112.6	9.6	112.2	100.6	
5/4	Lot 11E (Burnpit Backfill)					
		95.0	22.9		84.7	Rerolled and Retested
		96.9	15.8		86.4	Rerolled and Retested
		98.8	24.4		88.1	Rerolled and Retested
5/5		101.3	19.6		90.3	Retest of Above
5/6		95.7	24.8		85.3	Retest of Above, Rerolled and Retested
		89.5	28.1		79.8	Retest of Above Rerolled and Retested
5/7		101.2	20.6		90.3	Retest of Above
		101.2	20.1		90.3	Retest of Above
		101.2	14.0		90.4	
		102.1	15.8		91.1	
5/9		101.1	14.6		90.3	
		101.1	15.3		90.2	
		106.5	17.2		95.1	
		102.8	15.8		91.8	
		102.8	15.4		91.8	
		100.4	21.9		89.7	Rerolled
5/17	Lot 14E	105.7	17.0	114.6	92.2	
5/10	Lot 15E	102.7	19.5		89.6	Rerolled
5/11		104.9	16.8		93.6	
5/16		104.4	16.8	112.2	93.1	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u>Y</u> <u>m dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
5/17	Lot 15E	107.5	13.7	114.6	93.8	
6/6		102.5	14.4	112.2	91.5	
5/10	Lot 16E	103.4	17.4	114.6	90.2	
5/11		104.0	18.8	112.2	92.9	
5/13		101.7	18.1	108.8	93.5	
5/16		103.4	16.8	112.2	92.1	
5/17		106.8	16.5	114.6	93.2	
6/6		107.7	9.4	112.2	96.1	
5/12	Lot 53E (Bumpit Backfill)	104.0	18.1	114.6	90.7	Rerolled
		105.4	16.1		91.9	
		103.0	17.7		89.9	
		104.2	16.7		91.0	
		105.0	9.4		91.6	
		108.5	13.2		94.7	
6/16	Lot 63E	103.6	12.9	112.2	92.5	
	Lot 64E	104.1	15.2		92.9	
	Lot 65 E	105.7	14.1		94.4	
5/7	Lot 88E	102.3	16.8	114.6	93.0	
5/10		100.2	18.7	112.2	89.5	Rerolled
5/18		103.4	9.2	114.6	90.2	
6/2		101.7	21.1		90.8	
5/7	Lot 89E	92.4	24.0		94.0	Rerolled and Retested
		101.7	17.2	112.2	90.6	Retest of Above

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><sup>m</sup>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
5/10	Lot 89E	101.1	19.0	112.2	90.3	
5/18		104.8	8.2	114.6	91.4	
6/1		107.5	17.2		93.8	
<u>Springhurst Parkway</u>						
6/16	1+00	100.9	17.5	112.2	89.9	Rerolled
6/17		104.5	18.5		93.1	
6/16	4+00	100.4	18.7		89.5	Rerolled
6/17		103.2	15.2		92.0	
6/16	5+00	103.1	18.8		91.9	
6/17		103.5	18.1		92.2	
	6+00	106.6	14.3		95.0	
10/18	6+00 (Water Crossing Backfill)					
		138.7	5.5	135.0*	102.7	
		133.7	5.0		99.1	
		135.3	2.3		100.2	
		126.4	5.7		93.7	
		128.9	4.2		95.5	
		132.9	5.1		98.4	
10/5	7+00	103.4	18.2	112.2	92.1	
10/6		105.5	14.5		94.1	
		106.5	16.5		94.9	
10/7		108.3	14.4		96.6	
		103.6	16.9		92.4	
10/8	7+00	107.3	17.6	112.2	95.6	
		106.5	13.9		94.9	
		105.3	17.8		93.8	
10/10		106.3	15.0		94.7	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>m_{dry}</math></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Springhurst Parkway						
6/6	8+00	105.4	19.7		93.9	
10/5		101.2	20.2		90.2	
10/6		101.3	18.3		90.3	
		101.2	19.7		90.2	
10/7		107.9	17.0		96.1	
		100.9	16.5		89.9	Rerolled
10/8		105.9	14.9		94.4	
		106.8	15.8		95.2	
		107.1	16.5		95.5	
10/10		103.7	15.3		92.4	
6/6	9+00	102.3	16.6	108.8	94.0	
10/5		106.5	16.1	112.2	94.9	
10/6		101.2	15.7		90.2	
		107.8	17.3		96.1	
10/7		107.7	15.1		96.0	
		107.4	17.6		95.7	
10/8		104.7	18.5		93.3	
		101.6	19.6		90.5	
		106.9	16.7		95.3	
10/10		105.7	14.7		94.2	
6/6	10+00	101.4	18.2	108.8	93.2	
10/5		101.7	20.1	112.2	90.7	
10/6		106.5	16.8		94.9	
		109.8	15.9		97.8	
10/7		108.7	16.4		96.9	
		106.8	17.0		95.2	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Springhurst Parkway						
10/8	10+00	103.9	15.5	112.2	92.6	
		101.7	16.6		90.7	
5/4	24+00	101.0	21.3		90.0	
5/5		103.6	14.8		92.4	
5/7		108.1	10.8	114.6	94.3	
6/2	25+00	103.5	13.5		90.3	
6/2	26+00	104.4	13.1		91.1	
7/5		99.7	13.2		87.0	Rerolled and Retested
		100.7	10.3	112.2	89.9	Retest of Above, Rerolled
	26+50	98.5	12.7	114.6	85.9	Rerolled and Retested
		102.3	9.6	112.2	91.4	Retest of Above
6/2	27+00	103.7	13.2	114.6	90.5	
6/3	29+00	105.7	14.6	108.8	97.1	
	30+00	99.6	14.0		91.6	
6/10	31+00	100.3	15.1	108.3	92.6	
6/11		104.3	18.0	112.2	93.1	
	32+00	105.9	13.2		94.6	
7/25	37+50	105.6	13.0	114.6	92.1	
6/9	38+00	99.5	16.2	108.8	91.5	
7/25	38+50	109.8	13.9	114.6	95.8	
6/9	39+00	104.3	14.6	108.8	95.8	
	cul-de-sac	100.7	15.8		92.5	
		103.1	18.8		94.7	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u>γ<sub>m</sub></u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Springhurst Parkway						
6/9	cul-de-sac	100.4	18.7	108.8	92.3	
7/5		108.0	10.9	114.6	94.2	
Spring Borough Drive (Electric Crossing Backfill)						
11/8	2+25	116.8	7.0	130.0*	89.9	Rerolled
		116.9	6.0		90.0	
		117.1	5.1		90.1	
		122.3	5.5		94.1	
(Sewer Crossing Backfill)						
11/3	3+80	127.7	6.1	135.0*	94.6	
		135.2	5.3		100.1	
		131.2	7.3		97.2	
		136.3	6.8		101.0	
10/28	6+75	130.7	5.1		96.3	
		125.2	5.4		92.8	
		125.5	4.2		93.0	
		128.1	5.5		94.9	
		133.6	5.0		99.0	
		126.2	5.9		93.5	
		130.8	5.5		96.9	
		136.0	4.6		100.8	
(Water Crossing Backfill)						
11/7	7+25	134.1	5.8	135.0*	99.3	
		131.6	5.8		97.5	
		141.4	5.7		104.7	
		137.5	6.1		101.8	
		130.7	6.9		96.8	
		126.3	6.7		93.6	
10/28	8+50	140.6	4.7		104.1	
		124.0	5.6		91.8	
		122.8	4.2		90.9	
		131.6	4.7		97.5	
		133.8	3.9		99.1	
		125.0	3.5		92.6	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <b>2005</b>	<u>Location</u>	<u><math>\gamma</math></u> <u><sup>m</sup>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Spring Borough Drive (Sewer Crossing Backfill)						
11/2	8+56	135.4	5.9	135.0*	100.3	
		128.6	7.0		95.3	
		141.5	6.3		104.8	
		138.6	6.9		102.7	
		133.2	5.9		98.7	
		134.6	5.7		99.7	
(Water Crossing Backfill)						
11/5	9+35	133.1	8.0		98.6	
		131.7	8.6		97.6	
		137.3	7.1		101.7	
		135.0	9.4		100.0	
		127.9	9.4		94.8	
		132.9	9.0		98.4	
		125.9	9.6		93.3	
		122.4	12.9		90.7	
		124.0	8.7		91.8	
(Sewer Crossing Backfill)						
11/4	12+12	137.6	6.5		101.9	
		138.2	5.8		102.4	
		132.4	3.7		98.0	
		140.6	4.6		104.1	
		125.1	5.3		92.7	
		122.5	4.9		90.7	
		132.4	5.1		98.1	
		128.0	5.4		94.8	
		131.9	4.3		97.7	
		135.3	3.9		100.2	
5/10	14+00	103.7	15.1	112.2	92.6	
5/16		96.9	16.6		86.3	Rerolled and Retested
		104.2	19.2		92.9	Retest of Above
10/14	14+75	100.4	14.5		89.5	Rerolled
		105.9	14.8		94.4	
		103.6	14.2		92.3	
		108.0	16.3		96.2	
5/11	15+00	99.2	22.7	108.8	91.2	
5/24		103.7	15.8	114.6	90.5	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>_{m}dry</math></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Spring Borough Drive						
5/11	16+00	102.4	21.1	108.8	94.1	
5/12		105.4	16.1		96.8	
5/24		103.2	16.2		91.1	
5/11	17+00	98.7	22.6		90.7	
5/12		103.1	16.1		94.7	
4/19	18+00	100.9	15.8	112.2	89.9	Rerolled
		102.5	14.0		91.4	
5/4		101.6	21.5		90.5	
5/5		104.8	18.0		93.4	
	18+50	104.9	19.4		93.5	
5/6		100.8	21.7		89.9	Rerolled
		108.1	10.8	114.6	94.3	
4/19	19+00	101.5	14.1	112.2	90.5	
		102.5	14.2		91.4	
5/2		102.1	19.1		91.0	
5/4		101.0	23.8		90.0	
5/5		102.0	18.1		90.9	
5/6		104.8	17.8		93.4	
	19+50	104.2	18.2		92.9	
4/16	20+00	104.9	17.6	114.6	91.6	
4/19		104.4	16.9		91.1	
		96.4	21.6		86.0	Rerolled and Retested

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>m</math>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Spring Borough Drive						
4/20	20+00	104.5	18.6	114.6	93.2	Retest of Above
5/2		103.9	17.3	112.2	92.6	
		101.4	15.1		90.4	
5/4		96.0	23.4		85.5	Rerolled and Retested
		101.0	17.3		90.0	Retest of Above
5/5		101.8	18.7		90.8	
5/6		101.3	20.0		90.3	
4/5	21+00	102.0	18.8		91.1	
4/8		106.5	16.6		92.9	
4/9		105.5	15.0		94.0	
4/18		103.1	19.8		91.9	
4/20		107.1	17.1		95.4	
5/13		104.4	17.7		94.9	
4/5	21+00 (Eyebrow)	100.9	19.1		90.1	
4/19		106.1	15.7	114.6	92.6	
		95.5	22.5		85.1	Rerolled and Retested
4/20		106.8	18.3		95.2	Retest of Above
5/13		105.2	17.6	108.8	96.6	
4/8	22+00	103.4	18.0	114.6	90.2	
4/9		107.4	14.9		93.7	
4/18		103.4	17.0	112.2	92.2	
4/20		101.0	15.7		90.0	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u>γ<sub>m</sub></u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Spring Borough Drive						
4/8	23+00	103.5	16.7	114.6	90.3	
4/9		104.6	16.4		91.3	
4/20		102.3	13.0		91.1	
4/8	24+00	103.9	19.8		90.6	
4/9		103.8	18.7		90.6	
4/20		106.6	14.4		95.0	
Spring Borough Court						
5/3	4+00	100.9	20.7	112.2	90.0	
5/11		110.5	12.8	114.6	96.4	
4/7	6+00	99.1	22.9	108.8	91.1	
5/4		98.2	24.5	112.2	87.5	Rerolled and Retested
5/5		102.3	20.2		91.2	Retest of Above
5/6		101.2	19.8		90.2	
5/11		108.6	12.4	114.6	94.8	
5/3	6+50	105.4	17.5	112.2	94.0	
5/4		97.8	24.3		87.2	Rerolled and Retested
5/5		97.8	22.8		87.2	Retest of Above Rerolled and Retested
5/6		104.1	23.4		92.8	Retest of Above
4/7	7+00	105.3	18.8	114.6	91.9	
5/6		102.0	21.0	112.2	90.9	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>_{ndry}</math></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Spring Beach Drive						
10/5	0+50	101.2	18.7	112.2	90.2	
10/6	0+50	106.4	15.7		94.9	
		108.6	17.8		96.8	
10/7		104.0	18.5		92.7	
		102.5	16.4		91.3	
10/8		103.9	15.0		92.6	
		101.6	17.5		90.6	
		104.4	17.7		93.0	
10/10		103.8	16.7		92.5	
6/6	1+00	98.5	18.2		87.8	Removed
5/13	1+50	100.2	19.3	108.8	92.1	
(Sewer Crossing Backfill)						
11/2	2+79	124.3	5.3	135.0*	92.1	
		122.3	4.3		90.6	
		125.0	4.0		92.6	
		132.4	5.6		96.0	
		122.9	7.6		91.0	
		124.8	8.7		92.4	
		137.1	4.8		101.5	
		136.2	5.5		100.9	
5/10	4+00	103.3	19.4	114.6	90.5	
(Water Crossing Backfill)						
11/7	4+75	121.5	13.5	130.0*	93.5	
		121.7	12.8		93.6	
		120.4	13.1		92.6	
		118.9	14.0		91.4	
		117.5	13.3		90.3	
		122.7	9.9		94.4	
		126.0	8.8		96.9	
		128.5	10.0		100.0	
Brook Spring Lane						
11/8	4+00	112.2	12.7	112.2	100.0	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <b>2005</b>	<u>Location</u>	<u><math>\gamma</math></u> <u>mdry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Brook Spring Lane						
11/9	4+00	103.0	16.0	112.2	91.8	
		99.3	16.6	108.8	91.2	
11/10		106.2	16.0	112.2	94.6	
11/8	4+50	112.1	15.6		99.9	
11/9		110.1	16.6		98.1	
		102.4	20.5	108.8	94.1	
11/10		118.0	12.4	112.2	105.1	
11/8	(Parking Lot)	110.8	12.7		98.8	
11/9		107.0	17.1		95.9	
		97.7	23.9	108.8	89.8	Rerolled
		108.7	15.9		99.9	
11/10		105.8	19.7	112.2	94.3	
		105.7	16.1		94.2	
Brook Forest Drive						
5/16	1+00	101.7	15.6		90.7	
5/11	2+00	107.0	13.0	114.6	93.4	
5/16		102.7	19.2	112.2	91.5	
5/21		96.5	12.7		86.0	Removed
5/11	3+00	104.6	16.2	114.6	91.2	
5/16		105.2	17.6	112.2	93.8	
5/21		103.3	14.4		92.1	
Spring River Drive						
11/7	Entrance	121.0	9.5	135.0*	89.6	Rerolled
		129.1	10.8		95.7	
		136.4	6.4		101.1	
		137.6	5.6		101.9	

\* Assumed Control Factor

SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
River Hollow Drive						
5/17	1+00	111.2	14.7	114.6	97.1	
5/18		106.8	11.0		93.2	
	2+00	106.9	12.4		93.2	
5/17	3+00	109.9	13.9		95.9	
5/18		103.1	10.9		90.0	
	4+00	107.8	10.6		94.0	
5/19		101.5	19.0	108.8	93.3	
6/1		102.8	12.9	114.6	94.0	
5/17	5+00	107.7	17.3		94.0	
5/18		107.5	12.1		93.8	
5/19		99.6	21.7	108.8	91.6	
6/1		108.0	18.0		94.2	
Spring Forest Drive						
5/25	1+00	104.5	12.3	114.6	91.2	
5/26		104.6	16.0		91.3	
5/25	2+00	103.4	16.5		90.3	
5/26		107.5	15.3		93.8	
5/25	3+00	101.7	17.8	112.2	90.8	
5/26		109.3	13.8	114.6	95.4	
5/25	4+00	100.3	15.8	112.2	89.6	Rerolled and Retested
5/26		106.8	12.7	114.6	93.2	Retest of Above
5/25	5+00	101.4	16.6	112.2	90.6	
5/26		106.8	12.7		95.2	

\* Assumed Control Factor

SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>_{m}dry</math></u>	<u>W%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Spring Forest Drive						
5/25	6+00	103.1	16.3	112.2	92.1	
5/26		106.7	18.7	114.6	93.1	
5/25	7+00	104.8	12.0	112.2	93.6	
	8+00	101.0	16.4		90.2	
	9+00	100.6	20.2		89.8	Rerolled
	10+00	108.1	11.6		96.5	
5/23	11+00	99.9	21.3	108.8	91.8	
Spring Forest Court						
5/21	1+00	104.6	12.9	112.2	93.2	
5/23		99.1	18.0	108.8	91.1	
5/24		103.7	16.2		95.3	
5/23	2+00	101.2	16.7		93.0	
5/24		101.4	18.5		93.2	
5/21	3+00	104.1	13.8	112.2	92.8	
5/23		98.6	21.5	108.8	90.6	
5/24		103.1	16.9		94.7	
Shady Rock Lane						
5/19	1+50	100.5	16.6	112.2	89.8	Rerolled
	2+50	101.5	16.5		90.6	
	3+50	101.6	16.3		90.7	
	4+50	101.9	10.1		91.0	
(Water Crossing Backfill)						
10/18	10+75	124.3	5.7	135.0*	92.0	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <b>2005</b>	<u>Location</u>	<u>γ<sub>dry</sub></u>	<u>w%</u>	<u>Con- trol</u>	<u>% Com- pac- tion</u>	<u>Remarks</u>
Shady Rock Lane (Water Crossing Backfill)						
10/18	10+75	126.4	5.7	135.0*	93.6	
		125.9	4.8		93.3	
		123.4	4.8		91.4	
		129.8	5.4		96.2	
		134.2	5.7		99.4	
		123.2	5.7		91.3	
		122.1	4.5		90.5	
		126.9	5.5		94.0	
		126.7	6.0		93.9	
6/18	11+75	121.5	5.1		90.0	
		124.1	4.9		91.9	
		126.0	5.3		93.3	
		125.4	5.6		92.9	
		128.2	5.1		94.9	
		130.0	4.5		96.9	
		133.6	4.9		98.9	
		132.9	4.2		98.3	
		126.4	4.5		93.6	
		133.3	4.9		98.7	
		128.8	3.9		95.4	
		127.6	5.0		94.5	
		131.7	4.5		97.6	
Shady Rock Lane						
6/1	14+00	103.7	13.4	114.6	90.5	
	15+00	97.4	14.6		85.0	Rerolled and Retested Retest of Above
		105.8	16.1		92.4	
	16+00	103.0	23.7	108.8	94.7	
6/2		102.4	16.8		94.1	
6/8		109.0	19.6	114.6	95.1	
6/1	17+00	104.3	21.2	108.8	95.8	
6/2		99.6	25.9		91.5	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>_{m\text{dry}}</math></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Shady Rock Lane						
6/3	17+00	103.9	12.5	108.8	95.4	
6/4		99.7	20.9		91.6	
6/29		103.4	12.5	112.2	92.1	
6/1	18+00	99.5	19.5	108.8	91.4	
6/2		98.8	24.6		90.8	
6/3		106.8	16.6		98.1	
6/4		99.2	22.5		91.2	
6/8		101.7	23.7		93.4	
6/29		107.2	14.4	112.2	95.6	
Wild Oak Drive						
4/4	0+00	103.3	17.5	114.6	90.1	
(Sewer Crossing Backfill)						
10/26	2+75	126.5	4.2	135.0*	93.7	
		125.3	6.1		92.9	
		125.5	6.0		93.0	
		123.2	6.6		91.2	
(Water Crossing Backfill)						
10/18	9+25	135.8	5.0	135.0*	100.6	
		132.2	5.2		97.9	
		130.7	4.5		96.8	
		131.0	4.5		97.0	
		132.9	3.7		98.4	
		129.7	5.7		96.1	
		124.7	5.1		92.4	
		127.6	6.3		94.5	
		129.3	5.4		95.7	
		134.4	5.3		99.5	
		131.2	3.9		97.2	
	12+25	128.4	4.3	135.0*	95.1	
		127.8	6.9		94.7	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>^m</math>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Wild Oak Drive (Water Crossing Backfill)						
10/18	12+25	129.5	4.7	135.0*	96.0	
		134.5	5.3		99.6	
		127.3	5.0		94.3	
10/26	15+50	125.6	5.2		93.0	
		122.2	4.4		90.5	
		122.5	4.9		90.7	
		140.0	4.6		103.7	
		124.9	4.7		92.5	
		130.1	4.3		96.4	
		132.1	4.3		97.0	
		128.7	5.0		95.3	
		131.2	5.3		97.2	
		127.9	5.3		94.8	
		130.6	5.1		96.8	
		123.1	6.4		91.2	
Spring Trace						
6/11	10+00	99.1	18.9	108.8	91.1	
6/16		102.6	15.4	112.2	91.6	
6/11	11+00	101.9	20.7	108.8	93.6	
6/16		102.2	14.2	112.2	91.3	
English Ivy						
4/19	1+00	102.0	15.0		90.9	
4/20		100.7	18.5		89.7	Rerolled
5/4		101.8	18.6		90.7	
5/5		102.8	18.5		91.6	
5/2	1+50	105.6	14.4		94.1	
4/19	2+00	105.4	15.2		93.9	
4/20		105.0	15.5		93.6	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>m^3</math>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
5/4	English Ivy 2+00	101.7	19.5	112.2	90.7	
5/5		101.0	20.1		90.0	
5/2	2+50	101.4	15.8		90.4	
4/19	3+00	103.5	17.1		92.2	
4/20		105.5	15.8		94.1	
5/5		101.5	19.0		90.5	
6/11		103.0	16.2	114.6	89.9	Rerolled
5/2	3+50	105.7	14.9		94.2	
5/10		102.5	17.8		89.5	Rerolled
6/11	4+00	104.9	12.7		91.5	
6/1	5+00	86.7	27.2	108.8	79.8	Rerolled and Retested
6/2		100.1	18.2		92.0	Retest of Above
6/7		102.3	21.1		94.0	
6/8		102.7	23.1		94.4	
6/11		107.0	12.8	114.6	93.3	
6/13	5+75	112.5	12.4	112.2	100.3	
		106.4	15.6		94.8	
		103.5	18.6		92.2	
6/2	6+00	103.2	20.5	108.8	94.9	
6/7		101.0	8.9	112.2	90.0	
6/1	7+00	99.0	20.6	108.8	91.0	
6/2		103.8	21.1		95.3	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>^m</math>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
6/3	English Ivy 7+00	99.5	12.6	108.8	91.5	
6/4		100.8	20.0		92.7	
6/7		100.7	8.8		90.8	
6/8		101.0	24.4		92.8	
	8+00	103.9	14.7	114.6	90.6	
	(Sewer Crossing Backfill)					
10/26	8+50	135.6	5.2	135.0*	100.5	
		132.8	5.0		98.4	
		126.5	4.7		93.7	
		139.0	4.6		103.0	
		133.2	4.5		98.6	
		127.4	5.0		94.4	
		136.3	4.4		100.9	
		128.6	5.1		95.3	
		131.1	5.5		97.1	
	Daffodil Trails					
6/10	1+00	97.0	19.7	108.3	89.5	Rerolled
6/16		101.7	17.9	112.2	90.6	
10/27		100.9	15.2		90.0	
6/10	2+00	102.6	18.4	108.3	94.8	
6/16		103.0	17.2		91.8	
10/27		103.7	16.6		92.4	
6/9		101.1	16.1	110.0	91.9	
6/16		102.7	15.6	112.2	91.5	
10/28	cul-de-sac	103.7	16.3		92.5	
	Alley A					
	(Electric Crossing Backfill)					
10/24	1+00	130.8	7.2	135.0*	96.8	

\* Assumed Control Factor

Sheet 32 of 39

SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>m_{dry}</math></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Alley A						
(Electric Crossing Backfill)						
10/24	1+00	125.0	7.8	135.0*	92.6	
		126.8	7.3		93.9	
		144.7	5.8		107.2	
		123.1	6.5		91.2	
		141.4	5.8		104.8	
(Sanitary Crossing Backfill)						
10/25	2+50	130.5	3.1		96.7	
		135.1	2.8		100.1	
		132.1	3.6		97.9	
		134.7	6.4		99.8	
		133.1	3.9		98.6	
		126.0	4.8		93.3	
		136.4	4.4		101.0	
		130.6	5.9		96.7	
		137.3	5.8		101.7	
		141.4	4.9		104.7	
(Electric Crossing Backfill)						
	6+00	122.4	7.4		90.6	
		121.8	5.7		90.2	
		123.6	5.0		91.6	
		129.0	4.2		95.6	
		129.4	4.7		95.8	
		124.2	4.6		92.0	
Alley B						
(Water Crossing Backfill)						
6/18	0+25	133.0	6.0		98.5	
		130.0	5.2		96.6	
		138.5	6.1		102.6	
		133.9	5.3		99.2	
		135.5	5.7		100.3	
		126.6	5.8		93.8	
10/18	6+50	134.5	4.8		99.6	
		125.8	4.9		93.1	
		140.3	6.2		104.0	
		124.9	6.5		92.5	
		136.5	5.2		101.1	

\* Assumed Control Factor

Sheet 33 of 39

SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>_{m\text{dry}}</math></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>	
6/24	Alley C 5+00	109.7	18.4	115.0	95.4		
	6+00	111.6	11.8		97.0		
10/25	Alley E 1+00	106.2	15.7	112.2	94.6		
		105.4	14.8		94.0		
10/26		101.9	15.7		90.8		
		110.6	14.4		98.6		
		107.0	12.6		95.4		
	2+00	105.4	15.5	106.5	98.9		
		104.4	20.2		93.0		
		101.8	13.3		90.7		
	3+00	102.0	17.2	112.2	90.9		
Pool/Recreation Center							
6/16		101.4	17.1		90.4		
		104.2	18.2		92.9		
6/17		105.7	14.1	114.6	92.2		
		103.6	12.9		90.4		
		104.1	15.2		90.8		
		107.2	14.9		93.5		
6/18		104.6	15.9		91.3		
		103.9	17.4		90.6		
		105.5	16.5		91.9		
Central Electric Power Coop Property							
10/29		105.0	13.0	112.2	93.6		
		100.3	23.4		89.4	Rerolled	
		100.9	23.2		89.9	Rerolled	
		107.8	16.6		96.1		
		100.6	22.0		89.7	Rerolled	
		105.7	17.2		94.2		
		107.0	16.0		95.3		
		102.8	18.7		91.6		
		103.3	13.3		92.1		
		100.6	16.7		89.7	Rerolled	

\* Assumed Control Factor



<u>Date</u> <b>2005</b>	<u>Location</u>	<u><math>\gamma</math></u> <u>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Central Electric Power Coop Property						
10/29		102.6	17.7	112.2	91.5	
		107.5	13.9		95.0	
		105.0	15.4		93.6	
		101.9	16.6		90.9	
		106.6	18.2		95.1	
		107.7	15.5		96.0	
		107.9	15.5		96.2	
		102.2	20.8		91.1	
		102.3	18.3		91.2	
		103.7	16.0		92.4	
		103.8	20.0		92.5	
		104.9	18.2		93.5	
		105.6	19.1		94.1	
		109.3	14.7		97.4	
11/4		104.6	20.2		93.2	
		107.5	19.9		95.8	
		106.8	17.1		95.2	
		105.8	16.0		94.3	
		107.5	13.8		95.9	
		103.2	19.6		91.9	
11/5		111.3	11.9	113.7	97.8	
		106.0	16.7		93.2	
		106.6	16.5		93.7	
		113.6	14.9		99.9	
		104.4	21.2		91.8	
11/25		106.4	18.6		93.5	
		111.7	12.4		97.3	
		110.6	16.6		96.5	
		109.4	14.4		95.4	
		107.0	18.0		93.4	
		107.7	17.0		93.9	
		113.1	12.0		98.6	
Common Ground (South of Power Station)						
6/17		103.9	20.3	108.8	95.5	
		104.6	19.7		96.1	
6/20		97.7	17.0		89.8	Rerolled

\* Assumed Control Factor

SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>_{dry}</math></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Common Ground (South of Power Station)						
6/20		99.3	16.2	108.8	91.3	
		101.5	19.0		93.3	
		99.6	21.7		91.5	
		99.4	21.1		91.3	
		100.3	20.8		92.1	
		100.6	19.7		92.4	
		100.4	19.5		92.3	
6/21		104.9	19.0		96.4	
		101.3	21.4		93.1	
		100.8	17.5		92.7	
		97.6	26.7		89.7	Rerolled
6/24		101.0	19.2		92.9	
		98.4	14.8		90.5	
		100.6	15.9		92.5	
		99.3	21.6		91.3	
6/25		103.5	15.7		95.1	
		98.6	21.7		90.7	
		99.6	25.0		91.6	
		97.7	25.1		89.8	Rerolled
		107.7	16.7		99.0	
		102.5	17.0		94.2	
Detention Pond (East of Lot 64E)						
6/1		101.5	19.3		93.3	
		102.4	18.1		94.1	
6/3		99.2	16.8		91.2	
		106.1	18.6		97.5	
		103.5	20.3		95.1	
		102.1	21.0		93.8	
		100.4	21.2		92.3	
6/6		104.6	18.7		96.0	
		103.9	20.3		95.1	
		103.6	18.4		95.1	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u>"dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
	Detention Pond (East of Lot 64E)					
6/7		106.6	19.0	108.8*	97.9	
		105.2	20.4		96.6	
		106.2	17.7		97.6	
6/8		108.6	19.7		99.7	
		101.8	21.9		93.5	
		102.5	22.6		94.2	
		101.4	23.4		93.2	
	(S.W. of Lot 90C)					
6/17		104.8	15.3	114.6	91.5	
		104.9	14.0		91.5	
		105.2	15.7		91.8	
6/18		100.9	17.5	112.2	90.1	
		104.0	16.9		92.9	
6/20		103.3	17.0	114.6	90.1	
		103.5	16.3		90.3	
		103.8	15.6		90.6	
	Retention Pond Overflow Structure Backfill					
6/21		106.6	17.2	112.2	95.2	
		104.3	15.4		93.1	
		104.0	17.5		92.9	
		106.8	14.5		95.4	
		103.8	15.3		92.7	
		103.7	14.9		92.6	
12/29		99.2	17.3	108.8	91.2	
		98.8	23.2		90.8	
		100.2	19.5		92.1	
		104.2	17.5		95.2	
		98.3	21.4		90.4	
		99.3	20.9		91.3	
		100.5	17.7		92.4	
		102.0	21.8		93.7	
		99.2	21.7		91.2	
		99.0	17.1		91.0	

\* Assumed Control Factor

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SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><math>_{dry}</math></u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Retention Pond Overflow Structure Backfill						
12/29		103.9	19.2	108.8	95.5	
		106.0	16.2		97.4	
		100.1	19.4		92.0	
		100.6	15.7		92.4	
		100.5	16.8		92.4	
		103.1	22.9		94.7	
		103.5	16.7		95.1	
		109.9	20.0		100.9	
		105.9	18.0		97.3	
		104.7	16.7		96.2	
		102.5	18.4		94.2	
		104.3	20.6		95.8	
		102.1	22.9		93.8	
		103.2	25.0		94.8	
		107.5	16.1		98.7	
		100.8	22.8		92.6	
		108.1	17.8		99.3	
		100.6	22.5		92.5	
		105.0	17.3		96.5	
		104.2	17.2		95.8	
12/29		98.9	19.1	108.8	90.9	
		102.6	18.2		94.3	
		98.6	17.0		90.7	
		110.0	16.8		101.0	
12/30		112.0	15.1		102.0	
		107.0	16.0		98.3	
		104.0	16.8		95.5	
		109.5	15.3		100.5	
		105.8	18.7		97.2	
		107.9	17.4		99.1	
		101.2	18.3		93.0	
		108.2	17.0		99.4	
		106.2	16.9		97.6	
Common Ground (East of Lots 1E/16E)						
10/5		104.8	20.0	112.2	93.4	
10/6		104.0	12.4		92.7	

\* Assumed Control Factor

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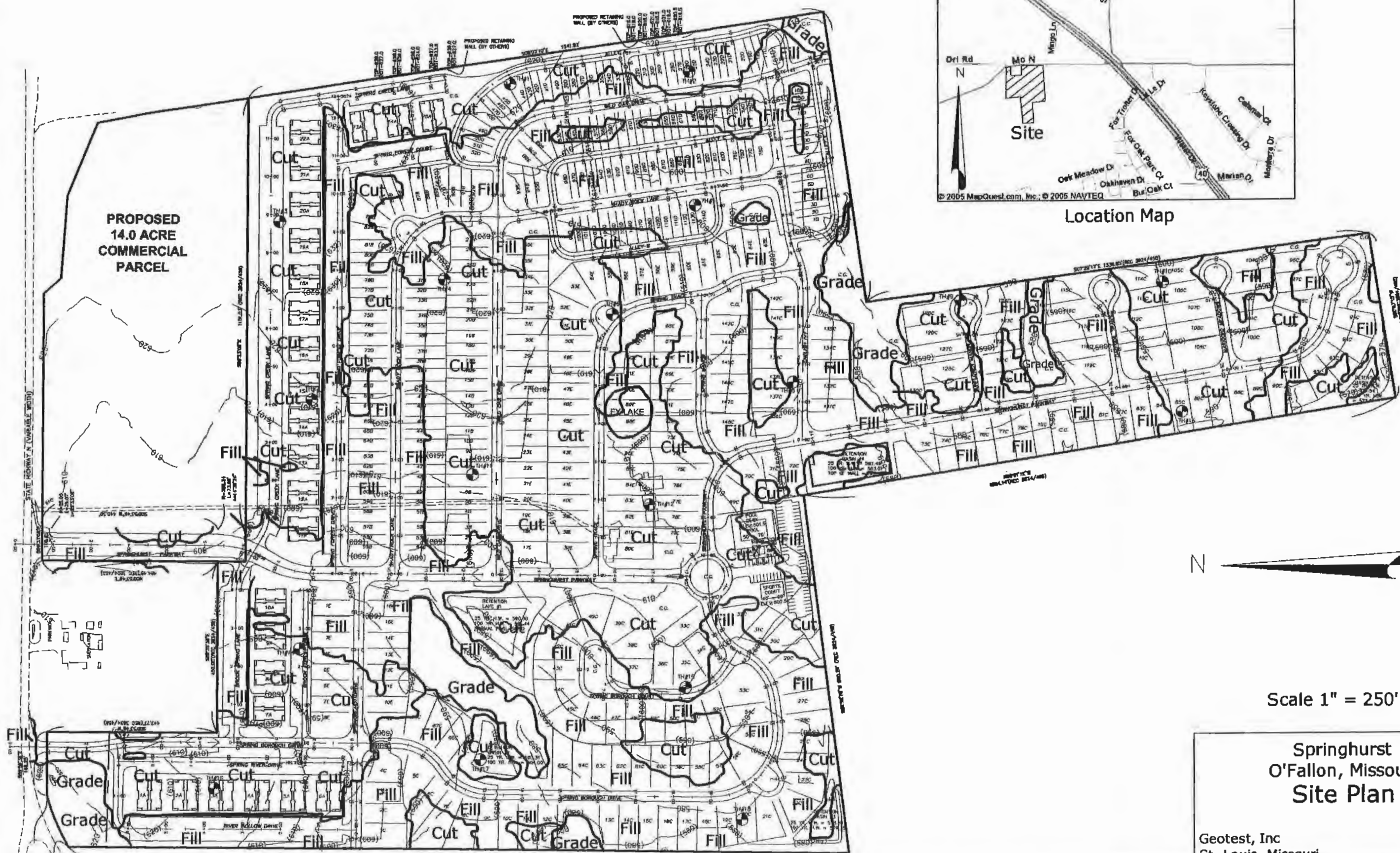
SPRINGHURST

<u>Date</u> <u>2005</u>	<u>Location</u>	<u><math>\gamma</math></u> <u><sup>m</sup>dry</u>	<u>w%</u>	<u>Con-</u> <u>trol</u>	<u>%</u> <u>Com-</u> <u>pac-</u> <u>tion</u>	<u>Remarks</u>
Common Ground (East of Lots 1E/16E)						
10/7		105.1	19.5	112.2	93.7	
		109.8	16.5		97.8	
10/8		105.7	14.4		94.3	
		106.5	15.2		94.9	
		106.4	15.0		94.9	
		105.1	15.5		93.7	
10/10		102.7	17.7		91.5	
Backfill of Draw (Shady Rock Lane - Lot 94 B/ Detention Pond)						
5/25		107.4	11.2	114.6	93.7	
		104.6	7.3		91.2	
		107.7	9.0		94.0	
		110.4	10.1		96.4	
		102.6	12.0		89.5	Rerolled
		104.3	13.8		91.0	
		106.8	9.4		93.2	
		106.7	10.5		93.1	
		102.9	12.0		89.5	Rerolled
		104.8	10.9		91.5	
		103.5	12.1		90.3	
		104.4	11.3		91.1	
	5/26		106.1		11.1	
		105.5	13.1		92.0	
		110.5	13.8		96.4	
		111.1	14.5		97.0	
		111.8	14.2		97.6	
		108.9	15.7		95.1	
		108.3	14.7		94.5	
		108.1	11.7		94.3	
		107.5	14.7		93.8	
		98.7	21.2	108.8	90.7	
	106.0	21.6	97.3			

Springhurst Jan cts

\* Assumed Control Factor

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**PROPOSED  
14.0 ACRE  
COMMERCIAL  
PARCEL**



**Location Map**



Scale 1" = 250'

**Springhurst  
O'Fallon, Missouri  
Site Plan**

Geotest, Inc  
St. Louis, Missouri

March  
2005

Figure 1