REPORT ON
RCRA FACILITY INVESTIGATION
INVESTIGATION DATA REPORT NO. 3

DELPHI CORPORATION
DELPHI ENERGY & CHASSIS SYSTEMS
PLANT 400
1300 NORTH DORT HIGHWAY
FLINT, MICHIGAN

US EPA ID # mid 005 356 647
VOLUME 2 OF 2

by:

Haley & Aldrich, Inc.

for:

Delphi Corporation
Troy, Michigan

File No.: 49017-034
December 2004

HALEY & ALDRICH

Appendix B

APPENDIX B

Test Boring and Monitoring Well Installation Reports

TEST BORING REPORT

Boring No. B-4031

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 15, 2003
Finish May 15, 2003
Driller M. Hefferan
H&A Rep. G. Laird

Elevation 760.0
Datum Estimated

Location
N 7,847
E 8,162

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		NA	0.0 1.0	759.0		-CONCRETE-										
	ND	S-1 12	1.0 2.0	758.0	SP	Loose, tan, fine SAND mps: 1.3 cm, no odor, moist. - FILL-					100					
	ND	S-2 14	2.0 4.0	756.0	ML	Soil sample S-1 B031-051503-1725 collected from 0.0 to 2.0 feet. Soft, black and gray, sandy SILT, mps: 2.5 cm, no odor, moist. -FILL-		5	5		30	60				
	ND	NA	4.0 5.0	755.5 755.0		-CONCRETE- No Recovery										
5	7.2	S-3 19	5.0 7.0	753.0	ML	Stiff, gray and brown SILT, mps: 1.2 cm, no odor, moist. -GLACIAL TILL- Soil sample S-2 B031-051503-1750 collected from 6.0 to 7.0 feet.					10	90				
	5.1	S-4 18	7.0 9.0	751.3		Soil sample S-3 B031-051503-1805 collected from 7.0 to 9.0 feet.										
10	3.9	S-5 15	9.0 11.0	751.0 749.0	SP	Loose, tan, fine SAND, mps: <1 mm , no odor, wet. -GLACIAL TILL- Water present at 8.75 feet. GW sample B031-051503-1830 and MS/MSD collected from 8.0 to 10.0 feet. Note: No monitoring well set. -Bottom of Exploration at 11.0 feet.					100					

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary
Overburden (lin. ft.) 11.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. B-4031

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4032

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 19, 2002
Finish November 19, 2002
Driller C. Donovan
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.5		-CONCRETE-										
	2	S-1 40	0.0 4.0	NO WELL INSTALLED			Interbedded yellow-brown SAND and olive-gray CLAY. Backfill and coal/asphalt present. -FILL-										
	10				757.5	CL	Yellow-brown CLAY with some sand, moist.					10	90				
5		S-2 46	4.0 8.0														
	28				753.0	SP-SM	Yellow-brown SAND, moist.					90	10				
	5	S-3 42	8.0 12.0		750.5		Wet at 9.5 feet.										
10					748.0												
	8	S-4 38	12.0 16.0			CL	Yellow-brown CLAY, moist.						100				
	ND				746.0												
15					744.0		-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram	Summary	
O Open End Rod	Riser Pipe	Overburden (lin. ft.)	16
T Thin Wall Tube	Screen	Rock Cored (lin. ft.)	-
U Undisturbed Sample	Filter Sand	Samples	
S Split Spoon	Cuttings	**Boring No.**	B-4032
G Geoprobe	Grout		
	Concrete		
	Bentonite Seal		

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4033

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller C. Donovan
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.5		-CONCRETE-										
		S-1 46	0.0 4.0	NO WELL INSTALLED		SP-CL	Interbedded layers of SAND and CLAY, some gravel.										
					757.0	CL	Yellow-brown CLAY, moist.					5	95				
5		S-2 48	4.0 8.0														
					752.5	SP	Yellow-brown SAND.					95	5				
		S-3 46	8.0 12.0				Wet at 9.0 feet.										
10					748.0	CL	Gray-brown CLAY, moist.						100				
							-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples

Boring No. B-4033

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4034

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller C. Donovan
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 40	0.0 4.0	NO WELL INSTALLED	759.5		-CONCRETE-										
					759.0	SP	Yellow-brown SAND					95	5				
						CL	Dark brown, sandy CLAY, moist.					30	70				
					757.0												
						CL	Yellow-brown CLAY, moist.					5	95				
5		S-2 48	4.0 8.0														
		S-3 46	8.0 12.0		751.5	SP-SM	Yellow-brown SAND, moist. Wet at 9.0 feet.					90	10				
10																	
		S-4 42	12.0 16.0		747.5	CL	Gray-brown CLAY, moist.						100				
15					744.0		-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	16
Rock Cored (lin. ft.)	-
Samples	

Boring No. B-4034

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4041

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location N 7,617 E 7,760

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.5		-CONCRETE-										
	7.0	S-1 34	0.0 4.0	NO WELL INSTALLED		CL	Gray, sandy, lean CLAY, mps: 1 mm, moist.					30	70	N	L	L	L
							Soil sample S-1 4041A collected at approximately 1.5 feet.										
	28						Broken concrete from 3.5' to 3.75' and black SAND from 3.75' to 3.87'										
	12	S-2 42	4.0 8.0														
5						CL	Gray, sandy, lean CLAY, moist.					40	60	N	L	L	L
	7.0						Same except less sand, tan. Soil sample S-2 4041B collected at approximately 6.5 feet.										
	3.0	S-3 48	8.0 12.0														
10					749.5		Soil sample S-3 4041C collected at approximately 10.0 feet.										
						SM	Yellow-brown, silty SAND, mps < 1 mm, wet.					80	20	R	L	N	N
					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. B-4041

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4081

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 14, 2002
Finish November 14, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 7,915 E 7,864

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				759.0		-CONCRETE-										
	0.7	S-1 24	1.0 5.0		SP	Loose, tan, fine SAND, mps: 2.5 cm, no odor, moist.					100					
	0.6					-FILL-										
5		S-2 48	5.0 9.0	754.5												
	0.5				ML	Stiff, brown SILT with sand, mps: 2.5 cm, no odor, moist.					15	85				
	0.5			751.0		-GLACIAL TILL-										
	ND	S-3 41	9.0 13.0		SP	Dense, tan, fine SAND, mps <1mm, no odor, moist to wet. -GLACIAL TILL-					100					
10				749.0		Water at 10.0 feet.										
	ND				ML	Stiff, tan SILT, mps: 1.3 cm, no odor, moist. -GLACIAL TILL-					10	90				
				747.0		-Bottom of Exploration at 13.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples GP-1, GP-3, GW

Boring No. B-4081

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4082

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 14, 2002
Finish November 14, 2002
Driller P. Orsi
H&A Rep. G. Laird

Elevation 760.0
Datum Estimated

Location
N 7,881
E 7,892

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.2	S-1 30	1.0 5.0	NO WELL INSTALLED		SP	Loose, tan, fine SAND, mps: 2.5 cm, no odor, moist.					100					
	0.1						-FILL-										
5	0.1	S-2 38	5.0 9.0				Same as 1 to 5 feet. -FILL-					100					
	0.1				753.0	ML	Soft, brown SILT with sand, mps: 2.5 cm, no odor, moist.					20	80				
	0.1	S-3 46	9.0 13.0				-GLACIAL TILL-										
10	0.1				749.5	SP	Loose, tan, fine SAND, mps <1mm, no odor, wet. -GLACIAL TILL- Water at 10.5 feet.					100					
					747.0		-Bottom of Exploration at 13.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary
Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples GP-1, GP-3, GW

Boring No. B-4082

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. B-4083

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location N 7,938 E 7,865

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.5		-CONCRETE-										
	ND	S-1 40	0.0 4.0	NO WELL INSTALLED		SP	Yellow-brown, poorly-graded SAND, trace silt, mps < 1 mm, moist.					95	5	N	L	N	N
					757.5	CL	Dark brown, lean CLAY. Color is black from 2.5' to 2.75' becoming dark brown.					10	90	N	L	M	L
	ND	S-2 46	4.0 8.0				Same except color changes to yellow-brown, moist.										
5																	
	ND	S-3 48	8.0 12.0														
10					749.0	SM	Silty SAND, wet. GW sample S-1 4083D collected at approximately 11.5 feet.					80	20				
					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. B-4083

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4084

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 7, 2003
Finish May 7, 2003
Driller D. Pino
H&A Rep. F. Palatka

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Elevation 760.0
Datum Estimated

Location
N 7,881
E 7,855

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 24	0.0 4.0	NO WELL INSTALLED	759.0		-CONCRETE-										
						SW-SC	Brown, well-graded SAND with clay and gravel, mps: 35 mm, moist. Soil sample S-1 4084A collected at approximately 1.5 feet.	5	15	10	10	50	10	N	L	N	N
	ND	S-2 32	4.0 8.0														
5					754.0	CL	Olive-gray, lean CLAY with sand, mps: 2 mm, moist.				5	10	85	N	L	L	L
	ND	S-3 40	8.0 12.0				Soil sample S-3 4084B collected at approximately 8.0 feet.										
10					749.5	ML	Yellow-brown, sandy SILT, mps < 1 mm, wet.					30	70	R	L	N	N
					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples S 1-2, GW-1

Boring No. B-4084

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4091

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 6, 2002
Finish November 6, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,082 E 7,671

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	3.7	S-1 20	1.0 3.0	NO WELL INSTALLED	757.0	ML	Soft, brown SILT with sand, no odor, moist mps: 6.4 mm. -GLACIAL TILL-					20	80				
5					751.0		Closed Rod. No Sample from 3 to 9 feet.										
10	ND	S-2 22	9.0 11.0		749.0	SP	Loose, brown, fine SAND, mps <1 mm, no odor, wet. -GLACIAL TILL-					100					
	ND	S-3 24	11.0 13.0		747.0	SP	Loose, gray, fine SAND, mps <1 mm, no odor, wet. -GLACIAL TILL- Water at 13.0 feet. -Bottom of Exploration at 13.0 feet.-					100					

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (lin. ft.) 13.0; Rock Cored (lin. ft.) -; Samples GP-1, GP-2, GP-3

Boring No. B-4091

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4092

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 6, 2002
Finish November 6, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,045 E 7,717

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	3.6	S-1 12	1.0 3.0			ML	Fairly stiff, gray-brown, sandy SILT, mps <1 mm no odor, moist.					30	70				
					757.0		-FILL-										
							No Sample taken.										
5					754.0												
	4.7	S-2 24	6.0 8.0			ML	Stiff, tanish gray SILT, mps <1 mm, slight hydrocarbon odor, moist.					10	90				
					752.0		-GLACIAL TILL-										
	4.3	S-3 18	8.0 10.0			SM	Soft, gray-brown, silty SAND, mps <1 mm, no odor, wet.										
							-GLACIAL TILL-										
					750.0		Water at 10.0 feet										
10							-Bottom of Exploration at 10.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram	
	Riser Pipe
	Screen
	Filter Sand
	Cuttings
	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	10.0
Rock Cored (lin. ft.)	-
Samples	GP-1, GP-2, GP-3

Boring No. B-4092

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. B-4093

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 6, 2002
Finish November 6, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,191 E 7,772

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				759.0		-CONCRETE-										
	ND	S-1 18	1.0 3.0		ML	Stiff, dark gray to black SILT, mps: 6.3 mm, no odor, moist. -GLACIAL TILL-					10	90				
				757.0		No sample taken from 3 to 6 feet.										
5				754.0												
	4.7	S-2 22	6.0 8.0		ML	Stiff, tan and gray SILT, mps <1 mm, no odor, moist. -GLACIAL TILL-					5	95				
	ND	S-3 20	8.0 10.0	751.0	SP	Dense, tan, fine SAND, mps <1 mm, no odor, moist. Water at 10.0 feet.					100					
10				750.0		-Bottom of Exploration at 10.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 10.0
Rock Cored (lin. ft.) -
Samples GP-1, GP-2, GP-3

Boring No. B-4093

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4094

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 14, 2002
Finish November 14, 2002
Driller R. Vining
H&A Rep. G. Laird

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Elevation 760.0
Datum Estimated
Location N 8,094 E 7,776

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	7.6	S-1 26	1.0 5.0	NO WELL INSTALLED		ML	Fairly stiff, brown and black SILT, mps: 2.5 cm, no odor, moist.					10	90				
	1.9						-FILL-										
5		S-2 46	5.0 9.0		754.5												
	0.8					ML	Stiff, brown and tan SILT, mps: 1.3 cm, no odor, moist.					5	95				
							-GLACIAL TILL-										
	0.1																
		S-3 24	9.0 11.0				Same as 5.5 to 8.0 feet.										
10	2.0				750.0	SP	Dense, tan, fine SAND, mps< 1 mm, no odor, wet.					100					
	0.3				749.0		Water at 10.0 feet										
							-GLACIAL TILL-										
							-Bottom of Exploration at 11.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 11.0
Rock Cored (lin. ft.) -
Samples GP-1, GW-3

Boring No. B-4094

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4095

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location N 8,146 E 7,668

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.3		-CONCRETE-										
	ND	S-1 48	0.0 4.0			CL	Yellow-brown, lean CLAY, mps < 1 mm, moist. Soil sample S-1 4095A collected at approximately 1.5 feet.					10	90	N	M	L	L
5	ND	S-2 48	4.0 8.0				Soil sample S-2 4095B collected at approximately 6.5 feet.										
				NO WELL INSTALLED	752.0		-Bottom of Exploration at 8.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 8.0
- Rock Cored (lin. ft.) -
- Samples S 1-2

Boring No. B-4095

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4096

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location N 8,107 E 7,654

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.5		-CONCRETE-										
	ND	S-1 48	0.0 4.0			CL	Yellow-brown, lean CLAY with sand, mps: 2 mm, moist.				10	10	80	N	M	L	L
							Soil sample S-1 4096A collected at approximately 1.0 feet.										
	ND	S-2 48	4.0 8.0														
5							Soil sample S-2 4096B collected at approximately 7.0 feet.										
				NO WELL INSTALLED	752.0		-Bottom of Exploration at 8.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 8.0
Rock Cored (lin. ft.) -
Samples S 1-2

Boring No. B-4096

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4097

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location N 8,017 E 7,655

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 36	0.0 4.0	NO WELL INSTALLED	759.3		-CONCRETE-										
	1.0					SP	Tan, poorly-graded SAND, mps < 1 mm, dry.					95	5	N	L	N	N
	7.0				758.0												
						CL	Olive-gray, lean CLAY, some sand, mps < 1 mm, moist. Soil sample S-1 4097A collected at approximately 2.0 feet.					10	90	N	M	L	L
	5.0																
		S-2 36	4.0 8.0				Same except color changes to light brown.										
5	5.0																
							Soil sample S-2 4097B collected at approximately 7.0 feet.										
					752.0		-Bottom of Exploration at 8.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 8.0
Rock Cored (lin. ft.) -
Samples S 1-2

Boring No. B-4097

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. B-4111

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: May 5, 2004
Finish: May 5, 2004
Driller: B. Graham, D. Gardenhous
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location Executive Garage

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-750
Inside Diameter (in.)	4 1/4	4 1/4	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 3 4 3	ND	S-1 12	0.0 2.0			ML	Soft, dark brown SILT, mps: 1 mm, no odor, moist. -TOP SOIL-					10	90				
	3 3 3 3	ND	S-2 12	2.0 4.0		2.0	ML	Soft, yellow brown SILT, mps: 1/4 in., no odor, moist. -FILL-					10	90				
5	2 3 4 5	ND ND	S-3 18	4.0 6.0		4.0	ML	Soft, yellow brown and gray mottled, elastic SILT, mps: 1/4 in., no odor, moist. -GLACIAL TILL- 2 in. seam of black ash/slag at 5 ft.					10	90				
	1 1 3 5	ND	S-4 20	6.0 8.0				Similar to above except more moist. Similar to above except yellow brown.										
	3 4 6 9	ND	S-5 24	8.0 10.0				Similar to above.										
10	4 7 12 13	ND	S-6 24	10.0 12.0		11.5	SM	Soft, light brown, silty SAND, mps: 1 mm, no odor, wet.					60	40				
						12.0		-GLACIAL TILL- -Bottom of Exploration at 12.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples -

Boring No. B-4111

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. B-4141

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 11, 2002
Finish November 11, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,756 E 7,883

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-CONCRETE-										
					759.0												
	ND	S-1 32	1.0 5.0			SP	Loose, brown foundry SAND, mps< 1mm, no odor, moist.					50	50				
					757.5		-FILL-										
	ND					ML	Soft, tan SILT with sand, mps: 1.3 cm, no odor, moist.					20	80				
							-GLACIAL TILL-										
5	0.8	S-2 22	5.0 9.0														
	0.5																
	6.2	S-3 22	9.0 13.0				Same as 2.5' to 5.0'					20	80				
10	13.1											20	80				
					747.0												
	8.1	S-4 44	13.0 17.0			SP	Loose, tan, fine SAND, mps <1mm, no odor, wet.					100					
							Water at 13.0 feet.										
15	4.0						-GLACIAL TILL-										
					743.0		-Bottom of Exploration at 17.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary
Overburden (lin. ft.) 17.0
Rock Cored (lin. ft.) -
Samples GP-2,GP-3,FD/GP-2

Boring No. B-4141

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4142

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 11, 2002
Finish November 11, 2002
Driller P. Orsi
H&A Rep. G. Laird

Elevation 760.0
Datum Estimated

Location
N 8,781
E 7,894

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.3	S-1 40	1.0 5.0	NO WELL INSTALLED		SP	Loose, black foundry SAND, mps : 1.3 cm, no odor, moist.					50	50				
	0.5						-FILL-										
5		S-2 40	5.0 9.0		754.0		Same as 1 to 5 feet.				50	50					
	0.5					ML	Soft, brown SILT with sand, mps: 1.3 cm, no odor, moist.					25	75				
	1.5						-GLACIAL TILL-										
	0.8	S-3 47	9.0 13.0				Same as 5 to 9 feet.					25	75				
10	1.6					ML	No water encountered.										
					747.0		-Bottom of Exploration at 13.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram	
	Riser Pipe
	Screen
	Filter Sand
	Cuttings
	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	13.0
Rock Cored (lin. ft.)	-
Samples	GP-2, GP-3

Boring No. B-4142

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. B-4143

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 11, 2002
Finish November 11, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,832 E 7,887

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				759.0		-CONCRETE-										
	0.3	S-1 40	1.0 5.0		SP	Loose, black, foundry SAND, mps: 2.5 cm, no odor, moist.				50	50					
	0.4					-FILL-										
5	0.9	S-2 47	5.0 9.0			Same as 1 to 5 feet.				50	50					
	0.4			752.0	ML	Stiff, brown and gray mottled, sandy SILT, mps: < 6.4 mm, no odor, moist.					30	70				
10	1.3	S-3 45	9.0 13.0			-GLACIAL TILL- Same as 8 to 10 feet.										
	0.6			748.0	SP	Loose, tan, fine SAND, mps< 1mm, no odor, moist. -GLACIAL TILL-										
				747.0		No water encountered. -Bottom of Exploration at 13.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	13.0
Rock Cored (lin. ft.)	-
Samples	GP-2, GP-3, FD

Boring No. B-4143

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4161

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 7, 2002
Finish November 1, 0702
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,957 E 8,252

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-CONCRETE-										
					758.8												
	ND	S-1 22	1.3 5.3			SP	Loose, black foundry SAND, mps< 1 mm, no odor, moist. -FILL-					100					
5					754.8												
	ND	S-2 48	5.3 9.3			ML	Stiff, brown, sandy SILT, mps: 6.3 mm, no odor, moist. -GLACIAL TILL-					30	70				
					751.3												
	ND	S-3 48	9.3 13.3			ML	Soft, brown and black, sandy SILT, mps: 1.2 cm, no odor, wet. -GLACIAL TILL-					30	70				
10					748.8												
	ND					SP	Loose, tan, fine SAND, mps< 1mm, no odor, moist. -GLACIAL TILL-					100					
	ND	S-4 48	13.3 17.3				Same as 11.25 to 13.25 feet.										
15	ND						Water encountered at 15.25 feet. -GLACIAL TILL-					100					
					742.8		-Bottom of Exploration at 17.25 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 17.25
Rock Cored (lin. ft.) -
Samples GP-1, GP-3, GP-4

Boring No. B-4161

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. B-4162

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 7, 2002
Finish November 7, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,947 E 8,251

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							-CONCRETE-										
					758.8												
	ND	S-1 32	1.3 5.3	NO WELL INSTALLED	758.3	SP	Loose, black foundry SAND, mps< 1 mm, no odor, moist.					100					
					757.5	ML	-FILL-					5	95				
	ND						Stiff, tan SILT, mps< 1 mm, no odor, moist. -GLACIAL TILL-										
5					754.8												
	ND	S-2 48	5.3 9.3			ML	Stiff, tan, sandy SILT, mps: 2.5 cm, no odor, moist. -GLACIAL TILL-					35	65				
	ND	S-3 45	9.3 13.3				Same as 5.25 to 9.25 feet.					35	65				
10					749.3												
	ND					SP	Loose, tan, fine SAND, mps< 1 mm, no odor, moist. -GLACIAL TILL-										
		S-4 45	13.3 17.3		746.3												
	ND					ML	Fairly stiff, gray- brown, sandy SILT, mps: 6.4 mm, no odor, moist. -GLACIAL TILL-					50	50				
15							Water encountered at 16.25 feet.										
					742.8		-Bottom of Exploration at 17.25 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 17.25
Rock Cored (lin. ft.) -
Samples GP-1, GP-3, GP-4

Boring No. B-4162

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4163

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 7, 2002
Finish November 7, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,930 E 8,251

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							-CONCRETE-										
					758.8												
	ND	S-1 18	1.3 5.3			SP	Loose, black and brown foundry SAND, mps< 1 mm, no odor, moist. -FILL-					100					
5					754.8												
	ND	S-2 46	5.3 9.3			ML	Stiff, tan, sandy SILT, mps: 1.3 cm, no odor, moist. -GLACIAL TILL-					30	70				
	ND	S-3 44	9.3 13.3	NO WELL INSTALLED			Same as 5.25 to 9.25 feet.					50	50				
10					749.3												
	ND					SP	Fairly dense, tan, fine SAND, mps< 1 mm, no odor, moist. -GLACIAL TILL-					100					
					746.8												
	ND	S-4 47	13.3 17.3			SM	Dense, gray, silty SAND, mps< 1 mm, no odor, moist. -GLACIAL TILL- Water encountered at 15.25 feet.					80	20				
15																	
					742.8		-Bottom of Exploration at 17.25 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram	
	Riser Pipe
	Screen
	Filter Sand
	Cuttings
	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	17.25
Rock Cored (lin. ft.)	-
Samples	EB,GP-1,GP-3,GP-4

Boring No. B-4163

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. B-4168

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 2
Start May 5, 2003
Finish May 5, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.5
Datum Estimated
Location N 10,048 E 7,870

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 28	0.0 4.0	NO WELL INSTALLED	756.0		-TOPSOIL-										
						ML	Gray-brown, SILT with sand, mps < 1 mm, moist.					10	90	N	L	N	L
					752.5												
	ND	S-2 40	4.0 8.0			SP-SM	Light brown, poorly-graded SAND with silt, mps < 1 mm, moist.					90	10	N	L	N	L
5					751.0												
						CL	Light brown, lean CLAY with sand, mps < 1 mm, moist.					10	90	N	L	L	N
					749.0												
	ND	S-3 42	8.0 12.0			SP	Yellow-brown, poorly-graded SAND, mps < 1 mm, moist. Water present at 8.5 feet. GW sample GW-3 4168D collected at approximately 9.0 feet.					95	5	N	L	L	N
10					746.5												
						CL	Gray-brown, lean CLAY, mps < 1 mm, moist. 4" silt lens.						100	N	M	M	
					745.5												
	ND	S-4 48	12.0 16.0			SP-SM	Yellow-brown to gray-brown, poorly-graded SAND with silt, mps < 1 mm, wet. GW sample GW-4 4168E collected at approximately 12.0 feet.					90	10	R	L	N	N
					743.5												
15						CL	Gray-brown, lean CLAY, mps < 1 mm, moist.						100	N	M	H	
	ND	S-5 46	16.0 20.0				Same except some fine sand, mps: 3 mm.										
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples GW 1-3

Boring No. B-4168

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4168
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6 40	20.0 24.0													
				734.5	ML	Gray-brown SILT, mps < 1 mm, wet.						100	R	L	N	N
	ND	S-7 46	24.0 28.0													
25						Soil sample GW-7 4168F collected at approximately 26.5 feet.										
				729.5		Soil sample GW-7 4168F collected at approximately 26.5 feet.										
					CL	Gray-brown lean CLAY, some silt, moist.						100	N	M	L	L
				728.5												
	ND	S-8 36	28.0 32.0		SP	Gray-brown, poorly-graded SAND, some fine gravel, mps: 4.75 mm, wet.		10	75	5	5	5				
30				726.5												
					SM	Sand changes to silty SAND, mps < 1 mm, wet.					80	20	R	L	N	L
				724.5		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. B-4168

TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4169

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 5, 2003
Finish May 5, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.5
Datum Estimated
Location N 10,048 E 7,888

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 30	0.0 4.0	NO WELL INSTALLED	755.5	OL/OH	Dark brown, organic SOIL, moist. -TOPSOIL-					10	90				
					753.0	SC	Dark brown, clayey SAND becoming yellow-brown, mps < 1 mm, moist.					70	30				
	ND	S-2 48	4.0 8.0		752.5	CL	Yellow-brown, sandy CLAY, mps < 1 mm, moist.					30	70	L	L	L	L
5					749.5	SM	Silty SAND, mps < 1 mm, moist. Water present at 8.5 GW sample GW-3 4169D collected at approximately 8.0 feet.					85	15				
	ND	S-3 46	8.0 12.0		747.0												
10					746.5	CL	Gray-brown, lean CLAY, moist.						100	N	M	H	H
						SM	Gray-brown, silty SAND, mps. < 1 mm, wet.					85	15				
	ND	S-4 42	12.0 16.0		742.5												
15						CL	Gray-brown, lean CLAY, mps < 1 mm, moist.						100	N	M	H	H
							Same except more sand.					15	85				
	ND	S-5 47	16.0 20.0				Same except less sand, some fine gravel.		5			5	90				
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples GW 1-3

Boring No. B-4169

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4169
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6 35	20.0 24.0			Soil sample S-6 4169E collected at approximately 22.0 feet. Same except more silt, wet.										
				733.0	ML	Gray-brown SILT, mps < 1 mm, wet.						100	R	L	L	L
25	ND	S-7 38	24.0 28.0			Soil sample S-7 4169F collected at approximately 26.5 feet.										
	ND	S-8 38	28.0 32.0	728.0	CL	Gray-brown, silty CLAY, mps < 1 mm, moist.						100	S	L	L	L
				727.0	SP	Coarse, poorly-graded SAND, some gravel, mps 19 mm, wet.		10	75	5	5	5				
30				726.0	ML	Gray-brown SILT, some sand, mps: 2 mm, moist.				5	5	90	N	L	L	L
				724.5		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. B-4169

TEST BORING REPORT

Boring No. B-4170

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.5
Datum Estimated
Location N 10,048 E 7,910

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 36	0.0 4.0	NO WELL INSTALLED	755.5	OL/OH	Dark brown, TOPSOIL with roots, moist. -TOPSOIL-					20	80				
					754.5	SM	Light brown, silty SAND, mps < 1 mm, moist.					80	20				
						SP	Yellow-brown, poorly-graded SAND, mps: 1 mm, moist.					95	5				
	ND	S-2 46	4.0 8.0		751.5	SP											
5						CL	Gray-brown, lean CLAY with sand, mps < 1 mm, moist.					20	80	N	L	M	M
					749.5	SC	Tan, clayey SAND, mps < 1 mm, moist.					80	20	N	L	N	
	ND	S-3 46	8.0 12.0			SC											
10					746.5	SM	Gray-brown, silty SAND, mps < 1 mm, wet. Water present at 10.0 feet. GW sample S-3 4170D collected at approximately 10.0 feet.					80	20				
	ND	S-4 46	12.0 16.0			SM											
					742.5	CL	Gray-brown, lean CLAY, some fine gravel, mps: 19 mm, moist.		5				95	N	M	H	H
15	ND	S-5 46	16.0 20.0			CL											
						CL	Same except more sand.										
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples GW 1-3

Boring No. B-4170

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4170
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6 10	20.0 24.0		ML	Gray-brown SILT, some sand, mps < 1 mm, wet. GW sample S-6 4170E collected at approximately 20.0 feet.					5	95	R	L	N	N
25	ND	S-7 24	24.0 28.0		ML											
				728.5												
	ND	S-8 44	28.0 32.0	728.0	CL	Gray-brown, lean CLAY, some silt, moist.						100	S	L	L	L
30					SW	Gray-brown, well-graded SAND, some gravel, interbedded silt pockets, mps: 19 mm, wet.		10	60	10	15	5				
				725.5	ML	Gray-brown SILT with sand, mps < 1 mm, moist.				10	10	80	N	M	N	L
				724.5		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4171

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 9, 2003
Finish May 9, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 790.0
Datum Estimated
Location N 9,172 E 7,766

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**; structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					789.5		-CONCRETE-										
	1.0	S-1 40	0.0 4.0	NO WELL INSTALLED		CL	Dark brown, silty, lean CLAY, some sand from 0.5 to 0.75', mps: 3 mm, moist. Color changes to yellow-brown at 1.0'. Soil sample S-1 4171A collected at approximately 0.5 feet.				5	5	90	N	L	L	L
	1.0																
	3.0	S-2 46	4.0 8.0														
5																	
	2.0				782.5												
	7.0	S-3 42	8.0 12.0			SP-SM	Yellow-brown, poorly-graded SAND with silt, mps < 1 mm, dry to moist. Occasionally dry. Soil sample S-3 4171 collected at approximately 8.0 feet.					90	10	N	L	N	N
10																	
	2.0																
	1.0	S-4 46	12.0 15.0				Same as above.										
	ND				775.0												
15		S-5 44	15.0 19.0			CL	Light brown CLAY lens from 15.5' to 15.83'.										
	2.0				773.0		Same as above. Light brown CLAY lens from 17.5' to 17.83'. Soil sample S-5 4171C collected at approximately 17.5 feet. Water present at 18.0 feet. GW sample GW-5 4171D collected at approximately 18.5 feet.										
					771.0		-Bottom of Exploration at 19.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 19.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. B-4171

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4181

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 12, 2002
Finish November 12, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 9,501 E 7,506

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-CONCRETE-										
					759.0												
	ND	S-1 40	1.0 5.0			SP	Loose, tan, fine SAND, mps: 2.5 cm, no odor, moist. -FILL-					100					
					756.0												
	ND					ML	Stiff, tan, SILT with sand, mps< 1mm, no odor, moist. -GLACIAL TILL-					20	80				
5					754.5												
	ND	S-2 45	5.0 9.0			SP	Loose, tan, fine SAND, mps< 1mm, no odor, moist. -GLACIAL TILL-					100					
	0.3	S-3 48	9.0 13.0				Same as 9 to 13 feet. Water encountered at 10.0 feet.					100					
10																	
	ND	S-4 48	13.0 17.0				Same as 13 to 17 feet.					100					
15																	
	ND	S-5 48	17.0 21.0				Same as 17 to 21 feet.					100					
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 21.0
Rock Cored (lin. ft.) -
Samples GP-1, GP-3, GP-5, FD

Boring No. B-4181

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4181
File No. 49017
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Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tr Dilatancy	Toughness	Plasticity	Strength
20																	
					739.0		-Bottom of Exploration at 21.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4182

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 12, 2002
Finish November 13, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 9,585 E 7,518

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.3	S-1 36	1.0 5.0	NO WELL INSTALLED		ML	Stiff, tan SILT with sand, mps: 1.3 cm, no odor, moist. -FILL-					20	80				
5	ND	S-2 44	5.0 9.0		754.0		Same as 1 to 5 feet.					20	80				
	ND					SP	Loose, tan, fine SAND, mps: 1.3 cm, no odor, moist. -GLACIAL TILL-					100					
	ND	S-3 46	9.0 13.0				Same as 6 to 9 feet.					100					
10																	
	ND	S-4 40	13.0 17.0				Same as 6 to 9 feet.					100					
15																	
	ND	S-5 40	17.0 21.0				Same as 6 to 9 feet.					100					
20							Water encountered at 20.0 feet.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 21.0
Rock Cored (lin. ft.) -
Samples GP-1,GP-3,GP-5,MSD

Boring No. B-4182

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4182
File No. 49017
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Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
20																	
					739.0		-Bottom of Exploration at 21.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4183

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 12, 2002
Finish November 12, 2002
Driller P. Orsi
H&A Rep. G. Laird

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Elevation 760.0
Datum Estimated

Location
N 9,549
E 7,469

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	ND	S-1 40	1.0 5.0			ML	Stiff, brown SILT with sand, mps: 1.9 cm, no odor, moist. -FILL-					15	85				
5		S-2 44	5.0 9.0		753.5												
	ND			NO WELL INSTALLED		SP	Loose, tan, fine SAND, mps< 1mm, no odor, moist. -GLACIAL TILL-					100					
10	ND	S-3 48	9.0 13.0				Same as 6.5 to 9 feet.					100					
15	ND	S-4 40	13.0 17.0				Same as 6.5 to 9 feet.					100					
	ND	S-5 46	17.0 21.0				Same as 6.5 to 9 feet.					100					
20							Water encountered at 20.0 feet.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 21.0
Rock Cored (lin. ft.) -
Samples EB,GP-1,GP-3,GP-5

Boring No. B-4183

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4183
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Te Dilatancy	Toughness	Plasticity	Strength
20																	
					739.0		-Bottom of Exploration at 21.0 feet.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4211

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 13, 2002
Finish November 13, 2002
Driller P. Orsi
H&A Rep. G. Laird

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Elevation 760.0
Datum Estimated
Location
N 9,805
E 7,839

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	1.4	S-1 32	1.0 5.0	NO WELL INSTALLED		ML	Soft, brown, sandy SILT, mps: 6.4 mm, no odor, moist. -FILL-					50	50				
	1.8																
5		S-2 42	5.0 9.0		754.5												
	0.4					ML	Stiff, tan and gray SILT with sand, mps: 1.3 cm, slight hydrocarbon odor, moist. -FILL-					25	75				
	6.7																
	16.4	S-3 47	9.0 13.0		750.5	SP	Loose, grayish tan, fine SAND, mps< 1 mm, hydrocarbon odor, moist. -FILL-					100					
10					747.5												
	13.4				747.0	ML	Stiff, gray-brown SILT, mps: 6.4 mm, hydrocarbon odor, moist. -FILL- No water encountered. -Bottom of Exploration at 13.0 feet.-					10	90				

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples EB,GP-1,GP-3

Boring No. B-4211

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4213

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 13, 2002
Finish November 13, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 9,782 E 7,849

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-CONCRETE-										
					759.0												
	18.1	S-1 30	1.0 5.0			SP	Loose, black foundry SAND, mps: 2.5 cm, hydrocarbon odor, moist. -FILL-					100					
					756.0												
	12.2					ML	Fairly stiff, brown, sandy SILT, mps< 1 mm, hydrocarbon odor, moist.					50	50				
5	9.5	S-2 45	5.0 9.0				-FILL-										
	7.3						-FILL-					50	50				
	8.5	S-3 35	9.0 13.0				Same as 3 to 5 feet.					50	50				
10	10.5						Same as 3 to 5 feet.										
	9.0	S-4 38	13.0 17.0				Same as 3 to 5 feet. No water encountered.					50	50				
15							-FILL-										
					743.0		-Bottom of Exploration at 17.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 17.0
Rock Cored (lin. ft.) -
Samples GP-1, GP-3, GP-4

Boring No. B-4213

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4214

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 13, 2002
Finish November 13, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 9,764 E 7,840

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							-CONCRETE-										
					759.0												
	2.5	S-1 24	1.0 5.0	NO WELL INSTALLED		SP	Loose, tan, fine SAND, mps< 1 mm, no odor, moist. -FILL-					100					
	4.0				757.0												
5	6.2	S-2 33	5.0 9.0				Same as 1 to 5 feet except gray at 7 feet with a hydrocarbon odor.					100					
	8.2																
	11.7	S-3 33	9.0 13.0				Same as 5 to 9 feet.					100					
10					749.0												
	8.1					ML	Stiff, brown, sandy SILT, mps: 2.5 cm, hydrocarbon odor, moist. -FILL-					50	50				
	3.8	S-4 48	13.0 17.0				Same as 11 to 13 feet.										
15	3.0						No water encountered.					50	50				
					743.0		-Bottom of Exploration at 17.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	17.0
Rock Cored (lin. ft.)	-
Samples	GP-1, GP-2, GP-3

Boring No. B-4214

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4215

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 14, 2002
Finish November 14, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 9,769 E 7,834

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

NO WELL INSTALLED

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0						-CONCRETE-										
				759.0												
	1.9	S-1 24	1.0 5.0		SP	Loose, tan, fine SAND, mps< 1 mm, slight hydrocarbon odor, moist. -FILL-					100					
	11.1															
5	13.1	S-2 40	5.0 9.0			Same as 1 to 5 feet.					100					
				754.0												
	35.0				ML	Stiff, brown, sandy SILT, mps: 2.5 cm, hydrocarbon odor, moist. -FILL-					35	65				
		S-3 48	9.0 13.0	750.5												
10	37.0				SP	Dense, gray-brown, fine SAND, mps< 1 mm; hydrocarbon odor, moist. -FILL-					100					
				748.0												
	19.1			747.0	ML	Stiff, brown SILT, mps: 6.4 mm, hydrocarbon odor, moist. -FILL-					5	95				
	18.1	S-4 47	13.0 17.0		SP	Stiff, gray-brown, fine SAND, mps< 1 mm, hydrocarbon odor, moist. -FILL-					100					
15				744.0												
	4.5			743.0	ML	Stiff, gray-brown SILT, mps< 1 mm, slight hydrocarbon odor, moist. -FILL-										
						-Bottom of Exploration at 17.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 17.0
Rock Cored (lin. ft.) -
SamplesGP-1,GP-2,GP-3,EB

Boring No. B-4215

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4231

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 6, 2002
Finish November 6, 2002
Driller D. Pino
H&A Rep. F. Palatka

Elevation 760.0
Datum Estimated

Location
N 9,744
E 8,461

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 30	0.0 4.0	NO WELL INSTALLED	759.7		-CONCRETE-										
						SP-SM	Yellow-brown SAND, moist.					90	10				
5		S-2 32	4.0 8.0														
		S-3 30	8.0 12.0		752.0	CL	Yellow-brown, sandy CLAY, moist.					20	80				
10					750.0	SP	Yellow-brown SAND, moist.					95	5				
							Wet at 11.6 feet.										
		S-4 44	12.0 16.0				Same except trace medium SAND.				5	90	5				
15							Rust color staining at 15 feet.										
		S-5 32	16.0 20.0				Same except dark brown/black, moist.										
					743.0												
					742.5	SP	Coarse SAND with fine gravel.		10	60	10	10	10				
						CL	Gray and brown CLAY and silt, moist.										
20					740.0		-Bottom of Exploration at 20.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 20.0
Rock Cored (lin. ft.) -
Samples

Boring No. B-4231

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4232

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 7, 2002
Finish November 7, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location N 9,758 E 8,510

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				759.8		-CONCRETE-										
	ND	S-1 24	0.0 4.0		SP	Yellow-brown SAND.					95	5				
						Wet at 3.0 feet.										
				756.0												
	ND	S-2 40	4.0 8.0													
5																
				752.0												
	ND	S-3 24	8.0 12.0							5	90	5				
						Wet at 11.0 feet.										
10																
				748.0												
	ND	S-4 6	12.0 14.0													
		S-5 12	14.0 17.0													
15																
				744.0												
	ND				SP	Coarse, brown/black SAND.		10	10		75	5				
		S-6	17.0 20.0													
				742.0												
	ND				CL	Gray-brown CLAY, moist. 3" silt lens.										
20				740.0		-Bottom of Exploration at 20.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram	Summary
O Open End Rod	Riser Pipe	Overburden (lin. ft.) 20.0
T Thin Wall Tube	Screen	Rock Cored (lin. ft.) -
U Undisturbed Sample	Filter Sand	Samples
S Split Spoon	Cuttings	**Boring No.** B-4232
G Geoprobe	Grout	
	Concrete	
	Bentonite Seal	

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4233

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 13, 2002
Finish November 13, 2002
Driller D. Pino
H&A Rep. F. Palatka

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Elevation 760.0
Datum Estimated

Location
N 9,860
E 8,500

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.5		-CONCRETE-										
	ND	S-1 24	0.0 4.0	NO WELL INSTALLED		SP	Yellow-brown SAND, moist.					95	5				
5		S-2 40	4.0 12.0														
	ND	S-3	8.0 12.0			SP	Yellow-brown, fine SAND, some medium and coarse SAND, moist.			10	10	95	5				
10							Wet at 10.5 feet.										
	ND	S-4	12.0 16.0				4" lens of coarse SAND and fine gravel at 12.0 feet.										
15																	
	ND	S-5	16.0 20.0				Color changes to gray-brown.										
20					740.0												

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 23.0
Rock Cored (lin. ft.) -
Samples

Boring No. B-4233

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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NEW USCSLIB3_DTR.GLB DELPHI.GDT

TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4233
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
20	ND	S-6	20.0 23.0			CL	Gray-brown CLAY, moist.					5	95				
					737.0		-Bottom of Exploration at 23.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINT\SLOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. B-4251

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 7, 2002
Finish November 7, 2002
Driller D. Pino
H&A Rep. F. Palatka

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Elevation 757.5
Datum Estimated
Location N 9,264 E 8,562

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 42	0.0 4.0	NO WELL INSTALLED	757.3	CL	-CONCRETE- Yellow-brown CLAY, moist, black staining present.					5	95				
	ND	S-2 48	4.0 8.0		753.5	SP	Poorly-graded SAND, moist.				85	5	10				
5																	
	ND	S-3 48	8.0 12.0				At 9 feet, 3" lens of broken concrete, brick, backfill.										
10					746.5		Same except gray-brown.										
	ND	S-4	12.0 16.0		744.5	ML	Gray-brown CLAY. Wet at 13.5 feet.						100				
15					741.5		-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary
Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples

Boring No. B-4251

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4252

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 7, 2002
Finish November 7, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 757.5
Datum Estimated
Location N 9,252 E 8,551

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					757.2		-CONCRETE-										
	ND	S-1 36	0.0 4.0			CL	Yellow-brown CLAY, moist, some staining present.		10	10	10	65	5				
		S-2 48	4.0 8.0														
5																	
	15.0				750.5		At 7 feet, 4" lens with concrete, backfill.										
		S-3 48	8.0 12.0	NO WELL INSTALLED													
10																	
		S-4 46	12.0 16.0														
					743.5												
	ND					ML	Gray-brown, clayey SILT. Wet at 14.5 feet.						100				
15					741.5												
							-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples

Boring No. B-4252

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4253

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 7, 2002
Finish November 7, 2002
Driller D. Pino
H&A Rep. F. Palatka

Elevation 757.5
Datum Estimated

Location
N 9,234
E 8,545

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					757.3		-CONCRETE-										
		S-1 36	0.0 4.0	NO WELL INSTALLED		SP	Gravel, concrete, some staining present. -FILL-		10	10	60	10	5				
	ND				755.5	CL	Yellow-brown CLAY, moist.				5		95				
5	ND	S-2 48	4.0 8.0		751.5		Same, but more SAND.				5	20	75				
	8.0	S-3 46	8.0 12.0		748.5	SP	Fine SAND, black stained.			5	5	90					
10	ND	S-4	12.0 16.0		745.5	SP	Becoming yellow-brown SAND, wet.			15	10	70	5				
					743.5	ML	Gray-brown, clayey SILT, wet.										
15					741.5		-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples

Boring No. B-4253

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4254

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 8, 2002
Finish November 8, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 757.5
Datum Estimated
Location N 9,243 E 8,563

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					757.3		-CONCRETE-										
	ND	S-1 44	0.0 4.0	NO WELL INSTALLED		CL	Yellow-brown CLAY, moist. -FILL-					5	95				
					753.5												
		S-2 48	4.0 8.0				Same as above.										
5																	
					749.5												
	ND	S-3 48	8.0 12.0				Same as above.										
10																	
					745.5												
	ND	S-4 48	12.0 16.0				Same except gray-brown.					5	95				
					743.5												
						ML	Gray-brown SILT.						100				
15							Wet at 14.5 feet.										
					741.5												
							-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples

Boring No. B-4254

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4255

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 8, 2002
Finish November 8, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 757.5
Datum Estimated
Location N 9,246 E 8,556

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					757.3		-CONCRETE-										
	ND	S-1 24	0.0 4.0	NO WELL INSTALLED		SP	Dark brown SAND with black staining, moist.			15	10	70	5				
					753.5												
	ND	S-2 48	4.0 8.0			CL	Yellow-brown CLAY, moist.				5	5	90				
5																	
	ND	S-3 24	8.0 12.0		748.5		Same as above, 6" trace sand lens at 9.0 feet, moist. Sample collected from CLAY.			50	10	35	5				
10																	
					745.5												
	ND	S-4 48	12.0 16.0			SP	Dark brown SAND, moist.			10	10	55	5				
					743.5												
	ND					ML	Gray-brown SILT.						100				
15							Wet at 15 feet.										
					741.5		-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	16.0
Rock Cored (lin. ft.)	-
Samples	

Boring No. B-4255

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4261

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 755.5
Datum Estimated
Location N 8,232 E 8,374

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: N/A
Hammer Fall (in.)	-	-	-	Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					755.3		-CONCRETE-										
	ND	S-1 36	0.0 4.0	NO WELL INSTALLED	754.9	SP	Yellow-brown, poorly-graded SAND, mps < 1 mm, moist.					95	5				
						CL	Olive-gray, lean CLAY, some sand, mps < 1 mm, moist.					10	90	N	L	L	L
							Soil sample S-1 4261A collected at approximately 1.5 feet.										
					751.5												
	98	S-2 48	4.0 8.0														
5							Soil sample S-2 4161B collected at approximately 5.5 feet.										
	72																
	28	S-3 48	8.0 12.0				Same as above.										
							Soil sample S-3 4261C collected at approximately 9.5 feet.										
10					745.5												
	8					SP-SM	Brown, poorly-graded SAND, some silt, mps < 1 mm, wet.					90	10	R	L	N	N
					743.5		-Bottom of Exploration at 12.0 feet.										
15																	
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram
O Open End Rod	Riser Pipe
T Thin Wall Tube	Screen
U Undisturbed Sample	Filter Sand
S Split Spoon	Cuttings
G Geoprobe	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	12.0
Rock Cored (lin. ft.)	-
Samples	S 1-3

Boring No. B-4261

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-42610

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 7, 2003
Finish May 7, 2003
Driller D. Pino
H&A Rep. F. Palatka

Elevation 755.8
Datum Estimated

Location
N 8,292
E 8,466

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					755.1		-CONCRETE-										
	0.2	S-1 30	0.0 4.0	NO WELL INSTALLED		CL	Dark brown, lean CLAY, some sand, mps < 1 mm, moist.					5	95	N	L	L	L
							Soil sample S-1 42610A collected at approximately 2.0 feet.										
	0.1						Same except color changes to yellow-brown.										
	0.5	S-2 48	4.0 8.0														
5							Soil sample S-2 42610B collected at approximately 6.0 feet.										
	0.4																
		S-3 42	8.0 12.0				Soil sample S-3 42610C collected at approximately 8.0 feet.										
					746.8												
	0.5					SP-SM	Gray-brown, poorly-graded SAND with silt, mps < 1 mm, wet.					90	10	R	L	N	N
10					744.8												
	1.5					ML	Gray-brown SILT, mps < 1 mm, moist.						100	N	L	N	N
					743.8		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples S 1-3

Boring No. B-42610

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-42611

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 755.7
Datum Estimated
Location N 8,187 E 8,432

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					755.5		-CONCRETE-										
	ND	S-1 46	0.0 4.0	NO WELL INSTALLED		CL	Light brown, lean CLAY, mps < 1 mm, moist. Soil sample S-1 42611A collected at approximately 1.5 feet.					10	90	N	L	L	L
					751.7												
	ND	S-2 42	4.0 8.0			SP	Light brown, poorly-graded SAND, trace silt, mps < 1 mm, wet.					95	5	N	L	M	L
5																	
	ND	S-3 48	8.0 12.0				Soil sample S-3 42611C collected at approximately 10.0 feet.										
10					745.2												
	ND					SP-SM	Light brown, SAND, some silt, mps < 1 mm, wet.					90	10	R	L	N	N
					743.7		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples S 1-3

Boring No. B-42611

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. B-42612

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 26, 2004
Finish March 26, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								CONCRETE										
			G-1 33	0.0 5.0		0.5	SP	Medium dense, yellow brown, poorly graded SAND, mps: 0.75 cm, no odor, moist.			10	45	40	5				
		0.2																
						2.0	CL	Medium stiff, blackish gray, sandy lean CLAY, mps: 2.5 cm, pertrochemical odor, moist.		5	5	15	10	65				
		67.1																
		4.7																
5			G-2 18	5.0 10.0	NO WELL INSTALLED	5.0	SM	Loose, gray black, clayey, silty SAND, mps: 1 mm, petrochemical odor, wet.				10	75	15				
		6.7																
		76.8																
10			G-3 54	10.0 15.0		9.5	CL	Stiff, red gray, lean CLAY, mps: 2 mm, slight odor, moist.					10	90				
		15.5																
		5.4																
		37.5																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/26/04					5.0

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 15.0
- Rock Cored (lin. ft.) -
- Samples 3G

Boring No. B-42612

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

USCS_TB3 USCSLIB3.GLB USCSTBC3.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Apr 28, 04

TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4262

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.0
Datum Estimated
Location N 8,225 E 8,462

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					755.8		-CONCRETE-										
	ND	S-1 36	0.0 4.0	NO WELL INSTALLED		CL	Black, lean CLAY with sand, mps < 1 mm, moist. Soil sample S-1 4262A collected at approximately 1.5 feet.					15	85	N	L	L	L
	ND	S-2 36	4.0 8.0				Similar to above, except color changes to olive-green and less sand, mps < 1 mm.					5	95	N	L	L	L
5	0.4						Soil sample S-2 4262B collected at approximately 6.5 feet.										
		S-3 48	8.0 12.0				Soil sample S-3 4262C collected at approximately 9.0 feet.										
					746.5	SP-SM	Gray-brown, poorly-graded SAND, with silt, mps < 1 mm, wet.					90	10	R	L	N	N
10	2.9				745.5												
					744.0		-Bottom of Exploration at 12.0 feet.-										
15																	
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples S 1-3

Boring No. B-4262

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. B-4263

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Elevation 756.2
Datum Estimated
Location N 8,288 E 8,571

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	0.5	S-1 48	0.0 4.0	NO WELL INSTALLED		CL	Tan, lean CLAY with sand, some concrete and gravel, mps: 19 mm, moist. Soil sample S-1 4263A collected at approximately 1.5 feet.		5		5	10	80	N	L	L	L
					752.2												
	2.3	S-2 48	4.0 8.0			CL	Yellow-brown, lean CLAY with sand, mps < 1 mm, moist. Soil sample S-2 4263B collected at approximately 6.0 feet.					10	90	N	L	M	M
5																	
	3.3	S-3 48	8.0 12.0				Soil sample S-3 4263C collected at approximately 10.0 feet.										
					746.2												
10						SP-SM	Light brown, poorly-graded SAND with silt, wet.					90	10	R	L	N	N
					744.2		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12.0
Rock Cored (lin. ft.)	-
Samples	S 1-3

Boring No. B-4263

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4264

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 7, 2003
Finish May 7, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 755.0
Datum Estimated
Location N 8,339 E 8,381

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					754.3		-Concrete										
	0.1	S-1 24	0.0 4.0	NO WELL INSTALLED		CL	Dark brown to black, lean CLAY, some sand, mps < 1 mm, moist. Color changes to yellow-brown at 1.0 foot. Soil sample S-1 4264A collected at approximately 1.5 feet.					10	90	N	L	L	L
	0.1																
	0.1	S-2 48	4.0 8.0														
5																	
	0.1																
	0.2	S-3 48	8.0 12.0				Soil sample S-3 4264B collected at approximately 8.0 feet.										
10					744.5												
	0.2				743.0	SP-SM	Gray-brown, poorly-graded SAND with silt, mps < 1 mm, wet. Soil sample S-3 4264C collected at approximately 10.0 feet.					90	10	R	L	N	N
							-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12.0
Rock Cored (lin. ft.)	-
Samples	S 1-3

Boring No. B-4264

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4265

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 7, 2003
Finish May 7, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 755.5
Datum Estimated
Location N 8,330 E 8,469

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					754.8		-CONCRETE-										
	4.0	S-1 48	0.0 4.0	NO WELL INSTALLED	754.3	SP	Yellow-brown, poorly-graded SAND.					95	5	N	L	N	N
						CL	Soil sample S-1 4265A collected at approximately 1.0 foot. Black, lean CLAY for 4 inches, becoming olive-gray, mps < 1 mm.					10	90	N	L	L	L
	2.0																
	1.0	S-2 40	4.0 8.0				Soil sample S-2 4265B collected at approximately 6.0 feet.										
5	0.5						Soil sample S-3 4265C collected at approximately 8.5 feet.										
	1.0	S-3 44	8.0 12.0		746.5	SP-SM	Olive-gray, poorly-graded SAND, with silt, mps < 1 mm, wet.					90	10	R	L	N	N
10	1.0				745.0	ML	Olive-gray SILT, moist.						100	N	L	N	N
					743.5		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples S 1-3

Boring No. B-4265

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4266

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 752.6
Datum Estimated
Location N 8,234 E 8,568

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: N/A
Hammer Fall (in.)	-	-	-	Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**; structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 42	0.0 4.0	NO WELL INSTALLED		CL	Tan, lean CLAY with sand and gravel, mps : 17 mm, moist. Soil sample S-1 4266A collected at approximately 1.5 feet.		10	5	5	15	65	N	L	L	L
5	ND	S-2 46	4.0 8.0			CL	Color changes to yellow-brown, less gravel and sand, mps: 2 mm, moist. Soil sample S-2 4266B collected at approximately 6.0 feet.				5	5	90	N	M	L	L
	ND	S-3 44	8.0 12.0		743.6	SP-SM	Yellow-brown, poorly-graded SAND with silt, mps < 1 mm, wet. Soil sample S-3 4266C collected at approximately 9.5 feet.					90	10	R	L	N	N
10					740.6		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples S 1-3

Boring No. B-4266

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4267

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 752.9
Datum Estimated
Location N 8,434 E 8,374

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					752.7		-CONCRETE-										
	ND	S-1 36	0.0 4.0	NO WELL INSTALLED		SP	Brown, poorly-graded SAND with gravel, mps: 3 mm, moist.	10	10	75	5						
					750.9	CL	Yellow-brown, lean CLAY, mps < 1 mm, moist. Soil sample S-1 4267A collected at approximately 2.0 feet.					10	90	N	M	L	L
	ND	S-2 48	4.0 8.0				Soil sample S-2 4267B collected at approximately 6.0 feet.										
5					746.4	SP-SM	Yellow-brown, poorly-graded SAND with silt, mps < 1 mm, wet.					90	10	R	L	L	N
					744.9		-Bottom of Exploration at 8.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 8.0
Rock Cored (lin. ft.) -
Samples S 1-3

Boring No. B-4267

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4268

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 752.4
Datum Estimated
Location N 8,438 E 8,481

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					751.9		-CONCRETE-										
	0.3	S-1 36	0.0 4.0			CL	Black, sandy, lean CLAY, mps: 1 mm, moist.					30	70	N	L	L	N
							Soil sample S-1 4268A collected at approximately 2.0 feet.										
	ND					CL	Olive-brown, sandy, lean CLAY, mps < 1 mm, moist.					30	70	N	L	L	L
	ND	S-2 48	4.0 8.0														
5																	
	ND	S-3 42	8.0 12.0	NO WELL INSTALLED			Lens of sand and gravel. Color changes to light brown. Soil sample S-3 4268B collected at approximately 8.0 feet.										
							Soil sample S-3 4268C collected at approximately 10.0 feet.										
10					741.9												
	0.7					SP-SM	Light brown, poorly-graded SAND with silt, mps < 1 mm, wet.					90	10	R	L	N	N
					740.4		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples S 1-3

Boring No. B-4268

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4269

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 752.4
Datum Estimated
Location N 8,430 E 8,551

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 42	0.0 4.0	NO WELL INSTALLED		CL	Light brown to yellow-brown, sandy, lean CLAY, some fine gravel, mps: 15 mm, moist. Soil sample S-1 4269A collected at approximately 2.0 feet.		5	5	5	15	70	N	L	L	L
5	ND	S-2 47	4.0 8.0				Same except color changes to yellow-brown at 7.0 feet. Soil sample S-2 4269B collected at approximately 7.0 feet.										
10	ND	S-3 46	8.0 12.0		741.9		Soil sample S-3 4269C collected at approximately 10.0 feet.										
					740.4	SP-SC	Yellow-brown, poorly-graded SAND with clay, mps < 1 mm, wet. -Bottom of Exploration at 12.0 feet.-					90	10	R	L	N	N

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12.0
Rock Cored (lin. ft.)	-
Samples	S 1-3

Boring No. B-4269

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-42710

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 13, 2002
Finish November 13, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1	0.0 4.0	NO WELL INSTALLED		CL	Yellow-brown CLAY, moist.				5	5	90				
5	ND	S-2	4.0 8.0		749.5	SP-SM	Yellow-brown, fine SAND, moist to wet.					90	10				
	ND	S-3	8.0 12.0		746.5		Wet at 8.0 feet.										
10					745.0	CL	Yellow-brown CLAY, moist.						100				
					744.0	ML	Gray-brown SILT, moist.						100				
							-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. B-42710

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4271

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 8, 2002
Finish November 8, 2002
Driller D. Pino
H&A Rep. F. Palatka

Elevation 756.0
Datum Estimated

Location
N 8,146
E 8,533

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					755.6		-CONCRETE-										
	ND	S-1 32	0.0 4.0	NO WELL INSTALLED		SP-SC	Yellow-brown SAND with some clay lenses interbedded.					90	10				
5	ND	S-2 32	4.0 8.0			SP	Yellow-brown, fine SAND, dry to moist.					95	5				
	ND	S-3 40	8.0 12.0		746.5		Wet at 9.5 feet.										
10					745.5	ML	Gray-brown SILT. Water collected at 9.5 to 10.5 feet.						100				
					744.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. B-4271

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4272

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 8, 2002
Finish November 8, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.2
Datum Estimated
Location N 8,244 E 8,594

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 44	0.0 4.0	NO WELL INSTALLED		SP	Yellow-brown SAND, moist.				5	95	5				
					753.2	SC	Olive-gray, clayey SAND, moist.					75	25				
					752.2												
	ND	S-2 46	4.0 8.0			CL	Light brown CLAY, moist.										
5																	
	ND	S-3 46	8.0 12.0		747.7	SM	Wet at 8.5 feet. Olive SAND with some silt. Color changes to yellow-brown at 10.5 feet.					80	20				
10					744.7 744.2	ML	Gray-brown SILT. -Bottom of Exploration at 12.0 feet.-						100				

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram	Summary	
O Open End Rod	Riser Pipe	Overburden (lin. ft.)	12
T Thin Wall Tube	Screen	Rock Cored (lin. ft.)	-
U Undisturbed Sample	Filter Sand	Samples	
S Split Spoon	Cuttings	**Boring No.**	B-4272
G Geoprobe	Grout		
	Concrete		
	Bentonite Seal		

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4273

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 11, 2002
Finish November 11, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.8
Datum Estimated
Location N 8,308 E 8,553

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 42	0.0 4.0	NO WELL INSTALLED		SP	Yellow-brown SAND, moist.				5	90	5				
					752.8												
	ND	S-2 40	4.0 8.0				Same as above.										
5																	
		S-3 40	8.0 12.0														
	ND				747.3		Wet at 9.5 feet.										
10					745.8		Color changes to gray-brown at 10.5 feet.										
						ML	Gray-brown SILT, moist.						100				
					744.8		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. B-4273

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4274

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 11, 2002
Finish November 11, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.2
Datum Estimated
Location N 8,574 E 8,363

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 46	0.0 4.0	NO WELL INSTALLED	755.7	OL/ OH	-TOPSOIL-										
						SC	Yellow-brown, clayey SAND, moist.				5	65	30				
5	ND	S-2 42	4.0 8.0		750.2	CL	Yellow-brown CLAY, moist.					30	70				
					748.7	SP	Yellow-brown SAND, moist.				15	80	5				
	ND	S-3 43	8.0 12.0				Wet at 9.0 feet.										
10					746.2	ML	Gray-brown SILT, moist.						100				
					744.2		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples

Boring No. B-4274

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4275

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 11, 2002
Finish November 11, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 752.4
Datum Estimated
Location N 8,425 E 8,540

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 44	0.0 4.0		SC	Yellow-brown, clayey SAND, moist.				5	65	35				
				749.4	CL	Brown CLAY, moist.					5	95				
	ND	S-2 48	4.0 8.0	748.4	SP-SC	Yellow-brown SAND with CLAY.				5	85	10				
5				745.4	CL	Brown CLAY, moist.					5	95				
	ND	S-3 45	8.0 12.0	743.4	SP	Wet at 9.0 feet. Yellow-brown SAND, wet.					95	5				
10				741.4	ML	Gray-brown SILT, moist.					95	5				
				740.4		-Bottom of Exploration at 12.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples
Boring No. B-4275

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4276

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 12, 2002
Finish November 12, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.0
Datum Estimated
Location N 8,448 E 8,588

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 36	0.0 4.0	NO WELL INSTALLED		CL	Yellow-brown interbedded layers of SAND and CLAY, moist.				10	30	60				
					752.0												
	ND	S-2 46	4.0 8.0				Same as above.										
5					749.0												
						SP	Yellow-brown SAND, moist.					95	5				
		S-3 47	8.0 12.0				Wet at 8.5 feet.										
					746.5												
10	ND					ML	Gray-brown SILT, moist.						100				
					744.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 12
- Rock Cored (lin. ft.) -
- Samples

Boring No. B-4276

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4277

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 12, 2002
Finish November 12, 2002
Driller D. Pino
H&A Rep. F. Palatka

	Casing	Sampler	Barrel
Type	-	GP	-
Inside Diameter (in.)	-	1 7/8	-
Hammer Weight (lb.)	-	-	-
Hammer Fall (in.)	-	-	-

Drilling Equipment and Procedures
Rig Make & Model: Truck-mounted Geoprobe
Bit Type:
Drill Mud: None
Casing: N/A
Hoist/Hammer: Automatic Hammer

Elevation 756.0
Datum Estimated
Location N 8,482 E 8,568

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 44	0.0 4.0	NO WELL INSTALLED		CL	Interbedded layers of sand and CLAY, moist.				10	30	60				
					752.0												
	ND	S-2 48	4.0 8.0			CL	Yellow-brown CLAY, moist.					5	95				
5					748.5												
						SC	Yellow-brown, clayey SAND, moist. Wet at 8.5 feet.					85	15				
	ND	S-3 42	8.0 12.0		746.5												
10						ML	Gray-brown SILT, moist.						100				
					744.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples

Boring No. B-4277

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. B-4278

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 12, 2002
Finish November 12, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.0
Datum Estimated
Location N 8,552 E 8,587

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 38	0.0 4.0	NO WELL INSTALLED		CL	Yellow-brown CLAY with interbedded layers of sand, moist.				5	25	70				
					752.0												
	ND	S-2 48	4.0 8.0				Same as above.										
5					748.5												
						SP-SM	Yellow-brown SAND with some silt. Wet at 9.0 feet.					90	10				
	ND	S-3 48	8.0 12.0		746.5												
10						CL	Gray-brown CLAY, moist.					5	95				
					745.0												
						ML	Gray-brown SILT, moist.						100				
					744.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 12
- Rock Cored (lin. ft.) -
- Samples

Boring No. B-4278

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4279

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller D. Pino
H&A Rep. F. Palatka

Elevation 756.0
Datum Estimated

Location
N 8,573
E 8,566

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 42	0.0 4.0	NO WELL INSTALLED		SC	Yellow-brown SAND with interbedded layers of clay, moist.				5	65	30				
					752.0												
	ND	S-2 48	4.0 8.0			CL	Yellow-brown, sandy CLAY.					20	80				
5					748.0												
	ND	S-3	8.0 12.0			SM	Yellow-brown SAND with silt. Wet at 9.5 feet.					80	20				
					746.0												
10						CL	Gray-brown CLAY, moist.					5	95				
					744.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples

Boring No. B-4279

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. B-4311

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 8, 2002
Finish November 8, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 759.0
Datum Estimated
Location N 8,717 E 7,505

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 24	0.0 4.0	NO WELL INSTALLED		SP	Loose, brown medium SAND, mps: 1.3 cm, no odor, moist to wet. -FILL-				80	20					
					755.0												
	ND	S-2 20	4.0 8.0				Same as above, except wet. Water encountered at 5.0 feet				80	20					
5					751.0												
	ND	S-3 47	8.0 12.0				Same as above.										
					750.0		-FILL-										
	ND					SP	Loose, tan, fine SAND, mps< 1mm, no odor, wet -GLACIAL TILL-					100					
10					747.0		Bottom of Exploration at 12.0 feet										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples GP-1, GP-2, GP-3

Boring No. B-4311

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4351

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka

Elevation 760.0
Datum Estimated

Location
N 7,980
E 8,028

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.7		-CONCRETE-										
	ND	S-1 38	0.0 4.0			CL	Yellow-brown, lean CLAY, moist. Soil sample S-1 G51A collected at approximately 1.5 feet.						100	N	M	H	S
					756.0		-Bottom of Exploration at 4.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	4.0
Rock Cored (lin. ft.)	-
Samples	S 1

Boring No. B-4351

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINT\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. B-4352

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location N 7,971 E 8,011

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.7		-CONCRETE-										
	ND	S-1 42	0.0 4.0			CL	Yellow-brown, lean CLAY, some fine sand, mps < 1 mm, moist. Soil sample S-1 4352 collected at approximately 1.5 feet.					5	95	N	M	M	M
					756.0		-Bottom of Exploration at 4.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 4.0
Rock Cored (lin. ft.) -
Samples S 1

Boring No. B-4352

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4353

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Elevation 760.0
Datum Estimated
Location N 7,989 E 8,011

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.7		-CONCRETE-										
	ND	S-1 36	0.0 4.0	NO WELL INSTALLED		SP-SM	Dark brown, poorly-graded SAND, some silt, moist. Becoming yellow-brown at 1.0 feet. Soil sample S-1 G53A collected at approximately 1.5 feet.				5	90	5				
					757.5	CL	Yellow-brown CLAY, moist.						100				
					756.0		-Bottom of Explorationat 4.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 4.0
- Rock Cored (lin. ft.) -
- Samples S 1

Boring No. B-4353

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4371

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 6, 2002
Finish November 6, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 754.6
Datum Estimated
Location N 9,752 E 8,281

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type		GP		Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)		1 7/8		Bit Type:
Hammer Weight (lb.)			-	Drill Mud: None
Hammer Fall (in.)			-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					754.1		-6" CONCRETE-										
		S-1 36	0.0 4.0	NO WELL INSTALLED		SP	Gray-brown SAND, staining at 2.0 feet, brick and backfill at 4.0 feet. Some water present at 4.0 feet.				20	70	10				
		S-2 48	4.0 8.0		749.6												
5					748.6	CL	Olive-brown CLAY, moist					5	95				
						SP	Yellow-brown, fine SAND with no staining, moist.					95	5				
		S-3 48	8.0 10.0		746.6	SP	Becoming gray-brown, fine SAND, moist. Wet at 9.5 feet.					95	5				
10					744.6		-Bottom of Exploration at 10.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary	
Overburden (lin. ft.)	10
Rock Cored (lin. ft.)	-
Samples	

Boring No. B-4371

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4451

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 8, 2002
Finish November 8, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 7,980 E 8,028

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	ND	S-1 32	1.0 5.0	NO WELL INSTALLED		SP	Loose, black and tan foundry SAND, mps: 6.4 mm, no odor, moist. -FILL-				30	70					
					755.0												
5	ND	S-2 48	5.0 9.0			ML	Stiff, brown, sandy SILT, mps: 1.3 cm, no odor, moist. -GLACIAL TILL-					30	70				
	4.1	S-3 46	9.0 13.0				Same as 4 to 8 feet, except hydrocarbon odor present.					40	60				
10	4.9						Water at 12.75 feet										
					747.0		-Bottom of Exploration at 13.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples GP-1, GP-2, GP-3

Boring No. B-4451

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4452

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 8, 2002
Finish November 8, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 7,971 E 8,011

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-CONCRETE-										
					759.0												
	ND	S-1 40	1.0 5.0			SP	Loose, black and tan foundry SAND, mps: 6.4 mm, no odor, moist. -FILL-				40	60					
					755.5												
	ND					ML	Soft, brown, sandy SILT, mps< 1 mm, no odor, moist. -GLACIAL TILL-					50	50				
5		S-2 44	5.0 9.0														
	0						Same as 4.5 to 8 feet.					50	50				
	2.7	S-3 47	9.0 13.0				Same except hydrocarbon odor present. -GLACIAL TILL-					50	50				
10					749.0												
	3.8					SP	Soft, tan, fine SAND, mps< 1 mm, no odor, wet. -GLACIAL TILL- Water at 10.0 feet.					100					
					747.0		-Bottom of Exploration at 13.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary	
Overburden (lin. ft.)	13.0
Rock Cored (lin. ft.)	-
Samples	GP-1, GP-2, GP-3

Boring No. B-4452

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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Appendix C

APPENDIX C

Soil and Groundwater Risk Based Screening Results

HALEY & ALDRICH

TEST BORING REPORT

Boring No. B-4453

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 11, 2002
Finish November 11, 2002
Driller P. Orsi
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 7,989 E 8,011

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.4	S-1 44	1.0 5.0	NO WELL INSTALLED		SP	Loose, black and tan foundry SAND, mps< 1 mm, no odor, moist.				50	50					
	1.8				757.0		-FILL-										
5	35.0	S-2 47	5.0 9.0		755.0	ML	Stiff, brown SILT and sand, mps: 1.3 cm, slight hydrocarbon odor, moist.					25	75				
	9.9						-GLACIAL TILL-										
	8.2	S-3 48	9.0 13.0				Same as 5 to 9 feet.					25	75				
10					749.0												
	4.5					SP	Fairly dense, tan and gray, fine SAND, mps< 1 mm, slight hydrocarbon odor, wet.					100					
					747.0		-GLACIAL TILL-										
							Water at 11.0 feet. -Bottom of Exploration at 13.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
SamplesFD,GP-1,GP-2,GP-3

Boring No. B-4453

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4454

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location N 7,955 E 8,009

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.5		-CONCRETE-										
	ND	S-1 36	0.0 4.0	NO WELL INSTALLED		SP	Black, poorly-graded SAND, mps < 1 mm, moist. Soil sample S-1 G54A collected at approximately 1.0 feet.					95	5	N	L	N	N
					757.0	CL	Tan, lean CLAY, some sand, mps: 4 mm, moist.				5	5	90	N	M	M	M
	ND	S-2 48	4.0 8.0				Soil sample S-2 G54B collected at approximately 6.0 feet.										
5																	
	ND	S-3 47	8.0 12.0														
					750.5	SP-SM	Light brown, poorly-graded SAND, with silt, mps < 1 mm, wet. Soil sample S-3 G54C collected at approximately 9.0 feet.					90	10	R	L	N	N
10					749.0	CL	Yellow-brown, lean CLAY, some silt, mps < 1 mm, moist.						100	N	L	L	L
					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram
O Open End Rod	Riser Pipe
T Thin Wall Tube	Screen
U Undisturbed Sample	Filter Sand
S Split Spoon	Cuttings
G Geoprobe	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	12.0
Rock Cored (lin. ft.)	-
Samples	S 1-3

Boring No. B-4454

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4455

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 8, 2003
Finish May 8, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location N 7,968 E 7,994

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.5		-CONCRETE-										
	ND	S-1 40	0.0 4.0	NO WELL INSTALLED		SP	Yellow-brown, poorly-graded SAND, trace silt, mps < 1 mm, moist.					95	5	N	N	N	N
					756.5	CL	Dark brown, lean CLAY, some sand, mps < 1 mm, moist. Same except color changes to yellow-brown.					10	90	N	M	M	M
5	ND	S-2 48	4.0 8.0														
					752.0												
	ND	S-3 46	8.0 12.0			SP-SM	Tan, poorly-graded SAND with silt, mps < 1 mm, wet.					90	10	R	L	N	N
10					750.0												
	1.0					CL	Yellow-brown, lean CLAY, mps < 1 mm, moist.					5	95	N	M	H	M
					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram	
	Riser Pipe
	Screen
	Filter Sand
	Cuttings
	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	12.0
Rock Cored (lin. ft.)	-
Samples	S 1-3

Boring No. B-4455

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4481

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 14, 2002
Finish November 14, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.5	OL/	-TOPSOIL-				5	10	85				
	ND	S-1 46	0.0 4.0	NO WELL INSTALLED		OH SC	Brown, clayey SAND, moist, backfill material present.				10	75	15				
					757.0												
	ND					CL	Yellow-brown CLAY with sand, moist.				5	15	80				
5		S-2 48	4.0 8.0														
					753.0												
	ND					SM	Yellow-brown, fine, silty SAND, moist.					80	20				
		S-3	8.0 12.0				Wet at 8.5 feet.										
10					749.5												
	1.8					ML	Gray-brown SILT with some clay.						100				
					748.5												
					748.0	CL	Gray-brown CLAY with some silt.						100				
							-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. B-4481

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. B-4482

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 14, 2002
Finish November 14, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 45	0.0 4.0	759.0	OL/OH	-TOPSOIL-										
	ND			758.0	SC	Dark brown, clayey SAND, backfill present, moist.				10	70	20				
				757.0	CL	Yellow-brown CLAY with some sand, moist.					20	80				
					SM	Light brown, fine SAND with silt.					80	20				
		S-2 46	4.0 8.0	755.0												
5	ND				CL	Yellow-brown CLAY, moist.					5	95				
	ND			753.5	SP-SM	Yellow-brown, fine SAND with some silt, moist.					90	10				
		S-3 46	8.0 12.0													
10				749.5	CL	Yellow-brown CLAY with interbedded silt layers.					5	95				
				748.5		Same except gray-brown and no sand.						100				
				748.0		-Bottom of Exploration at 12.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples

Boring No. B-4482

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. B-4483

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 14, 2002
Finish November 14, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 760.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 42	0.0 4.0	NO WELL INSTALLED	759.4	OL/OH	-TOPSOIL-										
						SC	Light brown SAND with clay.				5	75	20				
							Concrete fragments from 3.5 to 4.0 feet.										
					756.0												
		S-2 46	4.0 8.0			CL	Yellow-brown, sandy CLAY, moist.				10	30	60				
5					753.5												
						SP	Yellow-brown, fine SAND, moist.					90	5				
		S-3 48	8.0 12.0		751.0		Wet at 9.0 feet.										
10	2.8				750.0	CL	Gray-brown CLAY with silt, moist.					5	95				
					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. B-4483

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. B-4501

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 30, 2004
Finish March 30, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		0.5	G-1 32	0.0 5.0	NO WELL INSTALLED			CONCRETE										
						1.0	SL	Medium dense, light brown, clayey SAND, mps: 2 cm, no odor, moist.			10	25	25	40				
		8.2				3.5	CL	Stiff, light brown, lean CLAY, mps: 1 mm, no odor, moist.					5	95				
						4.5	CL	Stiff, gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
5		2.7	G-2 60	5.0 10.0														
		2.2						8 ft.: Color change to light brown.										
		4.1																
10		28.7	G-3 60	10.0 15.0		10.0	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
						12.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
		26.1				12.5	SM	Medium dense, red gray, silty SAND, mps: 1 mm, no odor, wet.				5	80	15				
15		25.4				14.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/30/04				15.0	10.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. B-4501

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. B-4502

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 30, 2004
Finish March 30, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 27	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		0.9				1.0	CL	Very soft, brown, lean CLAY, mps: 1 mm, no odor, moist.					10	90				
		1.2				2.0	SW	Loose, tan, well graded SAND, mps: 3 mm, no odor, dry. -Foundry SAND?-	5	5	30	50	10					
						4.0	CL	Stiff, olive brown, lean CLAY, mps: 0.5 mm, no odor, moist. 4.5 ft.: Color change to light brown.					10	90				
5		1.4	G-2 60	5.0 10.0														
		1.0																
		1.4																
10			G-3 60	10.0 15.0														
		42.8				10.5	SM	Medium dense, light brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
						12.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
		28.8				13.0	SM	Medium dense, red gray, silty SAND, mps: 1 mm, no odor, wet.				5	80	15				
						14.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					10	90				
15		12.7				15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/30/04				15.0	10.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. B-4502

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

USCS_TB3 USCSLIB3.GLB USCSTBC3.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Apr 26, 04

HALEY & ALDRICH

TEST BORING REPORT

Boring No. B-4503

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 30, 2004
Finish March 30, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 46	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		0.4				1.0	SP	Medium dense, yellow brown, poorly graded SAND, mps: 1.5 cm, no odor, moist.			5	35	55	5				
		0.3				2.0	CL	Stiff, yellow brown, lean CLAY, mps: 1 mm, no odor, moist. 2.5 ft.: Seam of tan SAND, and piece of coarse gravel. 3.0 ft.: Color change to brown.					10	90				
5		0.3	G-2 60	5.0 10.0				5.5 ft.: Color change to light brown with red gray mottling.										
		0.9																
		4.8																
10		28.3	G-3 60	10.0 15.0		10.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
						12.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
		57.6				13.0	SP	Medium dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.				75	20	5				
15		13.4				14.5	SM-SC	Medium dense, red gray, clayey/silty SAND, mps: 0.5 mm, no odor, wet.				5	60	35				
						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/30/04				15.0	10.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. B-4503

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

USCS_T83 USCSLIB3.GLB USCSTBC3.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Apr 26, 04

HALEY & ALDRICH

TEST BORING REPORT

Boring No. B-4504

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 30, 2004
Finish March 30, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					NO WELL INSTALLED			CONCRETE										
						1.0		VOID										
			G-1 57	3.0 8.0		3.0	SW	Loose, brown, well graded SAND, mps: 1.5 cm,	5	5	30	50	10					
		0.8				4.0	CL	Stiff, light brown, lean CLAY with red gray mottling, mps: 5 mm, no odor, moist. 5.0 ft.: Seam of slag.					10	90				
5		1.4																
		1.0	G-2 60	8.0 13.0														
10		4.9																
						11.0	SM	Medium dense, olive brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		27.7																
						12.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
			G-3 24	13.0 15.0		13.0	SM	Medium dense, red gray, silty SAND, mps: 0.5 mm, no odor, wet. (some clay in cutting shoe).					85	15				
		25.2																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/30/04				15.0	11.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. B-4504

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

USCS_TB3 USCSLIB3.GLB USCSTBC3.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Apr 26, 04

TEST BORING REPORT

Boring No. GP-4001

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 10, 2001
Finish September 10, 2001
Driller K. Eagan
H&A Rep. A. Correll
Elevation 756.1
Datum Estimated
Location N 9,366 E 7,389

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1	0.0 4.0	755.1	ML	Grass over black sandy SILT, organic material present, trace gravel, moist to dry.		5			15	80				
	ND			752.1	ML	Yellow-brown, sandy SILT with gravel, dry.		10			15	75				
5	ND	G-2	4.0 8.0		ML	Soil Sample: GP-4001/G-2, 6-7 ft.		10			15	75				
	ND			749.1	SP	Yellow-brown, poorly-graded SAND, moist.				40	60					
10		G-3	8.0 12.0													
	ND	G-4	12.0 16.0	744.1	SP					40	60					
15	ND	G-5	16.0 20.0	740.1	SP	Soil Sample: GP-4001/G-5, 16-17 ft.				40	60					
	ND			737.1	SP	Water at 19.0 feet.				40	60					
20																

NO WELL INSTALLED

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 36
Rock Cored (lin. ft.) -
Samples G-2, G-5

Boring No. GP-4001

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4001
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**; structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Te Dilatancy	Toughness	Plasticity	Strengt
20		G-6	20.0 24.0		SP	GW Sample: GP-4001/GW-1, 20-21 ft.										
				732.1												
	ND	G-7	24.0 28.0		SP	Yellow-brown, poorly-graded SAND, wet.				40	60					
25																
		G-8	28.0 30.0													
				726.1												
30	ND	G-9	30.0 33.0		SP	Yellow-brown, poorly-graded SAND, wet. GW Sample: GP-4001/GW-2, 31-32 ft.				40	60					
				723.1												
	ND	G-10	33.0 36.0		SP					40	60					
35																
				720.1		-Bottom of Exploration at 36.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4002

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 11, 2001
Finish September 11, 2001
Driller K. Eagan
H&A Rep. A. Correll

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Elevation 756.1
Datum Estimated

Location
N 9,297
E 7,389

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 38	0.0 4.0	NO WELL INSTALLED	755.1	ML	Grass over black, sandy SILT with gravel, moist.		10		10	10	70				
	ND					ML	Brown, sandy SILT with gravel, moist.		10			15	75				
					752.1												
	ND	G-2 48	4.0 8.0			ML			10			15	75				
5							Soil Sample: GP-4002/G-2, 6-7 ft.										
					748.6												
	ND					SP	Yellow-brown, fine to medium grained SAND, moist.				30	70					
		G-3 48	8.0 12.0														
10																	
					744.1												
	ND	G-4 48	12.0 16.0			SP					30	70					
15																	
					740.1												
	ND	G-5 48	16.0 20.0			SP	Soil Sample: GP-4002/G-5, 16-17 ft.				30	70					
					736.6												
20	ND						Yellow-brown, fine to medium SAND, wet.				30	70					

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-2, G-5

Boring No. GP-4002

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4002
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tf Dilatancy	Toughness	Plasticity	Strength
20		G-6 48	20.0 24.0		SP	Water at 19.5 feet. GW Sample: GP-4001/GW-1, 20-21 ft.										
				732.1												
	ND	G-7 48	24.0 27.0		SP	Yellow-brown, fine to medium SAND, wet.				30	70					
25																
				729.1												
	ND	G-8 48	27.0 30.0		SP	GW Sample: GP-4002/GW-2, 31-32 ft.				30	70					
30				726.1		-Bottom of Exploration at 30.0 feet-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4003

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 11, 2001
Finish September 11, 2001
Driller K. Eagan
H&A Rep. A. Correll
Elevation 756.1
Datum Estimated
Location N 9,507 E 7,389

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 42	0.0 4.0	NO WELL INSTALLED	755.1		Grass over black, sandy SILT with gravel, moist.		10			15	75				
	ND				752.1	ML	Yellow-brown, sandy SILT with gravel, moist.		10			15	75				
	ND	G-2 48	4.0 8.0			SP	Yellow-brown, poorly-graded SAND, moist.		10		15	75					
5	ND				749.1	SP	Soil Sample: GP-4003/G-2, 6-7 ft.			15	85						
		G-3 48	8.0 12.0														
10					744.1												
	ND	G-4 48	12.0 16.0			SP	Yellow-brown, poorly-graded SAND, moist.			15	85						
15					740.1												
	ND	G-5 48	16.0 20.0			SP	Soil Sample: GP-4003/G-5, 16-17 ft.			15	85						
					737.1												
20	ND					SP	Yellow-brown, poorly-graded SAND, wet. Water at 19.0 feet.			15	85						

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-2, G-5

Boring No. GP-4003

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4003
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tr Dilatancy	Toughness	Plasticity	Strength
20		G-6 48	20.0 24.0		SP	GW Sample: GP-4003/GW-1, 20-21 ft.										
				732.1												
	ND	G-7 48	24.0 28.0		SP	Yellow-brown, poorly-graded SAND, wet.			15	85						
25																
				728.1												
	ND	G-8	28.0 30.0		SP	GW Sample: GP-4003/GW-2, 31-32 ft.			15	85						
30				726.1		-Bottom of Exploration at 30.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4004

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 11, 2001
Finish September 11, 2001
Driller K. Eagan
H&A Rep. A. Correll
Elevation 756.1
Datum Estimated
Location N 9,684 E 7,389

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 45	0.0 4.0	NO WELL INSTALLED	755.1	ML	Grass over black, sandy SILT, with gravel, moist.		10			15	75				
	ND					ML	Yellow-brown, sandy SILT with gravel, moist.		10			15	75				
	ND	G-2 48	4.0 8.0		752.1	ML	Soil Sample: GP-4004/G-2, 6-7 ft.		10			15	75				
5																	
	ND				749.1	SP	Yellow-brown, poorly-graded SAND, moist.				40	60					
		G-3 48	8.0 12.0														
10																	
	ND	G-4 48	12.0 16.0		744.1	SP					40	60					
15																	
	ND	G-5	16.0 20.0		740.1	SP	Soil Sample: GP-4004/G-5, 16-17 ft.				40	60					
	ND				737.1	SP	Yellow-brown, poorly-graded SAND, wet. Water at 19.0 feet.				40	60					
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-2, G-5

Boring No. GP-4004

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4004
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
20		G-6	20.0 24.0			SP	GW Sample: GP-4004/GW-1, 20-21 ft.										
					732.1												
	ND	G-7	24.0 27.0			SP	Yellow-brown, poorly-graded SAND, wet.				40	60					
25																	
							GW Sample: GP-4004/GW-2, 31-32 ft.										
30					726.1		-Bottom of Exploration at 30.0 feet.-										
		G-8	37.0 40.0														

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4005

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 12, 2001
Finish September 12, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll
Elevation 756.1
Datum Estimated
Location N 9,782 E 7,389

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 47	0.0 4.0	NO WELL INSTALLED		ML	Grass over black-brown, sandy, SILT with gravel, dry.		10				90				
					754.1	ML	Black-brown, sandy SILT with gravel, dry.		10				90				
5	ND	G-2 48	4.0 8.0		750.1	SP	Yellow-brown, fine to medium grained, poorly-graded SAND, moist. Soil Samples: GP-4005/G-2 and MS/MSD-1, 6-7 ft.				30	70					
10		G-3 48	8.0 12.0														
	ND	G-4 48	12.0 16.0		744.1	SP					30	70					
15							Soil Sample: GP-4005/G-5, 16-17 ft.										
	ND	G-5 48	16.0 20.0		738.1	SP	Yellow-brown, fine to medium grained SAND, wet. Water at 18.0 feet.				30	70					
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-2, G-5, MS/D

Boring No. GP-4005

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4005
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
20		G-6 48	20.0 24.0		SP	GW Sample: GP-4005/GW-1, 20-21 ft.										
				733.1												
	ND				SP	Same as above, becoming coarser grained SAND.			15	30	55					
		G-7 48	24.0 27.0													
25																
				729.1												
	ND	G-8 48	27.0 30.0		SP	Yellow-brown, fine to coarse SAND, wet.			15	30	55					
						GW Sample: GP-4005/GW-2, 31-32 ft.										
30				726.1		-Bottom of Exploration at 30.0 feet-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSUB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4006

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 12, 2001
Finish September 12, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll
Elevation 756.1
Datum Estimated
Location N 9,732 E 7,423

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 40	0.0 4.0		ML	Grass over black sandy SILT with gravel, dry.		10			20	70				
				753.6												
	ND			752.9		2.5-3.25 feet - Crushed gravel and concrete layer.										
	ND				ML	Black sandy SILT with gravel, dry.		15			15	70				
		G-2 48	4.0 8.0													
5				750.3												
	ND				SP	Yellow-brown, fine to medium grained, poorly-graded SAND, moist.				30	70					
						Soil Sample: GP-4006/G-2 and Dup-1, 6-7 ft.										
		G-3 48	8.0 12.0													
10																
				744.1												
	ND	G-4 48	12.0 16.0		SP	Yellow-brown, fine to medium grained, poorly-graded SAND, moist.				30	70					
						Soil Sample: GP-4006/G-5, 16-17 ft.										
15																
		G-5 48	16.0 20.0													
				738.1												
	ND				SP	Yellow-brown, fine to medium grained, poorly-graded SAND, moist.				30	70					
						GW Sample: GP-4006/GW-1, 20-21 ft.										
20																

NO WELL INSTALLED

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-2, G-5, D-1

Boring No. GP-4006

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4006
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
20		G-6 48	20.0 24.0		SP											
				732.1												
	ND	G-7 48	24.0 27.0		SP	Yellow-brown, fine to medium grained, poorly-graded SAND, moist.				30	70					
25																
						GW Sample: GP-4006/GW-2, 31-32 ft.										
		G-8 48	27.0 30.0													
30				726.1		-Bottom of Exploration at 30.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. GP-4007

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 12, 2001
Finish September 12, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll
Elevation 759.0
Datum Estimated
Location N 9,644 E 7,423

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		G-1 48	0.0 4.0		ML	Grass over brown, sandy SILT with gravel, dry to moist.		5			15	80				
	1.4			757.0	ML			5			15	80				
	5.6	G-2 30	4.0 8.0	755.0	ML	Brown, sandy SILT with gravel, dry to moist.										
5				753.0	SP	Yellow-brown, fine to medium, poorly-graded SAND, moist.				25	75					
						Soil Sample: GP-4007/G-2, 6-7 ft.										
		G-3 33	8.0 12.0													
10	2.3			749.0	SP					25	75					
		G-4 46	12.0 16.0													
	4.0			745.0	SP	Yellow-brown, fine to medium, poorly-graded SAND, moist.				25	75					
15						Soil Sample: GP-4007/G-5, 16-17 ft.										
		G-5 48	16.0 20.0													
	1.7			741.0 740.5	SP	Same as above except becoming coarser grained				25	75					
					SP	SAND at 18.0 feet. Yellow-brown, poorly-graded SAND, wet. Water at 18.5 feet.			10	15	75					
20																

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-2, G-5

Boring No. GP-4007

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4007
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Te Dilatancy	Toughness	Plasticity	Strength
20		G-6 48	20.0 24.0		SP	GW Sample: GP-4007/GW-1, 20-21 ft.										
	2.0			737.0	SP				10	15	75					
		G-7 48	24.0 27.0													
25	1.1			733.5	SP	Yellow-brown, poorly-graded SAND, wet.			10	15	75					
		G-8 48	27.0 30.0													
	1.5			730.5	SP	GW Sample: GP-4007/GW-2, 31-32 ft.			10	15	75					
30				729.0		-Bottom of Exploration at 30.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4007

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4008

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 13, 2001
Finish September 13, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll
Elevation 756.1
Datum Estimated
Location N 9,560 E 7,423

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 47	0.0 4.0	755.1	ML	Grass over black, sandy SILT with gravel, moist.		10			15	75				
	ND				ML	Yellow-brown to brown, sandy SILT with gravel, moist to dry.		10			20	70				
5	ND	G-2 34	4.0 8.0	750.1	SP	Yellow-brown, fine to medium grained, poorly-graded SAND, moist. Soil Sample: GP-4008/G-2, 6-7 ft.				30	70					
10		G-3 36	8.0 12.0	744.1												
	ND	G-4 42	12.0 16.0		SP	Soil Sample: GP-4008/G-5, 16-17 ft.				30	70					
15	ND	G-5 48	16.0 20.0	739.1	SP	Yellow-brown, fine to medium grained poorly-graded SAND, wet. Water at 17.0 feet. GW Sample: GP-4008/GW-1, 20-21 ft.				30	70					
20																

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-2, G-5

Boring No. GP-4008

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4008
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
20		G-6 48	20.0 24.0		SP											
25		G-7 48	24.0 27.0													
	ND	G-8 48	27.0 30.0	729.1	SP	Yellow-brown, fine to medium grained, poorly-graded SAND, wet.				30	70					
						GW Sample: GP-4008/GW-2, 31-32 ft.										
30				726.1		-Bottom of Exploration at 30.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4008

TEST BORING REPORT

Boring No. GP-4009

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 13, 2001
Finish September 13, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Elevation 756.1
Datum Estimated
Location
N 9,333
E 7,423

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 42	0.0 4.0	NO WELL INSTALLED	755.1	ML	Grass over black, sandy SILT with gravel, moist.		10			15	75				
	ND					ML	Brown, sandy SILT with gravel, moist.		10		20	70					
	ND	G-2 41	4.0 8.0		751.1												
5						SP	Yellow-brown, fine to medium grained, poorly-graded SAND, moist.				30	70					
							Soil Sample: GP-4009/G-2, 6-7 ft.										
	ND	G-3 47	8.0 12.0		746.6												
10						SP	* Pinecone and two pieces of fine gravel at 9.5 feet.				30	70					
							Soil Sample: GP-4009/G-5, 16-17 ft.										
		G-4 48	12.0 16.0														
15																	
	ND	G-5 48	16.0 20.0		739.1	SP	Yellow-brown, fine to medium grained, poorly-graded SAND, wet.				30	70					
							GW Sample: GP-4009/GW-1, 20-21 ft.										
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	30
Rock Cored (lin. ft.)	-
Samples	G-2, G-5

Boring No. GP-4009

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4009
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
20		G-6 48	20.0 24.0		SP											
				732.1												
	ND	G-7 36	24.0 27.0		SP	Yellow-brown, fine to medium grained, poorly-graded SAND, wet.				30	70					
25																
				729.1												
	ND	G-8 36	27.0 30.0		SP	GW Sample: GP-4009/GW-2, 31-32 ft.				30	70					
30				726.1		-Bottom of Exploration at 30.0 ft.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4010

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 13, 2001
Finish September 13, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll
Elevation 756.1
Datum Estimated
Location N 9,431 E 7,423

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 42	0.0 4.0	755.1	ML	Grass over black, sandy SILT with gravel, moist.		10			20	70				
	ND				ML	Brown, sandy SILT with gravel, moist.		5			10	85				
5		G-2 41	4.0 8.0	750.6												
	1.7			750.1	SP	Yellow-brown, fine to medium grained, poorly-graded SAND, moist. Soil Sample: GP-4010/G-2, 6-7 ft.				30 30	70 70					
	ND	G-3 47	8.0 12.0	748.1	SP					30	70					
10																
	ND	G-4 48	12.0 16.0	744.1	SP					30	70					
15																
	ND	G-5 48	16.0 20.0	740.1	SP	Water at 16.75 feet. Yellow-brown, fine to medium grained, poorly-graded SAND, moist. Soil Sample: GP-4010/G-5, 16-17 ft.				30	70					
20																

NO WELL INSTALLED

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-2, G-5

Boring No. GP-4010

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4010
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strengt
20		G-6 48	20.0 24.0		SP	GW Sample: GP-4010/GW-1, 20-21 ft.										
				732.1												
	ND	G-7 36	24.0 27.0		SP	Yellow-brown, fine to medium grained, poorly-graded SAND, moist.				30	70					
25				729.1												
	ND	G-8 36	27.0 30.0		SP	GW Sample: GP-4010/GW-2, 31-32 ft.				30	70					
30				726.1		-Bottom of Exploration at 30.0 feet.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. GP-4011

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 1
Start September 13, 2001
Finish September 13, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll
Elevation 759.0
Datum Estimated
Location N 7,595 E 8,544

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 48	0.0 4.0	NO WELL INSTALLED		ML	Grass over brown, sandy SILT with gravel, moist. Trace coal fragments, black staining present 4.0 - 5.0 feet.		10			15	75				
					755.0												
	ND	G-2 48	4.0 8.0			ML	Brown to red-brown, sandy SILT with gravel, moist. Black staining present from 6.0 to 7.0 feet. Trace coal fragments. Soil Sample: GP-4011/G-2, 6-6.5 ft.		15			15	70				
5					752.0												
	ND					SP	Yellow-brown to gray, fine, poorly-graded SAND, moist.					100					
		G-3 48	8.0 12.0														
					749.3												
10	ND				748.8		Red-brown, sandy SILT with gravel, moist.		10			15	75				
	ND					MH	Gray, sandy, elastic SILT with gravel, moist.		5			10	85				
		G-4 48	12.0 16.0														
15					743.0												
	ND	G-5 48	16.0 20.0			MH	Note: GW not recoverable. Soil Sample: GP-4011/G-5, 18-18.5 ft.		5			10	85				
					739.5												
20	ND					SM	Gray, silty SAND, wet.					60	40				

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 21
Rock Cored (lin. ft.) -
Samples G-2, G-5

Boring No. GP-4011

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4011
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field T Dilatancy	Toughness	Plasticity	Strength
20		G-6	20.0		738.5												
	ND	12	21.0		738.0	MH	Gray, sandy, elastic SILT with gravel, moist. -Refusal at 21.0 feet.-		5			30	65				

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4011

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4012

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 13, 2001
Finish September 13, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll
Elevation 759.0
Datum Estimated
Location N 7,596 E 8,466

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 44	0.0 4.0	NO WELL INSTALLED	758.0	ML	Grass over black, sandy SILT with gravel, dry. Trace coal fragments 1 to 2.5 feet.		10			25	65				
	ND				756.5	ML	Yellow to brown, sandy SILT with gravel, dry. Black staining present 3.8 to 4 feet. Spark plug insulators 5.0 to 6.0 feet. Soil Sample: GP-4012/G-2, 6-6.5 ft.		10			15	75				
5		G-2 48	4.0 8.0		754.0												
	ND				752.0	ML	Yellow-brown, red-brown, gray-brown mottled, sandy SILT with gravel, moist.		5			20	75				
		G-3 36	8.0 12.0		750.0												
	ND					SP	Yellow-brown, fine, poorly-graded SAND, wet. GW Sample: GP-4012/GW-1, 9-10 ft.						100				
10	ND				748.5	CL	Gray, lean CLAY, moist.						100	N	M	H	H
		G-4 48	12.0 16.0														
15					743.0												
	ND	G-5 14	16.0 20.0			CL-ML	Gray, sandy, lean CLAY, moist. Soil Sample: GP-4012/G-5, 19-20 ft.						100	N	M	H	H
20					739.2												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 26
Rock Cored (lin. ft.) -
Samples G-2, G-5, MS/D, D-2

Boring No. GP-4012

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4012
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field T Dilatancy	Field T Toughness	Field T Plasticity	Field T Strength
20	ND	G-6	20.0	738.5	SC	Gray, clayey SAND, wet.				30	30	40				
	ND	48	24.0		SP	Gray, poorly-graded SAND, wet.			30	70						
						GW Sample: GP-4012/GW-2 and Dup-3, 22-23 ft.										
				735.0												
	ND	G-7	24.0		CL	Gray, sandy, lean CLAY, moist.				10	90					
25			26.0													
				733.0		-Bottom of Exploration at 26.0 feet.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4013

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 17, 2001
Finish September 17, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll
Elevation 759.0
Datum Estimated
Location N 7,676 E 8,470

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	G-1 40	0.0 4.0		ML	Grass over brown, sandy SILT with gravel, dry.		10			20	70				
	ND			756.5		Tree roots at 2.5 feet and black staining 2.5 to 3.0 feet.		10			20	70				
5		G-2 48	4.0 8.0			Brown, sandy SILT with gravel, dry.										
	ND			752.0	ML	Yellow-brown, sandy SILT with gravel, moist.		10			30	60				
	ND	G-3 48	8.0 12.0	750.7	SP	Yellow to brown, poorly-graded, fine SAND, moist. Black stained sand from 8.3 to 8.7 feet. Soil Sample: GP-4013/G-3, 8.3-8.7 ft.					100					
	ND			750.0		Water at 9.0 - 11.0 feet.										
10	ND			747.8	MH	Gray, sandy, elastic SILT with gravel, moist.		5			30	65				
		G-4 36	12.0 16.0													
15				743.0												
	ND	G-5 48	16.0 20.0		MH			5			30	65				
20																

NO WELL INSTALLED

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-3, G-6

Boring No. GP-4013

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4013
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strengl.
20		G-6 48	20.0 24.0	738.0	MH											
	ND				CL	Gray, sandy, lean CLAY with gravel.		5			10	85				
						Soil Sample: GP-4013/G-6, 21-22 ft.										
						Note: GW not recoverable.										
		G-7 48	24.0 28.0													
25				732.7												
	ND					26.3 to 26.5 gray, fine to coarse SAND lens, moist.		5			10	85				
		G-8 18	28.0 30.0													
30				729.0		-Bottom of Exploration at 30.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4014

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental Corp.

File No. 49017
Sheet No. 1 of 2
Start September 17, 2001
Finish September 17, 2001
Driller K. Eagan, P. Orsi
H&A Rep. A. Correll
Elevation 759.0
Datum Estimated
Location N 7,674 E 8,533

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test: Dilatancy	Toughness	Plasticity	Strength
0	ND	G-1 46	0.0 4.0	758.0	ML	Grass over brown, sandy SILT with gravel, dry.		10			20	70				
	ND			757.0	SM	Brown, red-brown, yellow-brown, silty SAND with gravel, dry to moist.		20	20	20	20	20				
	ND				MH	Brown, yellow-brown, olive-gray, sandy, elastic SILT with gravel, moist.		10			15	75				
5		G-2 48	4.0 8.0			Same as above. Soil Sample: GP-4014/G-2, MS/MSD-3, 6-7 ft.										
	ND	G-3 48	8.0 12.0	751.3	SM	Brown, red-brown, olive-gray, silty SAND, wet					60	40				
10	ND			749.8	SP	Yellow-brown, fine to medium grained, poorly-graded SAND, wet. Water at 9.2 feet. GW Sample: GP-4014/GW-1, 10-11 ft.				40	60					
	ND	G-4 40	12.0 16.0	747.1	MH	Gray, sandy, elastic SILT, moist.					10	90				
15		G-5 48	16.0 20.0			Soil Sample: GP-4014/G-5, 17-18 ft.										
20	ND			740.0	SM	Gray, silty SAND, moist to wet.				40	45	15				

NO WELL INSTALLED

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 28
Rock Cored (lin. ft.) -
Samples G-2, G-5, MS/D

Boring No. GP-4014

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4014
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Str
20		G-6 48	20.0 24.0	738.0	SM											
	ND					Same as above except less silt, wet.				45	50	5				
						GW Sample: GP-4014/GW-2, 22-23 ft.										
						Gray, silty SAND, moist to wet.										
		G-7 39	24.0 28.0													
25																
				732.3												
	ND				ML	Gray, sandy, elastic SILT, moist.					10	90				
				731.0		-Bottom of Exploration at 28.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4023

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Zebra Environmental Corp.

File No.: 49017
Sheet No.: 1 of 1
Start: September 19, 2001
Finish: September 19, 2001
Driller: K. Eagan, P. Orsi
H&A Rep.: A. Correll

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Elevation
Datum Estimated
Location
N 7,518
E 8,589

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0		ND	G-1 34	0.0 4.0	NO WELL INSTALLED		ML	Grass over brown sandy SILT with gravel, moist. Coal fragments present and gravel at 0.75 to 1.5 feet and 3.0 to 4.0 feet.	5	10			30	55				
5		ND	G-2 41	4.0 8.0			ML	Black staining present 3.8 to 4.0 feet. Soil Sample: GP-4023/G-2, Dup-4, 6-7 ft.	5	10			30	55				
		ND				7.6	SP	Yellow-brown, poorly graded, fine SAND, wet.					100					
		ND ND	G-3 48	8.0 12.0		8.2 8.5	CH CH	Yellow-brown, sandy fat CLAY, moist. Brown, red-brown, sandy fat CLAY, moist.					5 15	95 85	N	M	H	H
10			G-4 48	12.0 15.9														
		ND				13.5	MH	Red-brown and gray mottled, sandy elastic SILT, moist.					15	85	S	M	M	M
15		ND				15.4 16.0	ML	Gray sandy SILT, moist. Refusal due to obstruction. Offset approximately 5.0 feet to the Northwest. -Refusal at 15.9 feet.-					5	95				

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 15.9
Rock Cored (lin. ft.) -
Samples G-2, D-4

Boring No. GP-4023

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4023a

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Zebra Environmental Corp.

File No.: 49017
Sheet No.: 1 of 2
Start: September 19, 2001
Finish: September 19, 2001
Driller: K. Eagan, P. Orsi
H&A Rep.: A. Correll
Elevation Datum Estimated
Location N 7,516 E 8,585

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore Drill Mud: -
Hammer Weight (lb.)	NA	NA	-	Casing: -
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA NA

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					NO WELL INSTALLED			Used closed piston sampler to probe to 16.0 feet to begin sampling.										
5																		
10																		
15																		
		ND	G-1 48	16.0 20.0		16.0	MH	Red-brown and gray mottled, sandy elastic SILT, moist. Soil Sample: GP-4023a/G-1, 17-18 ft.				10	90				
		ND				18.9	SP-SM	Gray, poorly graded SAND with silt, moist.			40	50	10				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G-1

Boring No. GP-4023a

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4023a
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20			G-2 48	20.0 24.0			SP-SM											
		ND				21.3	SP-SM	Gray, poorly graded SAND with silt, wet. Water at 21.5 feet. GW-Sample: GP-4023a/GW-1, 22-23 ft.				40	50	10				
		ND	G-3 48	24.0 28.0		24.0	SP-SM	Gray, poorly graded SAND with silt, wet.				40	50	10				
25																		
		ND	G-4 20	28.0 30.0		27.8	ML	Gray sandy SILT, moist, becoming moist to dry.					5	95				
30						30.0		-Bottom of Exploration at 30.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

USCS_TB3 USCSLIB3.GLB USCSTBC3.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Sep 9, 04

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4024

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Zebra Environmental Corp.

File No.: 49017
Sheet No.: 1 of 2
Start: September 20, 2001
Finish: September 20, 2001
Driller: K. Eagan, P. Orsi
H&A Rep.: A. Correll
Elevation
Datum Estimated
Location
N 7,520
E 8,414

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G-1 47	0.0 4.0	NO WELL INSTALLED		ML	Grass over dark brown, sandy SILT with gravel, moist.		10			20	70				
		ND				0.8	ML	Same, except becoming yellow-brown, dry. Coal fragments.		10			30	60				
		ND				2.2	ML	Red-brown, gray-brown, and red-yellow sandy SILT with gravel, moist.	5	10			20	65				
			G-2 48	4.0 8.0				Soil Sample: GP-4024/G-2, 5.2-5.5 ft. Black staining and coal fragments present.										
5																		
		ND				6.2	SP-SM	Yellow-brown, poorly graded SAND with SILT moist.					85	15				
		ND	G-3 48	8.0 12.0		7.8	ML	Red-yellow, gray, and yellow-brown sandy SILT with gravel, moist.		5			10	85				
10																		
		ND	G-4 39	12.0 16.0		11.8	ML	Gray, sandy SILT with gravel, moist.		5			10	85				
		ND				14.1	SP-SM	Brown, poorly graded SAND with SILT, wet.					75	25				
15		ND				14.6	MH	Gray, sandy elastic SILT, moist.					10	90	S	L	M	M
		ND	G-5 42	16.0 20.0		16.0	ML	Gray, sandy SILT with gravel, moist. Soil Sample: GP-4024/G-5, 17-18 ft.		10			10	80				
		ND				19.0	SP	Gray, poorly graded SAND, wet. Water at 19.0 feet.				15	85					
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 28
Rock Cored (lin. ft.) -
Samples G-2

Boring No. GP-4024

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4024
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20			G-6 36	20.0 24.0			SP	GW Sample: GP-4024/GW-1, 21-22 ft.										
						22.9	ML	Silt lens at 22.9 feet to 23.1 feet.										
		ND				23.1	SP MH	Gray sandy elastic SILT with gravel, moist.		5			5	90				
			G-7 35	24.0 28.0		23.5												
25								-Bottom of Exploration at 28.0 feet.-										
						28.0												

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4024

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4025

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Zebra Environmental Corp.

File No.: 49017
Sheet No.: 1 of 2
Start: September 20, 2001
Finish: September 20, 2001
Driller: K. Eagan, P. Orsi
H&A Rep.: A. Correll
Elevation
Datum Estimated
Location
N 7,377
E 8,303

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore Drill Mud: -
Hammer Weight (lb.)	NA	NA	-	Casing: -
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA NA

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G-1 48	0.0 4.0	NO WELL INSTALLED		SP-SM	Grass over brown, poorly graded SAND with silt and gravel, moist to dry.		10			80	10				
		ND				1.5	SP-SM	Brown poorly graded SAND with silt and coarse gravel, moist to dry.	25	10			60	5				
		ND				2.0	SP-SM											
		ND				3.0	SP	Black stained, poorly graded SAND with gravel, moist.		10			90					
		ND	G-2 48	4.0 8.0		4.0	MH	Brown becoming yellow-brown and gray mottled sandy elastic SILT, moist.					10	90	S	M	L	M
5																		
		ND	G-3 48	8.0 12.0		8.1 8.2		Same, except wet at 8.1 feet to 8.2 feet.					10	90	S	M	L	M
10																		
		ND				10.5	MH	Gray elastic SILT with gravel, moist.		5				95	S	H	L	M
			G-4 8	12.0 16.0				Gray sandy elastic SILT with gravel, wet. *Limited recovery, switch to closed piston system for next sample.										
15																		
		ND	G-5 35	16.0 20.0		16.0	SP	Gray, poorly graded SAND with silt, wet. GW Sample: GP-4025/GW-1, 17-18 ft.				5	90	5				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 27.5
Rock Cored (lin. ft.) -
Samples None to lab.

Boring No. GP-4025

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4025
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20		ND	G-6 48	20.0 24.0		19.8	MH	Gray, sandy elastic SILT with gravel, moist.		5			10	85				
						22.7	SP	Fine to coarse grained sand pocket 22.7 feet to 23.7 feet, wet.										
						23.7	MH	Gray, sandy elastic SILT with gravel, moist.										
25		ND	G-7	24.0 27.5		24.5	SP-SM	Gray, poorly graded SAND with silt, wet. GW Sample: GP-4025/GW-2, 25-26 ft.				15	50	35				
						27.5		-Refusal at 27.5 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4025

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4028a

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Zebra Environmental Corp.

File No.: 49017
Sheet No.: 1 of 1
Start: September 21, 2001
Finish: September 21, 2001
Driller: K. Eagan, P. Orsi
H&A Rep.: A. Correll
Elevation Datum Estimated
Location N 7,300 E 8,601

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: -
Hammer Fall (in.)	NA	NA	-	Casing: -
				Hoist/Hammer: NA NA

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					NO WELL INSTALLED			Used closed piston system to bore down to 8.0 feet. First sample 8.0 feet to 12.0 feet. See Test Boring Report for GP-4028 for 0.0 to 8.0 feet.										
5																		
		ND	G-1 48	8.0 12.0		8.0	ML	Gray sandy SILT with gravel, moist.		10			20	70				
10		ND				10.0	ML	Brown, red-yellow, red-brown, sandy SILT with gravel, moist.		10			20	70				
		ND				11.0	ML	Brown sandy SILT with gravel.		5			25	70				
			G-2 42	12.0 16.0														
15		ND				14.5		Gray, sandy SILT, becoming wet.					20	80				
		ND	G-3 37	16.0 20.0		16.0	SM	Gray, silty SAND, wet.					80	20				
		ND				18.0	SM	Black silty SAND, wet.					90	10				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 27
Rock Cored (lin. ft.) -
Samples None to lab.

Boring No. GP-4028a

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4028a
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20			G-4 31	20.0 24.0			SM											
		ND	G-5 29	24.0 27.0		24.0	SM	Black silty SAND, wet.					90	10				
25								GW Sample: GP-4028a/GW-1, Dup-5, 25-26 ft.										
						27.0		-Bottom of Exploration at 27.0 feet.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4101

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 7, 2002
Finish May 7, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 756.1
Datum Estimated
Location N 9,191 E 7,096

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 48	0.0 4.0	NO WELL INSTALLED	755.1	OH	-TOPSOIL-										
	ND					CL	Light brown, silty CLAY, moist.					5	95				
	ND	S-2 48	4.0 8.0			CL	Yellow-brown CLAY, some mottling, moist.					5	95				
5																	
		S-3 48	8.0 12.0		746.6												
10	ND					SP-SM	Yellow-brown, poorly-graded SAND, wet.					70	30				
	ND				745.1	CL	Medium stiff, dark brown CLAY, moist.						100	L	M	L	M
		S-4 48	12.0 16.0														
	ND					CL	Gray-brown, silty CLAY, moist.						100	L	L	H	L
15																	
	ND	S-5 36	16.0 20.0			CL	Same, except 3.0 in. sand lens present at 17.0 feet.						100	L	L	H	L
					737.6												
	ND					ML	Gray-brown SILT, wet.						100				
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4101

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4101
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20																
		S-6	20.0	735.6												
	ND	48	24.0		SM	Gray-brown, silty SAND, wet.					60	40				
						4.0 inch medium-grained sand lens.										
				733.6		Groundwater sample GW-1 was taken from a depth of 20'-22'										
	ND				ML	Gray-brown, clayey SILT, moist.					5	95				
				732.6												
	ND				SM	Light brown, silty SAND, moist.				40	40	20				
		S-7	24.0	731.6												
	ND	46	28.0		CL	Gray-brown CLAY, moist.						100				
25																
				729.1												
	ND				SM	Gray-brown, silty SAND, wet.					60	40				
		S-8	28.0			Groundwater sample GW-2 was taken from a depth of 26'-28'										
		28	32.0													
30																
				724.1		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4102

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 8, 2002
Finish May 8, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 756.1
Datum Estimated
Location N 9,269 E 7,097

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			No soils logged for location. Groundwater samples collected only.										
5																	
10																	
15																	
			19.0				NOTE: Groundwater sample GW-1 was taken from a depth of 19'-21'										
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4102

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4102
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20																	
25																	
30			30.0				NOTE: Groundwater sample GW-2 was taken from a depth of 30'-32'										
					724.1		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4102

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4103

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 7, 2002
Finish May 7, 2002
Driller E. Dephouse
H&A Rep. F. Palatka

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Elevation 756.2
Datum Estimated

Location
N 9,361
E 7,096

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 48	0.0 4.0	NO WELL INSTALLED	755.2		-ASPHALT-										
	ND					CL	Yellow-brown, silty CLAY with mottling, moist.					5	95				
	ND	S-2 48	4.0 8.0			CL	Same, with more sand.					10	90				
5					748.2												
	ND	S-3 48	8.0 12.0			SM	Yellow-brown, silty SAND, wet.			5	30	30	35				
					746.7												
10	ND					ML	Yellow-brown, SILT, some fine sand, moist.					25	75				
					745.7												
	ND					CL	Stiff, dark brown, silty CLAY, moist.						100				
	ND	S-4 48	12.0 16.0			CL	Medium stiff, gray-brown CLAY, moist.					10	90				
15					740.2												
	ND	S-5 48	16.0 20.0			SM	Gray-brown, very fine-grained SAND with silt, interbedded clay lenses, wet. NOTE: Groundwater sample GW-1 was taken from a depth of 17'-19'					60	40				
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4103

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4103
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6 42	20.0 24.0			SM	Same, more fine-grained sand.					65	35				
	ND	S-7 40	24.0 28.0			SM	Gray-brown, silty SAND, wet.				10	60	30				
25	ND					SM	Same, with more fine sand.					70	30				
	ND	S-8 30	28.0 32.0			SM	Gray-brown, silty SAND, wet.				5	70	25				
30							NOTE: Groundwater sample GW-2 was taken from a depth of 30'-32'										
					724.2		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4103

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4104

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 8, 2002
Finish May 8, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 756.2
Datum Estimated
Location N 9,442 E 7,096

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: NA
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 42	0.0 4.0	NO WELL INSTALLED	755.2		-ASPHALT-										
	ND					CL	Stiff to medium stiff, yellow-brown CLAY, with sand, mottling, moist.					15	85				
	ND	S-2 47	4.0 8.0			CL						15	85				
5					748.7												
	ND				748.2	SM	Yellow-brown silty SAND, moist.					90	10				
	ND	S-3 48	8.0 12.0		747.7	CL	Yellow-brown CLAY, moist.					10	90				
	ND				747.2	ML	Dark brown SILT, organic odor.						100				
	ND					SM	Yellow-brown, poorly-graded, fine-grained silty SAND, moist.					60	40				
10	ND	S-4 38	12.0 16.0			SM	Same, becoming wet at 14'					60	40				
15	ND				741.2	SM	Yellow-brown, poorly-graded SAND with silt, wet.					80	20				
		S-5 42	16.0 20.0				NOTE: Groundwater sample GW-1 was taken from a depth of 17'-19'										
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
5/14/02	1845	~ 3.0	36.1		16.1

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4104

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4104
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6 44	20.0 24.0		SM	Yellow-brown, fine-grained, silty SAND, wet.					60	40				
	ND			734.2	SM	Gray-brown, fine-grained, silty SAND, wet.					80	20				
				732.2												
	ND	S-7 14	24.0 28.0		SM	Gray-brown SAND, wet. NOTE: Poor Recovery					80	20				
25				729.2												
	ND				SP-SM	Gray-brown, medium-grained SAND, some silt, wet. NOTE: Groundwater sample GW-2 was taken from a depth of 30'-32'				40	50	10				
		S-8	28.0 32.0													
30				724.2		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4105

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 7, 2002
Finish May 7, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 756.2
Datum Estimated
Location N 9,562 E 7,091

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 36	0.0 4.0	NO WELL INSTALLED	755.7	OH	-ASPHALT-										
	ND					CL	Stiff, yellow-brown, CLAY, some mottling and organic material, moist.						100				
	ND	S-2 48	4.0 8.0			CL	Same with some sand.				10	5	85				
5					749.7												
	ND					SM	Yellow-brown, medium-grained, silty SAND, wet.				20	60	20				
		S-3 48	8.0 12.0		746.7												
10	ND					SM	Yellow-brown, silty, fine SAND, moist.					80	20				
		S-4 36	12.0 16.0		742.7												
	ND					SM	Same, becoming wet.					80	20				
15	ND				740.7	SM	Yellow-brown, medium-grained silty SAND, moist.				10	70	20				
		S-5 38	16.0 20.0		738.7												
	ND					SP-SM	Yellow-brown, poorly-graded SAND with silt, wet. NOTE: Groundwater sample GW-1 was taken from a depth of 17'-19'				5	85	10				
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4105

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4105
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20		S-6 42	20.0 24.0		SP-SM											
				732.2												
	ND	S-7 42	24.0 28.0	731.7	SP-SM	Same, becoming medium- and course-grained SAND with silt.				5	85	10				
25	ND				SM	Yellow-brown, silty SAND, wet.			10	30	30	30				
	ND	S-8 44	28.0 32.0		SM	Yellow-brown, silty SAND, wet.					80	20				
30					SM	Yellow-brown, silty SAND, wet. NOTE: Groundwater sample GW-2 was taken from a depth of 30'-32'					70	30				
				724.2		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4105

TEST BORING REPORT

Boring No. GP-4106

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 7, 2002
Finish May 7, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 756.2
Datum Estimated
Location N 9,690 E 7,091

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 40	0.0 4.0	NO WELL INSTALLED	755.2	OH	-TOPSOIL-		10	10		60	20				
	ND					CL	Medium stiff, yellow-brown CLAY with fine sand, some mottling, moist.					15	85				
	ND	S-2 48	4.0 8.0			CL						15	85				
5					749.2												
	ND					SP-SM	Yellow-brown, poorly-graded SAND with silt, moist.					90	10				
		S-3 36	8.0 12.0														
10																	
	ND	S-4 36	12.0 16.0			SP-SM	Same with some medium-grained sand.				5	85	10				
15																	
	ND	S-5 36	16.0 20.0			SP-SM	Yellow-brown, poorly-graded SAND with silt, moist.				5	85	10				
							NOTE: Groundwater sample GW-1 was taken from a depth of 17'-19'										
							Water present at 19.0 feet.										
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4106

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4106
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6 40	20.0 24.0		SP-SM					5	85	10				
	ND			733.7	SP-SM	Yellow-brown, poorly-graded SAND, wet.				40	50	10				
25		S-7 40	24.0 28.0													
30	ND	S-8 44	28.0 32.0	727.2	SP-SM	Same, becoming gray-brown. NOTE: Groundwater sample GW-2 was taken from a depth of 30'-32'				40	50	10				
				724.2		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4107

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start
Finish
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 757.3
Datum Estimated
Location N 9,954 E 7,522

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: NA
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 38	0.0 4.0	NO WELL INSTALLED	756.3	OH	-TOPSOIL-				5	45	50				
	0.8				753.3	CL	Yellow-brown CLAY with sand, moist.				5	15	80				
	1.1	S-2 30	4.0 8.0		749.3	SP	Yellow-brown, poorly-graded SAND, moist.					95	5				
5																	
	0.7	S-3 24	8.0 12.0			SP	Same as above.					95	5				
10																	
	0.5					SP	Same, becoming coarser grained.				10	85	5				
		S-4 24	12.0 16.0														
15																	
	0.2	S-5	16.0 20.0			SP	Water at 15.75 feet. Note: Low recovery.					95	5				
							NOTE: Groundwater sample GW-1 was taken from a depth of 17'-19'										
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4107

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4107
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20		S-6 24	20.0 24.0		SP											
				735.3												
	ND				SP-SM	Gray-brown, poorly-graded SAND with silt, wet.				15	75	10				
		S-7	24.0 28.0													
25																
				729.3												
	ND	S-8	28.0 32.0		SW	Gray-brown, well-graded SAND, wet. NOTE: Groundwater sample GW-2 was taken from a depth of 30'-32'			20	40	35	5				
30																
				725.3		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4107

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4108

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 14, 2002
Finish May 14, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 757.1
Datum Estimated
Location N 9,954 E 7,656

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 42	0.0 4.0	756.1	OH	-TOPSOIL-				5	50	45				
	0.6			753.1	CL	Yellow-brown, sandy CLAY, some mottling, moist.				5	25	70				
	0.5	S-2 46	4.0 8.0	749.6	CL					5	25	70				
5	0.8	S-3 40	8.0 12.0	745.1	SM	Yellow-brown, fine-grained, silty SAND.					70	30				
10	0.8	S-4 36	12.0 16.0	743.6	ML	Water present at 12.0 feet. Yellow-brown, sandy SILT, wet.					20	80				
	ND			743.1	SM	Brown, silty SAND, wet.					80	20				
	0.7				SM	Gray-brown SILT lens from 14.0' to 14.3'.					65	35				
15						Gray-brown, silty SAND, wet.										
		S-5 36	16.0 20.0			NOTE: Groundwater sample GW-1 was taken from a depth of 17'-19'										
20				737.1												

NO WELL INSTALLED

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4108

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4108
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6	20.0 24.0		SM	Same, becoming coarser grained and wet. NOTE: Poor recovery				20	60	20				
				733.1												
	ND	S-7	24.0 28.0		SP-SM	Gray-brown SAND with some silt, wet. NOTE: Poor recovery				25	65	10				
25																
				729.1												
	ND	S-8	28.0 32.0		SP	Well-graded SAND with gravel and some silt. Note: Poor recovery. NOTE: Groundwater sample GW-2 was taken from a depth of 29'-31'		15	10	20	45	10				
30																
				725.1		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4108

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4109

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 14, 2002
Finish May 14, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 756.8
Datum Estimated
Location N 9,954 E 7,783

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 48	0.0 4.0	NO WELL INSTALLED		OH	Dark brown TOPSOIL with organic material, moist.				10	45	45				
					754.8												
	0.7					CL	Stiff, yellow-brown CLAY with sand, some mottling, moist.				5	10	85				
		S-2 47	4.0 8.0														
5					750.3												
	2.7					SP-SM	Yellow-brown SAND with silt, wet. NOTE: Groundwater sample GW-1 was taken from a depth of 6'-8'					80	20				
		S-3 48	8.0 12.0														
10					746.3												
	8.5					CL	Very stiff, gray-brown CLAY, moist.				10	5	85	N	M	L	
					744.8												
	3.9	S-4 45	12.0 16.0			CL					10	5	85	N	M	L	
15					740.8												
	4.0	S-5 42	16.0 20.0			MH	Gray-brown SILT, wet.					5	95	R	-	-	-
20					736.8												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4109

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4109
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	1	S-6 42	20.0 24.0		MH						5	95	R	-	-	-
				732.8												
	0.6	S-7 6	24.0 28.0		MH	Gray-brown SILT, wet. NOTE: Poor recovery					5	95	R	-	-	-
25																
		S-8 36	28.0 32.0													
				727.8												
	ND				SW-SM	Gray-brown, well-graded SAND with silt, wet. NOTE: Groundwater sample GW-2 was taken from a depth of 29'-31'			30	30	30	10				
30				725.8												
	ND				CL	Very stiff, gray-brown CLAY with sand, moist.				10	5	85	N	H	L	-
				724.8		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4109

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4110

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 13, 2002
Finish May 14, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 756.6
Datum Estimated
Location N 9,954 E 7,937

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1	0.0 4.0	755.6	OH	Dark brown TOPSOIL with organic material, moist.				10	40	50				
	ND			752.6	CL	Medium stiff, yellow-brown, mottled, sandy CLAY, moist.				10	20	70				
5	8	S-2	4.0 8.0	749.6	CL	Same, becoming gray-brown in color.				10	20	70				
	1				SM	Gray-brown, silty SAND, wet. NOTE: Groundwater sample GW-1 was taken from a depth of 9'-11'					65	35				
10		S-3	8.0 12.0	745.9												
	ND			745.6	CL	Gray-brown CLAY lens, moist.										
	ND			744.6	SP	Gray-brown SAND with silt, wet.					75	25				
15	1.5	S-4	12.0 16.0	740.6	CL	Medium stiff, gray-brown CLAY, moist.					5	95	N	M	M	M
	1.5	S-5 38	16.0 20.0	738.6	CL	Becoming gray-brown sandy CLAY, moist.					30	70				
	ND			737.1	CL	Medium stiff, gray-brown CLAY, moist.					5	95				
20	0.6					Gray-brown SILT, wet.							R	-	N	N

NO WELL INSTALLED

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4110

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4110
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20		S-6 48	20.0 24.0		MH	Note: Interbedded saturated layers of silt and clayey-silt.										
25		S-7 46	24.0 28.0													
	ND			730.6	CL	Stiff, gray-brown CLAY, moist.					5	95				
	ND	S-8 42	28.0 32.0	728.6 728.1	MH	Gray-brown SILT, wet.					5	95	R	-	N	N
	ND				SP-SM	Gray-brown SAND with silt, wet.					80	20				
				726.6		NOTE: Groundwater sample GW-2 was taken from a depth of 28.5'-30.5'										
30	ND				CL	Medium coarse SAND lens from 30 to 30.5 feet. Very stiff, gray-brown CLAY with medium-grained sand, moist.				15	5	80				
				724.6		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4111

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 13, 2002
Finish May 13, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 756.4
Datum Estimated
Location N 9,954 E 8,041

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 36	0.0 4.0	NO WELL INSTALLED	755.4	OH	TOPSOIL with organic material, moist.										
	3				753.4	CL	Medium stiff, dark brown CLAY with sand, moist.					10	90				
	4					CL	Yellow-brown CLAY with mottling, moist.					5	95				
5		S-2 48	4.0 8.0		748.4												
	2	S-3 48	8.0 12.0			SP-SM	Yellow-brown, poorly-graded SAND with silt, wet. NOTE: Groundwater sample GW-1 was taken from a depth of 8'-10'					90	10				
10	ND					SP-SM	Same, becoming gray-brown, wet.					90	10				
	3	S-4 36	12.0 16.0		744.4	SP-SM						90	10				
	ND				742.4	CL	Stiff, gray-brown CLAY, moist.					5	95	N	M	M	
15	2	S-5 38	16.0 20.0		740.4	CL						5	95	N	M	M	
	ND				737.4	MH	Gray-brown SILT, wet.					5	95				
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	32.0
Rock Cored (lin. ft.)	-
Samples	NA

Boring No. GP-4111

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4111
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20		S-6 46	20.0 24.0		MH											
				733.9												
	ND			733.4	CL	Gray-brown CLAY, moist.						100				
	ND				CL	Interbedded layers of silt and clay from 23.0 to 28.0 feet.						100				
				732.4												
	ND	S-7 40	24.0 28.0			NOTE: Groundwater sample GW-2 was taken from a depth of 26'-28'										
25																
				728.4												
	ND	S-8 42	28.0 32.0		SM	Gray-brown, silty SAND. Interbedded silt layers throughout.				10	70	20				
				726.4												
30	ND				CL	Very stiff, gray-brown CLAY with fine medium-grained sand, moist.				10	15	75	-	H	L	M
				724.4												
						-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4111

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4112

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Fibertec Env. Services

File No. 49017
Sheet No. 1 of 2
Start May 13, 2002
Finish May 13, 2002
Driller E. Dephouse
H&A Rep. F. Palatka
Elevation 756.2
Datum Estimated
Location N 9,954 E 8,141

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	G	NA	Rig Make & Model: Geoprobe 5400
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: NA
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA, NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 44	0.0 4.0	NO WELL INSTALLED	755.7	OH	TOPSOIL with organic material.										
	ND					CL	Stiff, brown CLAY, moist.										
							Note: Some mottling from 3.0' to 5.0'.										
					752.2												
	ND	S-2 48	4.0 8.0			CL											
5					749.7												
	ND					SM	Light brown, silty SAND.					75	25				
					748.2												
	ND	S-3 48	8.0 12.0			SM	Same, becoming gray-brown.					75	25				
							NOTE: Groundwater sample GW-1 was taken from a depth of 9'-11'										
10					744.2												
	ND	S-4 48	12.0 16.0			SM	Gray-brown silty SAND.					75	25				
					741.7												
15	ND					CL	Stiff, gray-brown CLAY, moist.				5	5	90	N	L	H	H
		S-5 45	16.0 20.0		739.2												
	ND					CL	Same, contains some gravel.	5	5				90				
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 31.0
Rock Cored (lin. ft.) -
Samples NA

Boring No. GP-4112

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4112
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20		S-6 45	20.0 24.0		CL											
				734.2												
	ND				MH	Gray-brown, clayey SILT, wet.					5	95	S	L	L	L
		S-7 40	24.0 28.0													
25																
				730.2												
	ND			729.7	SM	Gray-brown, silty SAND, wet.				10	70	20				
	ND				CL	Gray-brown CLAY with silt and sand, moist.					20	80	N	L	L	L
				728.2												
	ND	S-8 30	28.0 32.0		CL	Very stiff CLAY with medium- to coarse-grained sand, moist.			5	5		90	R	H		H
						NOTE: Groundwater sample GW-2 was taken from a depth of 29'-31'										
30																
				725.2												
						-REFUSAL AT 31.0 FEET.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4114

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 18, 2002
Finish November 18, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.9
Datum Estimated
Location N 9,957 E 7,721

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-Mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0	ND	S-1 46	0.0 4.0	NO WELL INSTALLED	756.4	CL	-TOP SOIL- Yellow-brown sandy CLAY, moist.					15	85				
5	5 54	S-2	4.0 8.0		751.4	SP	Yellow-brown SAND fine-grained, moist.					95	5				
					750.4	CL	Yellow-brown CLAY, moist.					5	95				
10		S-3	8.0 12.0				Color changes to gray-brown around 9.0 feet.										
15	22000 150	S-4	12.0 16.0		741.4	ML	Brown fluid present at 12.0 feet. Took photograph of sleeve showing smearing. Gray-brown SILT with some clay.					5	95				
	40	S-5	16.0 20.0				Wet at 17.5 feet.										
20					736.9		-Bottom of Exploration at 20.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 20.0
Rock Cored (lin. ft.) -
Samples

Boring No. GP-4114

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4114
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20																	

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4114

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4114B

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 18, 2002
Finish November 18, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.8
Datum Estimated
Location N 9,957 E 7,721

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-Mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 48	0.0 4.0	756.3	OL/OH	-TOP SOIL-				5	15	80				
					CL	Yellow-brown, sandy CLAY.										
	0.5	S-2 48	4.0 8.0	751.8												
5	8.0			750.8	SP	Yellow-brown SAND.					95	5				
	16					4" lens, wet.										
	30															
	50	S-3 48	8.0 12.0			Same, but color changes to gray-brown, fine and medium sand present, moist.			5	5	90					
10	110					Containing more fine sand, moist.				10	90					
	2															
	70	S-4 48	12.0 16.0													
				742.3												
15	42				ML	Gray-brown SILT, wet.						100				
		S-5 42	16.0 20.0													
				738.8												
					SM	Gray-brown, silty SAND, fine-grained, wet.					70	30				
						-Bottom of Exploration at 20.0 feet.-										
20				736.8												

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 20.0
Rock Cored (lin. ft.) -
Samples

Boring No. GP-4114B

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4115

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 18, 2002
Finish November 18, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 757.5
Datum Estimated
Location N 9,874 E 7,781

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-Mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0						NO WELL INSTALLED										
		S-1 42	0.0 4.0	756.9	OL/OH	-TOPSOIL-										
	ND				CL	Yellow-brown, sandy CLAY, moist.					30	70				
				753.5												
	ND	S-2 48	4.0 8.0			Same, except less sand.					5	95				
5				751.5												
	ND			751.0	SP	Yellow-brown SAND, moist.					95	5				
	ND				CL	Light brown CLAY, moist.					5	95				
		S-3 46	8.0 12.0													
				747.5												
10				747.0	ML	6" lens of SILT, moist.						100				
	ND				SP	Light brown SAND, moist.					95	5				
		S-4 46	12.0 16.0													
15																
		S-5 46	16.0 20.0	741.0												
	ND					Wet at 16.5 feet.										
						Color changes to gray-brown at approximately 18 feet.										
						-Bottom of Exploration at 20.0 feet.-										
20				737.5												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 20.0
Rock Cored (lin. ft.) -
Samples

Boring No. GP-4115

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4116

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 19, 2002
Finish November 19, 2002
Driller D. Pino
H&A Rep. F. Palatka
Elevation 757.5
Datum Estimated
Location N 9,873 E 7,648

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-Mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**; structure, odor, moisture, optional descriptions, geologic interpretation)	% Coarse (Gravel)	% Fine (Gravel)	% Coarse (Sand)	% Medium (Sand)	% Fine (Sand)	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	ND	S-1 47	0.0 4.0	756.9	OL/ OH	-TOPSOIL- Dark brown TOPSOIL, some brick fragments.										
					CL	Yellow-brown CLAY, moist.				5	5	90				
5	ND	S-2 48	4.0 8.0	751.5	SP	Yellow-brown SAND, moist.					95	5				
10	1	S-3	8.0 12.0	747.0	SP	Same, except becoming light brown.					95	5				
	2	S-4	12.0 16.0								95	5				
15	10			743.0	SP	Wet at 14.5 feet.					95	5				
						No sample obtained.										
	9	S-5	16.0 20.0								95	5				
20				737.5		-Bottom of Exploration at 20.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (lin. ft.) 20.0; Rock Cored (lin. ft.) -; Samples

Boring No. GP-4116

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4116
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20							Note: Advanced augers to 27.5 feet.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4118

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 18, 2002
Finish November 18, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 756.1
Datum Estimated
Location N 9,715 E 7,478

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					755.1		-CONCRETE-										
	11	S-1 40	1.0 5.0	NO WELL INSTALLED		ML	Very stiff, brown and black SILT, mps: 2.5 cm, no odor, moist. -FILL-					10	90				
	2.8																
5	1.6	S-2 46	5.0 9.0		749.6		Same as 1 to 3 feet.					10	90				
	5.1					SP	Loose, tan, fine SAND, mps< 1mm, no odor, moist. -GLACIAL TILL-					100					
	2.0	S-3 38	9.0 13.0				Same as 6.5 to 9.0 feet.					100					
10	1.8																
	2.8	S-4 40	13.0 17.0			SP	Same as 6.5 to 9 feet.					100					
15	5.0																
	6.7	S-5 34	17.0 21.0		737.6		Same as 6.5 feet to 9 feet.					100					
	10.1					SM	Loose, brown, silty SAND, mps: 1.3 cm, no odor, wet. -GLACIAL TILL-					70	30				
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram	Summary
O Open End Rod	Riser Pipe	Overburden (lin. ft.) 30.0
T Thin Wall Tube	Screen	Rock Cored (lin. ft.) -
U Undisturbed Sample	Filter Sand	Samples GW 1
S Split Spoon	Cuttings	**Boring No.** GP-4118
G Geoprobe	Grout	
	Concrete	
	Bentonite Seal	

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4118
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20						SM	Water at 18.5 feet.										
					735.1												
	NA						Soil not characterized. Sample collected at 28 to 30 feet.										
25																	
30					726.1												
							-Bottom of Exploration at 30.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4119

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 18, 2002
Finish November 18, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,081 E 7,814

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							-CONCRETE-										
					759.0												
	5.0	S-1 38	1.0 5.0			ML	Medium stiff, blackish brown SILT, mps: 1.3 cm, hydrocarbon odor(oil), moist.					10	90				
							-FILL-										
	16.8																
5					754.5												
	1.1	S-2 46	5.0 9.0			SP	Dense, brown, fine SAND, mps< 1mm, hydrocarbon odor(oil), moist.					90	10				
	11.5																
		S-3 44	9.0 13.0														
10	54.1						Same as 5.5 to 10 feet.					10	90				
							-GLACIAL TILL-										
					748.0												
	60.2					SP	Loose, brown, fine SAND, mps< 1mm, no odor, wet.					100					
					747.0		-GLACIAL TILL-										
							Water at 12.0 feet.										
							-Bottom of Exploration at 13.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. GP-4119

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4120

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 19, 2002
Finish November 19, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,051 E 7,823

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	95.1	S-1 44	1.0 5.0	NO WELL INSTALLED		ML	Very stiff, brown and black SILT with some sand, mps: 2.5 cm, no odor, moist. -FILL-					20	80				
	36.9																
5		S-2 46	5.0 9.0				Same as 1 to 3 feet.					20	80				
					753.5												
	41.2					ML	Very stiff, tan and gray SILT, mps: 1.3 cm, no odor, moist to wet. -GLACIAL TILL-					10	90				
	41.7																
	12.5	S-3 48	9.0 13.0				Same as 6.5 to 8.0 feet					10	90				
10					749.0												
	1.1					SP	Dense, tan, fine SAND, mps< 1mm, no odor, moist to wet. -GLACIAL TILL- Water at 12.0 feet.					100					
					747.0		-Bottom of Exploration at 13.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 13
- Rock Cored (lin. ft.) -
- Samples GP-1, GW

Boring No. GP-4120

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4121

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 19, 2002
Finish November 19, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,072 E 7,856

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	24.1	S-1 40	1.0 5.0	NO WELL INSTALLED		ML	Very stiff, brown and black SILT, mps: 2.5 cm, no odor, moist.					10	90				
	169.5						-FILL-										
							Some staining at 4.0 feet.										
					755.0		Same as 1 to 3 feet.										
5		S-2 48	5.0 9.0		754.5							10	90				
	155.4					ML	Very stiff, grayish tan SILT, mps: 1.3 cm, no odor, moist.					10	90				
	131.8						-GLACIAL TILL-										
	34.7	S-3 48	9.0 13.0				Same as 5.5 to 7 feet.										
10					749.5												
	6.7					SP	Dense, tan, fine SAND, mps< 1mm, no odor, wet.					100					
							-GLACIAL TILL-										
							Water at 11.0 feet.										
					747.0		-Bottom of Exploration at 13.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	13.0
Rock Cored (lin. ft.)	-
Samples	GP-1, GW

Boring No. GP-4121

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4122

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 19, 2002
Finish November 19, 2002
Driller R. Vining
H&A Rep. G. Laird

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Elevation 760.0
Datum Estimated
Location
N 8,104
E 7,836

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							-CONCRETE-										
					759.0												
	1.3	S-1 34	1.0 5.0			ML	Very stiff, brown SILT, mps: 2.5 cm, no odor, moist.					5	95				
							-FILL-										
	0.8																
5		S-2 48	5.0 9.0				Same as 1 to 3 feet.					5	95				
					754.0												
	0.4					ML	Very stiff, gray and brown, SILT, mps: 1.3 cm, no odor, moist.					5	95				
							-GLACIAL TILL-										
	0.4																
	0.7	S-3 48	9.0 13.0				Same as 6 to 8 feet.					5	95				
10					749.5												
	0.4					SP	Loose, tan, fine SAND, mps< 1mm, no odor, wet. -GLACIAL TILL- Water at 10.5 feet.					100					
					747.0		-Bottom of Exploration at 13.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary
Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples GP-1, GW

Boring No. GP-4122

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4123

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 19, 2002
Finish November 19, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,065 E 7,869

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	9.8	S-1 41	1.0 5.0	NO WELL INSTALLED		ML	Very stiff, brown and black SILT, mps: 6.4 mm, no odor, moist. -FILL-					10	90				
	5.8																
5		S-2 48	5.0 9.0		754.5												
	9.4					ML	Very stiff, brown and gray SILT, mps: 6.4 mm, no odor, moist. -GLACIAL TILL-					10	90				
	2.0																
		S-3 46	9.0 13.0		750.0												
10	5.2					SP	Dense, tan, fine SAND, mps< 1mm, no odor, wet. Water at 10.0 feet. -GLACIAL TILL- -Bottom of Exploration at 13.0 feet.-					100					
	0.1				747.0												

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram	
	Riser Pipe
	Screen
	Filter Sand
	Cuttings
	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	13.0
Rock Cored (lin. ft.)	-
Samples	GP-1, GW

Boring No. GP-4123

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. GP-4124

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,023 E 7,815

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	–	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							-CONCRETE-										
					759.0												
	2.1	S-1 32	1.0 5.0			ML	Very stiff, black and brown SILT, mps: 6.4 mm, no odor, moist.					10	90				
	1.8						-FILL-										
5					754.5												
	0.9	S-2 48	5.0 9.0			ML	Very stiff, brown and gray SILT, mps: 1.3 cm, no odor, moist.					5	95				
	0.6						-GLACIAL TILL-										
	0.3	S-3 48	9.0 13.0				Same as 5.5 to 8 feet.					5	95				
10				NO WELL INSTALLED	749.0												
	0.5					SP	Water at 11.0 feet. Dense, tan, fine SAND, mps< 1mm, no odor, wet. -GLACIAL TILL-					100					
					747.0		-Bottom of Exploration 13.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary

Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples GP-1, GW

Boring No. GP-4124

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4125

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,034 E 7,856

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-CONCRETE-										
					759.0												
	0.4	S-1 16	1.0 5.0			SP	Fairly dense, tan and brown, fine SAND, mps: 2.5 cm, no odor, moist.					100					
	ND						-FILL-										
5					754.5												
	ND	S-2 48	5.0 9.0			ML	Very stiff, tan and gray SILT, mps: 1.3 cm, no odor, moist. -GLACIAL TILL-					5	95				
		S-3 48	9.0 13.0														
10	ND						Same as 5.5 to 10 feet					5	95				
					748.0												
	ND					SP	Dense, tan, fine SAND, no odor, wet. Water at 12.0 feet.					100					
					747.0		Bottom of Exploration at 13.0 feet										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 13.0
- Rock Cored (lin. ft.) -
- Samples GP-1, GP-3

Boring No. GP-4125

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. GP-4126

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,064 E 7,885

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	26.7	S-1 40	1.0 5.0	NO WELL INSTALLED		ML	Very stiff, brown and black SILT, mps: 2.5 cm, organic odor, moist.					10	90				
	252.6						-FILL-										
5		S-2 46	5.0 9.0		754.5												
	158.7					ML	Very stiff, olive-tan SILT, mps: 6.4 mm, organic odor, moist.					5	95				
	38.9						-GLACIAL TILL-										
	415.5	S-3 48	9.0 13.0				Same as 5.5 to 7.0 feet.					5	95				
10	13.0						Same as 5.5 to 7.0 feet										
							Same except tan. No water encountered.										
					747.0		-Bottom of Exploration at 13.0 feet-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 13
Rock Cored (lin. ft.) -
Samples GP-1, GP-3

Boring No. GP-4126

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4131

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Zebra Environmental Corp.

File No.: 49017
Sheet No.: 1 of 1
Start: November 19, 2002
Finish: November 19, 2002
Driller: C. Donovan
H&A Rep.: F. Palatka
Elevation
Datum Estimated
Location Building #4111
N 7,847
E 8,477

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type: Macrocore Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: Automatic Hammer

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	NA		S-1	0.0	NO WELL INSTALLED			-CONCRETE-										
		ND	44	4.0		0.5	CL	Olive brown CLAY with sand and gravel, moist.		5	5	5	5	80				
	NA	1	S-2	4.0 8.0		4.0	CL	Yellow brown CLAY with some fine gravel, moist.		5			5	90				
5																		
	NA	25	S-3	8.0 12.0		8.0	SP	Yellow brown, poorly-graded SAND.					95	5				
10		90				10.0		Wet at 9.5 feet.										
	NA		S-4	12.0 16.0														
		110				13.0		Gray brown silty CLAY, moist.						100				
15																		
						16.0		-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	16
Rock Cored (lin. ft.)	-
Samples	

Boring No. GP-4131

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4132

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Zebra Environmental

File No.: 49017
Sheet No.: 1 of 1
Start: November 19, 2002
Finish: November 19, 2002
Driller: C. Donovan
H&A Rep.: F. Palatka

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: -
				Hoist/Hammer: - Automatic Hammer

Elevation
Datum Estimated
Location
N 7,846
E 8,530

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	NA		S-1	0.0	NO WELL INSTALLED			-CONCRETE-										
		2	40	4.0		0.5		Interbedded yellow-brown SAND and olive-gray CLAY. Backfill and coal/asphalt present. -FILL-										
		10				2.5	CL	Yellow-brown CLAY with some sand, moist.					10	90				
5	NA		S-2	4.0														
			46	8.0														
		28				7.0	SP-SM	Yellow-brown SAND, moist.					90	10				
	NA		S-3	8.0														
			42	12.0														
10		5				9.5		Wet at 9.5 feet.										
	NA	8	S-4	12.0		12.0	CL	Yellow-brown CLAY, moist.						100				
			38	16.0														
		ND				14.0												
15								-Bottom of Exploration at 16.0 feet.-										
						16.0												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples 4S

Boring No. GP-4132

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

USCS_TB3 USCSLIB3.GLB USCSTBC3.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Sep 9, 04

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4133

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Zebra Environmental

File No.: 49017
Sheet No.: 1 of 1
Start: November 20, 2002
Finish: November 20, 2002
Driller: C. Donovan
H&A Rep.: F. Palatka

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: -
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Elevation
Datum Estimated
Location
N 7,756
E 8,532

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
	NA		S-1 46	0.0 4.0	NO WELL INSTALLED	0.5	SP-CL	Interbedded layers of SAND and CLAY, some gravel.										
						3.0	CL	Yellow-brown CLAY, moist.					5	95				
5	NA		S-2 48	4.0 8.0														
						7.5	SP	Yellow-brown SAND.					95	5				
	NA		S-3 46	8.0 12.0				Wet at 9.0 feet.										
10							CL	Gray-brown CLAY, moist.						100				
						12.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 12.0
- Rock Cored (lin. ft.) -
- Samples 3S

Boring No. GP-4133

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4134

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Zebra Environmental

File No.: 49017
Sheet No.: 1 of 1
Start: November 20, 2002
Finish: November 20, 2002
Driller: C. Donovan
H&A Rep.: F. Palatka

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: -
				Hoist/Hammer: - Automatic Hammer

Elevation
Datum Estimated
Location
N 7,750
E 8,478

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			S-1 40	0.0 4.0	NO WELL INSTALLED			-CONCRETE-										
						0.5	SP	Yellow-brown SAND					95	5				
						1.0	CL	Dark brown, sandy CLAY, moist.					30	70				
						3.0	CL	Yellow-brown CLAY, moist.					5	95				
5			S-2 48	4.0 8.0														
			S-3 46	8.0 12.0		8.5	SP-SM	Yellow-brown SAND, moist. Wet at 9.0 feet.					90	10				
10																		
			S-4 42	12.0 16.0		12.5	CL	Gray-brown CLAY, moist.						100				
15								-Bottom of Exploration at 16.0 feet.-										
						16.0												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples 4S

Boring No. GP-4134

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4141

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,354 E 7,981

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							-CONCRETE-										
					759.0												
	0.8	S-1 28	1.0 5.0	NO WELL INSTALLED		ML	Very stiff, brown SILT, mps: 1.3 cm, no odor, moist. -FILL-					10	90				
					757.0												
	0.5					SP	Fairly dense, black SLAG, mps: 6.4 mm, no odor, moist. -FILL-				50	50					
					755.0												
5	0.3	S-2 48	5.0 9.0			ML	Very stiff, light brown SILT, mps: 1.3 cm, slight organic odor, moist. -GLACIAL TILL-					5	95				
	0.8																
	4.6	S-3 48	9.0 13.0														
10	6.8																
					747.5												
					747.0	SP	Fairly dense, gray with black staining, fine SAND, mps< 1mm, slight organic odor, moist. -GLACIAL TILL- Product encountered at 9 to 13 feet. -Bottom of Exploration at 13.0 feet.-					100					

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram	Summary
O Open End Rod	Riser Pipe	Overburden (lin. ft.) 13
T Thin Wall Tube	Screen	Rock Cored (lin. ft.) -
U Undisturbed Sample	Filter Sand	Samples
S Split Spoon	Cuttings	**Boring No.** GP-4141
G Geoprobe	Grout	
	Concrete	
	Bentonite Seal	

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. GP-4142

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,408 E 7,993

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.4	S-1 34	1.0 5.0			ML	Very stiff, brown SILT, mps: 1.3 cm, no odor, moist.					10	90				
	0.3					ML	-FILL-										
		S-2 48	4.0 8.0		755.0												
5	0.3			NO WELL INSTALLED		ML	Very stiff, brown SILT, mps: 2.5 cm, no odor, moist. -GLACIAL TILL-					10	90				
	0.2					ML											
	0.4	S-3 48	8.0 12.0			ML	Same as 5 to 7 feet -GLACIAL TILL-										
10	1.2					ML	Product encountered from 8 to 12 feet.					10	90				
					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	-

Boring No. GP-4142

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINT\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. GP-4143

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,354 E 7,938

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.2	S-1 14	1.0 5.0	NO WELL INSTALLED		ML	Very stiff, brown SILT, mps: 1.3 cm, no odor, moist. -FILL-					10	90				
	0.4	S-2 48	4.0 8.0		755.0	ML											
5	0.4						Very stiff, brown SILT, mps: 1.3 cm, no odor, moist. -GLACIAL TILL-					10	90				
	0.7	S-3 48	8.0 12.0				Same as 5 to 8 feet.					10	90				
10	0.9					ML	-Bottom of Exploration at 12.0 feet.-										
					748.0												

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (lin. ft.) 12; Rock Cored (lin. ft.) -; Samples

Boring No. GP-4143

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4144

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 21, 2002
Finish November 21, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,432 E 7,997

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.1	S-1 30	1.0 5.0			SP	Soft, light brown, fine SAND, mps: 1.3 cm, no odor, moist.		2		3	95					
	ND						-FILL-										
		S-2 20	4.0 8.0		755.5												
	0.2				755.0		-CONCRETE-										
5	0.5			NO WELL INSTALLED		ML	Very stiff, brown SILT, mps< 1 mm, no odor, moist. -GLACIAL TILL-					5	95				
	0.2	S-3 28	8.0 12.0				Same as 5 to 8 feet.										
10	0.4						Traces of product around 10.0 feet.					5	95				
					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. GP-4144

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49917\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. GP-4145

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 20, 2002
Finish November 20, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,415 E 8,016

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.4	S-1 39	1.0 5.0			ML	Very stiff, brown SILT, mps < 1 mm, no odor, moist.					10	90				
	0.2						-FILL-										
		S-2 40	4.0 8.0		755.5												
	0.2					ML	Very stiff, gray and brown SILT, mps: 6.4 mm, no odor, moist.					5	95				
5	0.1						-GLACIAL TILL-										
	0.2	S-3 24	8.0 10.0			ML	Same as 4.5 to 6.0 feet, except product encountered at 9.5 feet.										
10					750.0		-Bottom of Exploration at 10.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 10
Rock Cored (lin. ft.) -
Samples

Boring No. GP-4145

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4146

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 21, 2002
Finish November 21, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,326 E 7,980

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.5	S-1 32	1.0 5.0	NO WELL INSTALLED		ML	Very stiff, brown SILT, mps: 2.5 cm, no odor, moist.					10	90				
	0.3					ML	-FILL- Some brick fragments at 3.75 feet.										
	0.2	S-2 48	4.0 8.0		755.5	ML	Very stiff, brown and gray SILT, mps: 1.3 cm, no odor, moist.					5	95				
5	0.2						-FILL-										
	0.2	S-3 48	8.0 12.0				Same as 4.5 to 8 feet.					10	90				
10	7.8						Product encountered at 11.0 feet.										
	1.4	S-4 48	12.0 16.0		748.0	SP	Dense, tan, fine SAND, mps< 1mm, no odor, moist.					100					
							-GLACIAL TILL-										
	0.3					SP	Water at 12.0 feet.										
15					744.0		-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 16
Rock Cored (lin. ft.) -
Samples

Boring No. GP-4146

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSUB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4147

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 21, 2002
Finish November 21, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,329 E 7,932

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-CONCRETE-										
					759.0												
	2.2	S-1 29	1.0 5.0			ML	Very stiff, brown SILT, mps: 2.5 cm, no odor, moist.					10	90				
	1.3					ML	-FILL-										
					756.0												
		S-2 0	4.0 8.0				No recovery from 4 to 8 feet.										
5																	
					752.0												
	0.1	S-3 48	8.0 12.0			ML	Very stiff, brown and gray SILT, no odor, moist.					5	95				
							-GLACIAL TILL-										
10	ND					ML											
					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram	
	Riser Pipe
	Screen
	Filter Sand
	Cuttings
	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. GP-4147

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4148

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 21, 2002
Finish November 21, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,435 E 7,932

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	0.4	S-1 24	1.0 5.0			SP	Fairly dense, tan, fine SAND, mps< 1mm, no odor, moist.					100					
	0.4					SP	-FILL-										
					756.0												
	0.9	S-2 48	4.0 8.0			ML	Very stiff, brown and gray SILT, mps: 1.3 cm, no odor, moist.					10	90				
5							-GLACIAL TILL-										
	0.7																
	1.6	S-3 48	8.0 12.0				Same as 4 to 8 feet.					10	90				
10	24.1			NO WELL INSTALLED		ML											
					749.0												
						SP	Dense, gray, fine SAND, mps< 1mm, no odor, wet.					100					
					748.0		-GLACIAL TILL-										
							-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples

Boring No. GP-4148

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

Boring No. GP-4149

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 21, 2002
Finish November 21, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,389 E 8,013

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							-CONCRETE-										
					759.0												
	2.2	S-1 31	1.0 5.0			ML	Soft, brown SILT, mps: 2.5 cm, no odor, moist.					10	90				
	0.8						-FILL- Pieces of brick fragments also present.										
					756.0												
	0.5	S-2 48	4.0 8.0			ML	Very stiff, brown SILT, mps: 6.3 mm, no odor, moist.					5	95				
5							-GLACIAL TILL-										
	0.2																
	0.1	S-3 48	8.0 12.0			ML	Same as 4 to 8 feet.					5	95				
10	0.1					ML											
					748.0		-Bottom of Exploration at 12.0 feet.-										

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. GP-4149

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4150

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 21, 2002
Finish November 21, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,299 E 7,979

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							-CONCRETE-										
					759.0												
	ND	S-1 4	1.0 5.0			GP	Loose, brown GRAVEL, mps: 3.8 cm, no odor, moist, spark plugs throughout. -FILL-		100								
					756.0												
	ND	S-2 41	4.0 8.0			ML	Very stiff, brown SILT, mps: 6.4 mm, no odor, moist. -GLACIAL TILL-					10	90				
5																	
	0.2	S-3 37	8.0 12.0				Same as 4 to 8 feet.					10	90				
10	0.7					ML											
					748.5		Water at 11.5 feet.										
					748.0	SP	Dense, brown, fine SAND, mps< 1mm, no odor, wet. -GLACIAL TILL- -Bottom of Exploration at 12.0 feet.-					100					

NO WELL INSTALLED

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram	
	Riser Pipe
	Screen
	Filter Sand
	Cuttings
	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. GP-4150

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4151

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 21, 2002
Finish November 21, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,448 E 8,021

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-CONCRETE-										
					759.0												
	ND	S-1 31	1.0 5.0			ML	Very stiff, brown SILT, mps: 2.5 cm, no odor, moist. -FILL-					10	90				
					756.0												
	ND	S-2 48	4.0 8.0			ML	Very stiff, brown SILT, mps: 1.3 cm, no odor, moist. -GLACIAL TILL-					5	95				
5																	
	ND	S-3 40	8.0 12.0			ML	Same as 4 to 8 feet.					10	90				
10							Water at 11.5 feet.										
					748.5												
	ND				748.0	SP	Dense, gray, fine SAND, mps < 1 mm, no odor, wet. -GLACIAL TILL- -Bottom of Exploration at 12.0 feet.-					100					

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12
Rock Cored (lin. ft.)	-
Samples	

Boring No. GP-4151

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4152

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start November 21, 2002
Finish November 21, 2002
Driller R. Vining
H&A Rep. G. Laird
Elevation 760.0
Datum Estimated
Location N 8,330 E 8,014

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Track-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: NA
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					759.0		-CONCRETE-										
	ND	S-1 28	1.0 5.0	NO WELL INSTALLED		ML	Soft, brown SILT with brick fragments, mps: 6.4 mm, no odor, moist. -FILL-					20	80				
	ND	S-2 41	4.0 8.0		755.5	ML	Very stiff, gray SILT, mps: 1.3 cm, no odor, moist. -GLACIAL TILL-					5	95				
5																	
	ND	S-3 48	8.0 12.0			ML	Same as 4.5 to 8 feet, except color changes to tan at 10.0 feet.					5	95				
10					748.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 12
Rock Cored (lin. ft.) -
Samples

Boring No. GP-4152

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4161

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017-022
Sheet No. 1 of 1
Start February 24, 2003
Finish February 24, 2003
Driller R. Christensen
H&A Rep. D. Nostrant
Elevation 756.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	GP	NA	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	NA	1.5	NA	Bit Type: Macrocore
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: Direct Push
				Hoist/Hammer: NA Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 60	0.0 5.0	NO WELL INSTALLED		ML	Gray, brown and olive SILT with sand, mps: 5 mm, no odor, damp, trace rootlets. -FILL-				10	10	80				
					752.0	ML	Gray to brown and yellow-brown mottled, sandy SILT, mps < 1 mm, no odor, damp. -LACUSTRINE-				5	25	70				
5	ND	S-2 60	5.0 10.0														
					748.2	SP-SM	Gray to brown, poorly-graded SAND with silt, mps: 1 mm, no odor, moist. -LACUSTRINE-				5	85	10				
10	1.1	S-3 60	10.0 15.0				Note: Soil sample G61A collected from 10.0 to 11.0 feet.										
					743.2	MH	Gray to brown, elastic SILT with sand, mps: 1 mm, no odor, damp. -LACUSTRINE-					20	80				
15	ND	S-4 60	15.0 20.0														
					736.7												
20					736.0	SP-	Gray to brown, poorly-graded SAND with silt, mps < 1mm, no odor, wet.					90	10				

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 30
Rock Cored (lin. ft.) -
Samples G61A, G61D, G61E

Boring No. GP-4161

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4161
File No. 49017-022
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	2.3	S-5 60	20.0 25.0	734.9	SM	-LACUSTRINE- Note: Groundwater sample G61E collected from 19.0 to 22.0 feet.										
					ML	Gray to brown SILT with sand, mps < 1 mm, no odor, moist. -LACUSTRINE-					20	80				
25	2.3	S-6 60	25.0 30.0	731.0	SP-SM	Gray to brown, poorly-graded SAND with silt, mps. < 1 mm, no odor, wet. -LACUSTRINE- Note: Groundwater sample G61D collected from 25.0 to 28.0 feet.					85	15				
				727.6	SW	Gray to brown, well-graded SAND with gravel, mps: 10 mm, no odor, wet. -LACUSTRINE-		40	20	20	20					
30				726.0		-Bottom of Exploration at 30.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4162

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017-022
Sheet No. 1 of 1
Start February 25, 2003
Finish February 25, 2003
Driller R. Christensen
H&A Rep. D. Nostrant
Elevation 756.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	GP	NA	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	NA	1.5	NA	Bit Type: Macrocore Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: Direct Push
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 60	0.0 5.0	NO WELL INSTALLED		ML	Brown SILT with sand, mps: 5 mm, no odor, damp. -FILL-		10	5	5	20	60	S			
					751.7		Gray to brown and yellow-brown mottled, sandy SILT, mps < 1 mm, no odor, damp to moist. -LACUSTRINE-					30	70				
5	ND	S-2 60	5.0 10.0				Moist to wet at 8.5 feet.										
	ND				746.8	SP-SM	Gray to brown, poorly-graded SAND with silt, mps < 1 mm, no odor, wet. -LACUSTRINE-				10	80	10				
10	ND	S-3 59	10.0 15.0		745.7	MH	Gray to brown elastic SILT with sand, mps < 1 mm, no odor, damp. -LACUSTRINE-										
15	ND	S-4 58	15.0 20.0														
					737.3	ML	Gray to brown SILT, mps < 1 mm, no odor, damp to moist. -LACUSTRINE-					5	95				
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 33.5
Rock Cored (lin. ft.) -
Samples 7G

Boring No. GP-4162

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4162
File No. 49017-022
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20		S-5 60	20.0 25.0	735.2	ML											
	ND				ML	Gray to brown SILT with sand, mps. < 1 mm, no odor, wet. -LACUSTRINE-					15	85				
	ND			732.3	SP	Gray-brown, poorly-graded SAND, mps < 1 mm, no odor, wet. -LACUSTRINE-			30	65	5					
25		S-6 60	25.0 30.0													
	1.2				SW	Gray to brown, well-graded SAND with gravel, mps: 6 mm, no odor, wet. -LACUSTRINE-		20	25	25	25	5				
30		S-7 42	30.0 33.5	724.9												
	ND				SM	Gray to brown, silty SAND with gravel, mps: 10 mm, no odor, damp. -GLACIAL TILL-		15	15	15	25	30				
				722.5		-Bottom of Exploration at 33.5 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4162

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4163

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017-022
Sheet No. 1 of 1
Start February 25, 2003
Finish February 25, 2003
Driller R. Christensen
H&A Rep. D. Nostrant
Elevation 756.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	GP	NA	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	NA	1.5	NA	Bit Type: Macrocore Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: Direct Push
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 60	0.0 5.0	NO WELL INSTALLED		ML	Brown SILT with sand and gravel. -FILL-	5	10	5	5	15	60				
					753.0	ML	Gray-brown and yellow-brown mottled, sandy SILT mps: 2 mm, no odor, damp. -LACUSTRINE-					30	70				
5	1.0	S-2 60	5.0 10.0		750.3	SP	Yellow, poorly-graded SAND, mps. < 1 mm, no odor, damp. -LACUSTRINE- Wet from 7.7 to 8.9 feet. Note: Soil sample G63A collected from 7.7 to 8.8 feet.					95	5				
					747.0	MH	Gray to brown, elastic SILT with sand, mps: 15 mm, no odor, damp. -LACUSTRINE-		15	5	10	10	60				
10	ND	S-3 60	10.0 15.0														
15	ND	S-4 60	15.0 20.0														
					737.3	SM	Gray to brown, silty SAND, mps: < 1 mm., no odor, moist to wet. -LACUSTRINE-					75	25				
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram	Summary
O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon G Geoprobe	Riser Pipe Screen Filter Sand Cuttings Grout Concrete Bentonite Seal	Overburden (lin. ft.) 33.0 Rock Cored (lin. ft.) - Samples G63A, G63D, G63E **Boring No.** GP-4163

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4163
File No. 49017-022
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	0.6	S-5 60	20.0 25.0			Note: Observed wet conditions beginning at 20.0 feet. Note: Groundwater sample G63E collected from 20.0 to 23.0 feet.										
				732.4												
	ND				SP	Gray to brown, poorly-graded SAND, mps. < 1 mm, no odor, moist to wet. -LACUSTRINE-				5	90	5				
25		S-6 60	25.0 30.0			Note: Groundwater sample G63D collected from 27.0 to 30.0 feet.										
	0.8			726.4	SP	Brown to gray, well-graded SAND, mps: 2 mm, no odor, wet. -LACUSTRINE-			30	30	35	5				
30	ND	S-7 36	30.0 33.0	725.6	SW			15	20	30	30	5				
					SM	Gray to brown, well-graded SAND with gravel, mps: 15 mm, no odor, wet. -LACUSTRINE-		15	20	30	30	5				
						Gray to brown, silty SAND with gravel, mps: 7 mm. -GLACIAL TILL-										
				723.0		-Refusal at 33.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4164

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017-022
Sheet No. 1 of 1
Start February 26, 2003
Finish February 26, 2003
Driller R. Christensen
H&A Rep. D. Nostrant
Elevation 756.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	GP	NA	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	NA	1.5	NA	Bit Type: Macrocore Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: Direct Push
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**; structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 60	0.0 5.0	NO WELL INSTALLED		ML	Brown, sandy SILT with gravel, mps: 25 mm, no odor, damp. -FILL-		15	10	10	20	45				
					753.4	ML	Gray-brown and yellow-brown SILT with sand, mps: 10 mm, no odor, damp. -LACUSTRINE-		5		5	10	80				
5	ND	S-2 54	5.0 10.0		749.6	SP	Yellow, poorly-graded SAND, mps. < 1 mm, no odor, damp. -LACUSTRINE- Moist to wet from 7.7 to 9.3 feet. Note: Soil sample G64A collected from 7.7 to 9.3 feet.					95	5				
	ND				746.7	ML	Gray-brown, elastic SILT with sand, no odor, damp. -LACUSTRINE-		10	5	5	10	70				
10	ND	S-3 50	10.0 15.0														
15	ND	S-4 60	15.0 20.0														
					736.6	MH	Gray-brown SILT with sand, mps: < 1 mm, damp to moist.			5	10	10	75				
20	ND																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 34.0
Rock Cored (lin. ft.) -
Samples G64A, G64D, G64E

Boring No. GP-4164

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

NEW USCSLIB3_DTR.GLB DELPHI.GDT G:\49017\GINTS\LOGS_COMPLETE\LOGS.GPJ Jul 22, 03

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4164
File No. 49017-022
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20		S-5 60	20.0 25.0	735.0	MH	-LACUSTRINE-										
	0.3				SP	Gray-brown, poorly-graded SAND with silt, mps. < 1 mm, no odor, wet. -LACUSTRINE- Note: Groundwater sample G64E collected from 20.0 to 23.0 feet.				10	65	25				
25	ND	S-6 60	25.0 30.0	731.0	SP	Gray to brown, poorly-graded SAND, mps: 1 mm, no odor, wet. -LACUSTRINE-				5	95					
30	1.9	S-7 48	30.0 33.0	726.0	SW	Gray to brown, well-graded SAND with gravel, mps: 10 mm, no odor, wet. -LACUSTRINE- Note: Groundwater sample G64D collected from 30.0 to 33.0 feet.		15	25	25	30	5				
				722.6	SM	Gray to brown, silty SAND with gravel, mps: 20 mm, no odor, damp to moist. -GLACIAL TILL-	5	10	15	15	30	25				
				721.0		-Refusal at 34.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4165

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017-022
Sheet No. 1 of 1
Start February 26, 2003
Finish February 26, 2003
Driller R. Christensen
H&A Rep. D. Nostrant
Elevation 756.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	GP	NA	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	NA	1.5	NA	Bit Type: Macrocore Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: Direct Push
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 60	0.0 5.0	NO WELL INSTALLED		SP	Gray to brown, poorly-graded SAND with gravel, mps: 20 mm, no odor, damp to dry. -FILL-	5	15	15	15	30	20				
	0.1				754.3 753.7	ML	Brown SILT with sand, mps: 10 mm, no odor, damp. -FILL-		10	5	5	10	70				
						ML	Gray to brown and yellow-brown, mottled SILT with sand, mps: 10 mm, no odor, damp. -LACUSTRINE-		10	5	5	10	70				
5	ND	S-2 60	5.0 10.0		751.2	SP	Yellow, poorly-graded SAND, mps < 1 mm, no odor, damp. -LACUSTRINE- Note: Soil sample G65A collected from 8.4 to 8.7 feet.					95	5				
10	ND	S-3 60	10.0 15.0		747.1	MH	Gray to brown, elastic SILT with sand, mps: 15 mm, no odor, damp. -LACUSTRINE-		5	5	5	10	75				
15	ND	S-4 60	15.0 20.0		737.4	ML	Gray to brown SILT with sand, mps. < 1 mm, no odor, damp. -LACUSTRINE-		5	5	5	10	75				
20												25	75				

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.)	34.0
Rock Cored (lin. ft.)	-
Samples	7G

Boring No. GP-4165

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4165
File No. 49017-022
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	2.2	S-5 56	20.0 25.0	735.7	SP	Gray to brown, poorly-graded SAND, mps < 1 mm, no odor, wet. -LACUSTRINE- Note: Groundwater sample G65E collected from 20.0 to 23.0 feet.				5	90	5				
25	ND	S-6 60	25.0 30.0							5	95	5				
30	0.9	S-7 48	30.0 35.0	726.0	SP	Gray to brown, well-graded SAND, mps: 10 mm, no odor, wet. -LACUSTRINE- Note: Groundwater sample G65D collected from 31.0 to 34.0 feet.		5	10	20	60	5				
				722.5 / 722.0	SW	Gray to brown, well-graded SAND with gravel, mps: 20 mm, no odor, wet. -Refusal at 34.0 feet.-	5	10	25	25	30	5				

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4165

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4166

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017-022
Sheet No. 1 of 1
Start February 27, 2003
Finish February 27, 2003
Driller R. Christensen
H&A Rep. D. Nostrant
Elevation 756.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	GP	NA	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	NA	1.5	NA	Bit Type: Macrocore Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: Direct Push
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 60	0.0 5.0	NO WELL INSTALLED		SP-SM	Brown, well-graded SAND with silt and gravel, mps: 15 mm, no odor, damp. -FILL-	10	10	10	15	45	10				
					752.8	ML	Gray-brown and yellow-brown SILT with sand, mps < 2 mm, no odor, damp. LACUSTRINE-			5	5	10	80				
5	0.7	S-2 60	5.0 10.0		749.8	SP	Yellow, poorly-graded SAND, mps < 1 mm, no odor, damp. -LACUSTRINE-					95	5				
					748.7	MH	Note: Soil sample G66A collected from 6.2 to 7.3 feet. Gray to brown, elastic SILT with sand, mps: 15 mm, no odor, damp. -LACUSTRINE-		10	5	5	5	75				
10	ND	S-3 60	10.0 15.0														
15	2.2	S-4 60	15.0 20.0		740.8	ML	Gray to brown, sandy SILT, mps < 1 mm, no odor, wet. -LACUSTRINE- Note: Groundwater sample G66F collected from 15.0 to 18.0 feet. Note: Soil sample G66B collected from 16.0 to 17.5 feet.					35	65				
					736.9	SM	Gray to brown, silty SAND, mps < 1 mm, no odor, moist. -LACUSTRINE-					70	30				
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 35.0
Rock Cored (lin. ft.) -
Samples 7G

Boring No. GP-4166

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4166
File No. 49017-022
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	33	S-5 60	20.0 25.0			Note: Groundwater sample G66E collected from 20.0 to 23.0 feet. Note: Soil sample G66C collected from 21.0 to 22.0 feet.										
					SP-SM	Gray to brown, poorly-graded SAND with silt , mps < 1 mm, no odor, wet. -LACUSTRINE-				5	85	10				
25	ND	S-6 60	25.0 30.0	730.5	SP	Gray to brown, poorly-graded SAND, mps: 2 mm, no odor, wet. -LACUSTRINE-			5	20	70	5				
30	2.7	S-7 60	30.0 35.0	726.0	SP	Gray to brown, poorly-graded SAND, mps: 2 mm, no odor, wet. -LACUSTRINE- Note: Groundwater sample G66D collected from 30.0 to 33.0 feet.			5	5	85	5				
				721.8	SW	Gray to brown, well-graded SAND with gravel, mps: 20 mm, no odor, moist. -LACUSTRINE-	5	5	20	25	35	10				
35				721.0		-Bottom of Exploration at 35.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4166

TEST BORING REPORT

Boring No. GP-4167

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017-022
Sheet No. 1 of 1
Start February 27, 2003
Finish February 27, 2003
Driller R. Christensen
H&A Rep. D. Nostrant
Elevation 756.0
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	GP	NA	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	NA	1.5	NA	Bit Type: Macrocore Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: Direct Push
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 60	0.0 5.0	NO WELL INSTALLED		SP-SM	Brown, well-graded SAND with silt and gravel, mps: 20 mm, no odor, damp. -FILL-	10	15	15	15	35	10				
					752.8	ML	Brown and yellow-brown, mottled SILT with sand. -LACUSTRINE-					25	75				
5	1.0	S-2 60	5.0 10.0				Note: Soil sample G67A collected from 7.0 to 8.0 feet.										
					746.7	ML	Gray to brown SILT with sand, mps: 2 mm, no odor, damp. -LACUSTRINE-			5	5	10	80				
10	ND	S-3 60	10.0 15.0		744.5	MH	Gray to brown, elastic SILT with sand, mps < 1 mm, occasional fine sand laminae, no odor, damp. -LACUSTRINE-		5	5	5	15	70				
					742.4	SP	Gray to brown, poorly-graded SAND with silt, mps < 1 mm, no odor, wet.					90	10				
15	1.7	S-4 60	15.0 20.0				Note: Soil sample G67B collected from 16.0 to 17.0 feet.										
20					736.0												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 35
Rock Cored (lin. ft.) -
Samples 7G

Boring No. GP-4167

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4167
File No. 49017-022
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-5 60	20.0 25.0		SP	Gray to brown, poorly-graded SAND, mps: 1 mm, no odor, wet. -LACUSTRINE-				15	80	5				
25	ND	S-6 60	25.0 30.0							15	80	5				
30	2.1	S-7 40	30.0 35.0	726.0	SW	Gray brown, well-graded SAND with gravel, mps: 25 mm, no odor, wet. Note: Groundwater sample G67D collected from 31.0 to 34.0 feet.										
35				721.0		-Bottom of Exploration at 35.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4167

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4168

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 2
Start May 5, 2003
Finish May 5, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.5
Datum Estimated
Location N 10,048 E 7,870

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 28	0.0 4.0	NO WELL INSTALLED	756.0		-TOPSOIL-										
						ML	Gray-brown, SILT with sand, mps < 1 mm, moist.					10	90	N	L	N	L
					752.5												
	ND	S-2 40	4.0 8.0			SP-SM	Light brown, poorly-graded SAND with silt, mps < 1 mm, moist.					90	10	N	L	N	L
5					751.0												
						CL	Light brown, lean CLAY with sand, mps < 1 mm, moist.					10	90	N	L	L	N
					749.0												
	ND	S-3 42	8.0 12.0			SP	Yellow-brown, poorly-graded SAND, mps < 1 mm, moist. Water present at 8.5 feet. GW sample GW-3 4168D collected at approximately 9.0 feet.					95	5	N	L	L	N
10					746.5												
						CL	Gray-brown, lean CLAY, mps < 1 mm, moist. 4" silt lens.						100	N	M	M	
					745.5												
						SP-SM	Yellow-brown to gray-brown, poorly-graded SAND with silt, mps < 1 mm, wet.					90	10	R	L	N	N
	ND	S-4 48	12.0 16.0				GW sample GW-4 4168E collected at approximately 12.0 feet.										
					743.5												
						CL	Gray-brown, lean CLAY, mps < 1 mm, moist.						100	N	M	H	
15																	
	ND	S-5 46	16.0 20.0				Same except some fine sand, mps: 3 mm.										
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples GW 1-3

Boring No. GP-4168

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4168
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6 40	20.0 24.0													
				734.5	ML	Gray-brown SILT, mps < 1 mm, wet.						100	R	L	N	N
	ND	S-7 46	24.0 28.0													
25						Soil sample GW -7 4168F collected at approximately 26.5 feet.										
						Soil sample GW-7 4168F collected at approximately 26.5 feet.										
				729.5	CL	Gray-brown lean CLAY, some silt, moist.						100	N	M	L	L
				728.5												
	ND	S-8 36	28.0 32.0		SP	Gray-brown, poorly-graded SAND, some fine gravel, mps: 4.75 mm, wet.		10	75	5	5	5				
				726.5												
30					SM	Sand changes to silty SAND, mps < 1 mm, wet.					80	20	R	L	N	L
				724.5		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4168

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4169

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 5, 2003
Finish May 5, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.5
Datum Estimated
Location N 10,048 E 7,888

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 30	0.0 4.0	NO WELL INSTALLED	755.5	OL/OH	Dark brown, organic SOIL, moist. -TOPSOIL-					10	90				
					753.0	SC	Dark brown, clayey SAND becoming yellow-brown, mps < 1 mm, moist.					70	30				
	ND	S-2 48	4.0 8.0		752.5	CL	Yellow-brown, sandy CLAY, mps < 1 mm, moist.					30	70	L	L	L	L
5					749.5	SM	Silty SAND, mps < 1 mm, moist. Water present at 8.5 GW sample GW-3 4169D collected at approximately 8.0 feet.					85	15				
	ND	S-3 46	8.0 12.0		747.0												
10					746.5	CL	Gray-brown, lean CLAY, moist.						100	N	M	H	H
						SM	Gray-brown, silty SAND, mps. < 1 mm, wet.					85	15				
	ND	S-4 42	12.0 16.0		742.5												
15						CL	Gray-brown, lean CLAY, mps < 1 mm, moist.						100	N	M	H	H
							Same except more sand.					15	85				
	ND	S-5 47	16.0 20.0				Same except less sand, some fine gravel.		5			5	90				
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples GW 1-3

Boring No. GP-4169

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4169
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6 35	20.0 24.0			Soil sample S-6 4169E collected at approximately 22.0 feet.										
						Same except more silt, wet.										
				733.0	ML	Gray-brown SILT, mps < 1 mm, wet.						100	R	L	L	L
	ND	S-7 38	24.0 28.0													
25						Soil sample S-7 4169F collected at approximately 26.5 feet.										
	ND	S-8 38	28.0 32.0	728.0	CL	Gray-brown, silty CLAY, mps < 1 mm, moist.						100	S	L	L	L
				727.0	SP	Coarse, poorly-graded SAND, some gravel, mps 19 mm, wet.		10	75	5	5	5				
30				726.0	ML	Gray-brown SILT, some sand, mps: 2 mm, moist.				5	5	90	N	L	L	L
				724.5		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4169

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4170

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Zebra Environmental

File No. 49017
Sheet No. 1 of 1
Start May 6, 2003
Finish May 6, 2003
Driller D. Pino
H&A Rep. F. Palatka
Elevation 756.5
Datum Estimated
Location N 10,048 E 7,910

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	GP	-	Rig Make & Model: Truck-mounted Geoprobe
Inside Diameter (in.)	-	1 7/8	-	Bit Type:
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: N/A
				Hoist/Hammer: Automatic Hammer

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	ND	S-1 36	0.0 4.0	NO WELL INSTALLED	755.5	OL/OH	Dark brown, TOPSOIL with roots, moist. -TOPSOIL-					20	80				
					754.5	SM	Light brown, silty SAND, mps < 1 mm, moist.					80	20				
						SP	Yellow-brown, poorly-graded SAND, mps: 1 mm, moist.					95	5				
	ND	S-2 46	4.0 8.0		751.5	SP											
5						CL	Gray-brown, lean CLAY with sand, mps < 1 mm, moist.					20	80	N	L	M	M
					749.5	SC	Tan, clayey SAND, mps < 1 mm, moist.					80	20	N	L	N	
	ND	S-3 46	8.0 12.0			SC											
10					746.5	SM	Gray-brown, silty SAND, mps < 1 mm, wet. Water present at 10.0 feet. GW sample S-3 4170D collected at approximately 10.0 feet.					80	20				
	ND	S-4 46	12.0 16.0			SM											
					742.5	CL	Gray-brown, lean CLAY, some fine gravel, mps: 19 mm, moist.		5				95	N	M	H	H
15	ND	S-5 46	16.0 20.0			CL											
						CL	Same except more sand.										
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples GW 1-3

Boring No. GP-4170

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4170
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	ND	S-6 10	20.0 24.0		ML	Gray-brown SILT, some sand, mps < 1 mm, wet. GW sample S-6 4170E collected at approximately 20.0 feet.					5	95	R	L	N	N
	ND	S-7 24	24.0 28.0		ML											
25				728.5												
	ND	S-8 44	28.0 32.0	728.0	CL	Gray-brown, lean CLAY, some silt, moist.						100	S	L	L	L
					SW	Gray-brown, well-graded SAND, some gravel, interbedded silt pockets, mps: 19 mm, wet.		10	60	10	15	5				
30				725.5												
					ML	Gray-brown SILT with sand, mps < 1 mm, moist.				10	10	80	N	M	N	L
				724.5		-Bottom of Exploration at 32.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4201

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 18, 2004
Finish March 18, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 52	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		0.2				0.7	CL	Stiff, yellow-brown, lean CLAY, mps = 2 mm, no odor, moist.				10	10	80				
						2.0	CL	Stiff, gray, lean CLAY (CL), mps = 1 mm, no odor, moist.					5	95				
		0.4				3.0	CL	Stiff, light brown, lean CLAY (CL), mps = 2 mm, no odor, moist.					5	95				
5			G2 58	5.0 10.0														
		0.5																
		0.6				9.0	SM	Medium dense, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, moist. NOTE: Wet at 10 ft.					85	15				
10			G3 60	10.0 15.0														
		0.6				11.5	ML	Soft, yellow-brown, SILT with sand (ML), mps = 0.5 mm, no odor, wet.					20	80				
		0.3				13.5	CL	Stiff, red-gray, lean CLAY (CL), mps = 0.5 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/18/04		pH	= 6		10.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4201

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4202

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 18, 2004
Finish March 18, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 38	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		ND				0.7	CL	Stiff, yellow-brown, lean CLAY, mps = 1 mm, no odor, moist.				10	10	80				
						2.0	CL	Stiff, gray, lean CLAY, mps = 1 mm, no odor, moist.					5	95				
		0.2				3.0	CL	Stiff, light brown, lean CLAY, mps = 1.5 cm, no odor, moist. Red-gray mottling.					5	95				
5			G2 60	5.0 10.0														
		0.2																
		0.2																
						9.5	SM	Medium dense, yellow-brown, silty SAND (SM), no odor, moist. Wet at 10 ft.					85	15				
10			G3 60	10.0 15.0														
		0.3																
						12.5	CL	Stiff, red-gray, lean CLAY (CL), mps = 0.5 mm, no odor, moist.					5	95				
		0.3																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/18/04		pH = 6			10.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4202

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4203

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 18, 2004
Finish March 18, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 38	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		0.6				1.0	SP	Loose, light brown, poorly-graded, SAND (SP), mps = 3 mm, no odor, dry.				5	95					
		0.8				4.0	CL	Medium stiff, brown, lean CLAY (CL), mps = 2 mm, no odor, moist.				10	10	80				
5			G2 57	5.0 10.0		5.5	CL	Large concrete fragments at 5 ft. Stiff, light brown, lean CLAY (CL), mps = 3 mm, no odor, moist.										
		0.9																
		2.1																
10			G3 60	10.0 15.0		9.5	SM	Soft, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, wet. Wet at 9.5 ft.					85	15				
		1.0																
						12.0	ML	Soft, red-gray SILT (ML), mps = 1 mm, no odor, wet.					10	90				
		1.4				13.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 0.5 mm, no odor, moist. Dry seam at 14.5 ft.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/18/04		pH = 6			9.5

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	15.0
Rock Cored (lin. ft.)	-
Samples	3G

Boring No. GP-4203

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4204

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 19, 2004
Finish March 19, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 42	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		1.8				0.5	SP	Medium dense, yellow-brown, poorly-graded SAND (SP), mps = 2 mm, no odor, moist.				10	85	5				
		13.4				4.0	SW	Dense, red-brown, well-graded SAND with gravel (SW), mps = 2.7 cm, no odor, moist.	5	15	20	40	15	5				
5			G2 56	5.0 10.0		5.0	CL	Stiff, light brown, lean CLAY (CL), mps = 1 cm, no odor, moist.			5	5	5	85				
		1.5																
		1.1				9.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 2 mm, no odor, wet.					85	15				
10			G3 58	10.0 15.0		11.0	SM	Loose, red-gray, silty SAND (SM), mps = 0.5 mm, no odor, wet.					60	40				
		0.8				12.0	MH	Soft, clayey elastic SILT (MH), mps = 0.5 mm, no odor, wet.					10	90				
		1.1				13.0	CL	Medium stiff, red-gray, lean CLAY (CL), mps = 0.5 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/19/04					9.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4204

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4205

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 19, 2004
Finish March 19, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1	0.0	NO WELL INSTALLED			-CONCRETE-										
		8.6	52	5.0		0.5	CL	Stiff, dark brown, lean CLAY (CL), mps = 1 cm, petrochemical type odor, moist.					15	85				
		1.4				2.5	CL	Becoming light brown at 2.5 ft.										
5		1.0	G2 55	5.0 10.0		5.0												
		0.7				7.0												
10			G3	10.0 15.0		9.5	SM	Loose, light brown, silty SAND (SM), mps = 1 mm, no odor, moist. NOTE: Water at 10 ft.					85	15				
		0.6				11.0	ML	Loose, red-gray SILT (ML), mps = 1 mm, no odor, wet.					5	95				
		1.4				13.5	CL	Medium stiff, red-gray, lean CLAY (CL), mps = 0.5 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/19/04		pH = 6			10.0

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 15.0
- Rock Cored (lin. ft.) -
- Samples 3G

Boring No. GP-4205

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4206

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 19, 2004
Finish March 19, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1	0.0	NO WELL INSTALLED			-CONCRETE-										
		ND	48	5.0		0.5	SP	Loose, brown, poorly-graded SAND with cinders and debris (SP), mps = 1.5 cm, no odor, moist.			15	10	75					
						1.5	SP	Loose, yellow-brown, poorly-graded SAND (SP), mps = 0.5 cm, no odor, moist.				70	20	10				
						2.5	CL	NOTE: Some clay rich deposits. Stiff, red-gray, lean CLAY (CL), mps = 5 mm, no odor, moist. Brick fragments at 3 ft.					5	95				
		1.0						Becoming yellow-brown with gray-brown mottling and mps = 1 cm at 4 ft.										
5			G2	5.0														
			57	10.0														
		0.1																
		0.1				9.0	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, moist. NOTE: Wet at 9.5 ft.					85	15				
10			G3	10.0														
				15.0														
		3.0				11.0	ML	Stiff, red-gray SILT (ML), mps = 0.5 mm, no odor, wet.					10	90				
						13.0	CL	Medium stiff, red-gray, lean CLAY (CL), mps = 0.5 mm, no odor, moist.					5	95				
		0.1																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/19/04					9.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4206

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4207

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 19, 2004
Finish March 19, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 46	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		0.5				0.5	SP	Loose, dark brown, poorly-graded SAND (SP), mps = 2 cm, no odor, moist. Slag fragments.			5	10	85					
						1.5	SP	Loose, yellow-brown, poorly-graded SAND (SP), mps = 3 mm, no odor, moist. Some clay rich pockets.				70	20	10				
		0.6				3.5	CL	Stiff, light brown, lean CLAY (CL), mps = 1.5 cm, no odor, moist.					5	95				
5			G2 58	5.0 10.0														
		0.6																
		0.6				9.0	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, moist. Wet at 9.5 ft.					85	15				
10			G3 56	10.0 15.0														
		0.6				11.5	ML	Soft, red-gray SILT (ML), mps = 0.5 mm, no odor, wet.					5	95				
						13.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 0.5 mm, no odor, moist.										
		0.6																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 15.0
- Rock Cored (lin. ft.) -
- Samples 3G

Boring No. GP-4207

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4208

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 18, 2004
Finish March 18, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 43	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
						1.0	SP	Loose, brown black, poorly-graded SAND (SP), mps = 0.75 cm, no odor, dry.		10			90					
		0.6				1.5	SP	Loose, yellow-brown, poorly-graded SAND (SP), mps = 3 mm, no odor, moist.										
		0.5				3.0	CL	Medium stiff, brown, lean CLAY (CL), mps = 1 mm, no odor, moist.					5	95				
5			G2 60	5.0 10.0				Seam of dark brown fine to coarse grained sand at 6 feet.										
		0.7																
		0.5				9.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 0.5 mm, no odor. Wet at 10 ft.					85	15				
10			G3	10.0 15.0														
		0.5				12.5	ML	Soft, red-gray SILT (ML), mps = 0.5 mm, no odor, wet.					5	95				
						13.0	CL	Medium stiff, red-gray, lean CLAY (CL), mps = 0.5 mm, no odor, moist.					5	95				
		0.5																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/18/04		pH = 5			10.0

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	15.0
Rock Cored (lin. ft.)	-
Samples	3G

Boring No. GP-4208

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4211

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 29, 2004
Finish March 29, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 50	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		0.5				0.7	CL	Stiff, light brown, lean CLAY, mps: 2 mm, no odor, moist.					15	85				
						2.0	CL	Becoming dark brown at 2 ft.					15	85				
		0.5				2.5	CL	Becoming yellow brown with red gray mottling at 2.5 ft.					5	95				
5		0.4	G-2 57	5.0 10.0														
		0.1																
		0.2				9.5	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet at 9.5 ft.					85	15				
10			G-3	10.0 15.0														
		ND				11.0	MH	Soft, red gray, plastic SILT, mps: 0.5 mm, no odor, wet.					5	95				
		ND				13.0	CL	Medium stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
15		ND				15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/29/04				15.0	9.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4211

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4212

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 2, 2004
Finish April 2, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 42	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		0.7				0.7	SP	Medium dense, light brown, poorly graded SAND, mps: 1.5 mm, no odor, moist.				10	85	15				
						1.5	CL	Stiff, olive brown, lean CLAY, mps: 3 mm, no odor, moist.					5	95				
		ND						4.5 ft.: Black staining.										
5		ND	G-2 58	5.0 10.0														
		ND						7 ft.: End of black staining, becoming yellow brown.										
		ND				9.0	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
10			G-3 60	10.0 15.0														
		ND				11.5	MH	Medium soft, red gray, SILT, mps: 0.5 mm, no odor, wet.					5	95				
		0.1				12.5	CL	Stiff, red gray, leam CLAY, mps: 0.5 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/02/04				15.0	9.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4212

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4213

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 5, 2004
Finish April 5, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 30	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		ND				0.9	SP	Medium dense, dark brown, poorly graded SAND, mps: 3 mm, no odor, moist.				15	80	5				
		0.1				4.0	CL	Stiff, olive brown, lean CLAY, mps: 2 mm, no odor, moist.					10	90				
5		0.5	G-2 54	5.0 10.0				6 ft.: Slight petrochemical odor.										
		ND						8 ft.: Becoming yellow brown.										
		0.4				9.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, moist.					85	15				
10			G-3	10.0 15.0				10.5 ft.: Wet.										
		ND				11.0	MH	Soft, red gray, elastic SILT, mps: 0.5 mm, no odor, wet.					5	95				
		ND				12.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
15		ND				15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/05/04				15.0	10.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4213

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4214

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 30, 2004
Finish March 30, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 52	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		12.0				0.5	SP	Medium dense, yellow brown, poorly graded SAND, mps: 2 mm, no odor, moist. Some black staining.			5	35	60					
						2.0	CL	Medium stiff, light brown, lean CLAY, mps: 1.5 cm, no odor, moist.				10	90					
		2.6				3.0	CL	Some slag, some broken pieces of spark plugs, piece of wood at 3 ft. Stiff, dark brown, lean CLAY, mps: 0.5 mm, no odor, moist. 4 ft.: Becoming olive brown with red gray mottling.				5	95					
5		2.0	G-2 60	5.0 10.0														
		0.2																
		0.3				9.0	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.				85	15					
10			G-3 56	10.0 15.0														
		2.4				11.0	MH	Soft, red gray, elastic SILT, mps: 0.5 mm, no odor, wet.				5	95					
						12.0	CL	Soft, red gray SILT, mps: 0.5 mm, no odor, wet.				5	95					
						13.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.				5	95					
15		0.3				15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/30/04				15.0	9.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4214

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4215

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 5, 2004
Finish April 5, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 48	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		0.1				1.0	SP	Medium dense, dark brown, poorly graded SAND, mps: 3 mm, no odor, moist.				15	80	5				
		0.4																
						4.0	CL	Stiff, olive brown, lean CLAY, mps: 2 mm, slight petrochemical odor, moist.					10	90				
5		0.2	G-2 52	5.0 10.0														
		0.2						8 ft.: Becoming yellow brown.										
		0.2				9.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
10		0.1	G-3 60	10.0 15.0														
						11.5	SM	Medium stiff, red gray, silty SAND, mps: 1 mm, no odor, wet,					80	20				
		0.2				13.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
15		0.5				15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/05/04				15.0	9.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4215

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4216

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 5, 2004
Finish April 5, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 48	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		1.0				1.0	SP	Medium dense, dark brown, poorly graded SAND, mps: 2 cm, slag present, no odor, moist.				15	80	5				
		2.2				3.5	CL	Medium dense, yellow brown, silty SAND, mps: 3 cm, no odor, moist. 4 ft.: Petrochem odor.					10	90				
5		24.6	G-2 60	5.0 10.0														
		39.4																
		2.1				8.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, slight petrochem odor, moist. 9.5 ft.: Wet.					85	15				
10		0.3	G-3 60	10.0 15.0														
		0.2				12.5	MH	Soft, red gray, elastic SILT with sand, mps: 0.75 mm, no odor, wet.					20	80				
						13.5	CL	Stiff, red gray, lean CLAY with silt, mps: 0.5 mm, no odor, moist.					5	95				
		0.3				14.0	SP-SM	Medium dense, red gray, poorly graded SAND with silt, mps: 0.5 mm, no odor, moist.					90	10				
15							CL	Stiff, red gray, silty lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
						14.5		-Bottom of Exploration at 15.0 feet.-										
						15.0												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
4/5				15.0	9.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4216

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4217

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 6, 2004
Finish April 6, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0			G-1 50	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		0.1				0.9	SP-SC	Medium dense, light brown, poorly graded SAND with clay, mps: 2 mm, no odor, moist.					90	10				
						1.5	CL	Stiff, olive brown, lean CLAY, mps: 1 mm, no odor, moist.					15	85				
		0.2						3-4 ft.: Dark brown staining.										
5		ND	G-2 60	5.0 10.0				6 ft.: Becoming yellow brown with red gray mottling.										
		0.1																
		0.1				9.5	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, moist. 10 ft.: Wet.					85	15				
10		0.1	G-3 60	10.0 15.0		11.5	ML	Medium stiff, red gray, clayey SILT, mps: 0.5 mm, no odor, moist.					5	95				
						12.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
		0.1																
15		0.1				15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/06/04				15.0	10.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4217

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4218

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 6, 2004
Finish April 6, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 52	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		0.1				0.6	SP-SC	Medium dense, yellow brown, poorly graded SAND with clay, mps: 1 mm, some black staining, no odor, moist.					90	10				
						1.5	CL	Stiff, yellow brown, lean CLAY, mps: 2.5 cm, no odor, moist.					15	85				
		0.2						3-3.5 ft.: Black staining.										
5		ND	G-2 60	5.0 10.0														
		0.1						7 ft.: Becoming yellow brown.										
		0.2				9.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, moist.					85	15				
10			G-3	10.0 15.0				10 ft.: Wet.										
		0.2				11.5	CL	Medium stiff, red gray, silty CLAY, mps: 0.5 mm, no odor, wet.					5	95				
		0.2				12.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
15		0.2				15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/06/04				15.0	10.0

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	15.0
Rock Cored (lin. ft.)	-
Samples	3G
Boring No.	**GP-4218**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4219

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 6, 2004
Finish April 6, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 48	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		0.3				0.6	SP	Medium dense, yelow brown, poorly graded SAND, mps: 1 mm, no odor, moist.					95	5				
						1.5	CL	Slag and fine gravel at 1.5 ft. Stiff, yellow brown, lean CLAY with some red gray mottling, mps: 5 mm, no odor, moist.					15	85				
		0.3																
5		0.2	G-2 57	5.0 10.0		5.5	SP-SC	Medium dense, yellow brown, poorly graded SAND with clay, mps: 1.5 mm, no odor, moist.				5	85	10				
						6.0	CL	Stiff, yellow brown, lean CLAY, mps: 1 mm, no odor, moist.										
		0.4																
		0.3										5	15	85				
						9.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
10			G-3 60	10.0 15.0														
		0.2																
						12.0	MH	Medium stiff, red gray, elastic SILT, mps: 0.5 mm, no odor, wet.					5	95				
						12.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
		0.3																
		0.4																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/06/04				15.0	9.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4219

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4220

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 6, 2004
Finish April 6, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 40	0.0 5.0	NO WELL INSTALLED			CONCRETE										
		0.2				0.6	SP-SC	Dense, yellow brown, poorly graded SAND with clay, mps: 1 mm, no odor, moist.					90	10				
		0.3																
						4.0	CL	Stiff, yellow brown, lean CLAY, mps: 3 mm, no odor, moist.					10	90				
							GW	Loose, tan, well graded GRAVEL, mps: 3 cm, no odor, dry.	30	25	20	10	10	5				
5		0.5	G-2 60	5.0 10.0		4.5		-CONCRETE FILL-										
						5.5	CL	Stiff, yellow brown, lean CLAY, mps: 8 mm, no odor, moist.					15	85				
		0.4																
		0.4																
10			G-3 60	10.0 15.0		10.0	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
						12.5	MH	Soft, red gray, elastic SILT, mps: 0.5 mm, no odor, wet.					15	85				
		0.4				13.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
		0.4																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/06/04				15.0	10.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4220

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4221

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 14, 2004
Finish April 14, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 42	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		ND				0.6	SP	Medium dense, dark brown, poorly graded SAND, mps: 1 mm, no odor, moist.				60	35	5				
5		0.2 ND	G-2 60	5.0 10.0		5.5	CL	Stiff, olive brown, lean CLAY, mps: 4 mm, no odor, moist.					10	90				
		ND						Becoming yellow brown at 7.5 ft.										
10		ND	G-3 60	10.0 15.0		10.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, moist. Wet at 10.5 ft.					85	15				
		ND				12.5	ML	Medium stiff, red gray SILT, mps: 0.5 mm, no odor, wet.					5	95				
		ND				14.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/14/04				15.0	10.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4221

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4222

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 14, 2004
Finish April 14, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 30	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		0.2				1.0		Medium dense, brown, poorly graded SAND with some brick fragments, mps: 3.0 cm, no odor, moist.				60	35	5				
						3.5		-CONCRETE-										
						4.1		-FILL-										
5		0.3	G-2 38	5.0 10.0		5.0	SW	Medium dense, gray brown, well graded SAND, mps: 3.2 cm, no odor, moist.		5	10	50	30	5				
		0.2				8.0	CL	Medium stiff, gray, lean CLAY, mps: 1 mm, no odor, moist.					10	90				
		0.3						Becoming yellow brown at 9 ft.										
10		ND	G-3 60	10.0 15.0		10.0	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
		ND				12.0	ML	Medium stiff, red gray SILT, mps: 0.5 mm, no odor, wet.					5	95				
						13.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
		0.2																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/14/04				15.0	10.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4222

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

USCS_TB3 USCSLIB3.GLB USCSTBC3.GDT G:\49017\GINT5\LOGS_COMPLETE\LOGS.GPJ Apr 28, 04

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4223

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 14, 2004
Finish April 14, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 54	0.0 5.0	NO WELL INSTALLED			CONCRETE-										
						0.5	SP	Medium dense, dark brown, poorly graded SAND, mps: 1 mm, no odor, moist.				60	35	5				
		0.3				1.0	CL	Stiff, gray brown, lean CLAY, mps: 3 cm, no odor, moist.					10	90				
								NOTE: Petrochemical odor in head space.										
		96.7						Becoming light brown at 3.5 ft.										
5		12.6	G-2 60	5.0 10.0														
		366																
		950						Petroleum odor at 9 ft.										
10			G-3	10.0 15.0		9.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, moist.					85	15				
		3.1																
						12.0	ML	Medium stiff, red gray SILT, mps: 0.5 mm, no odor, moist.					5	95				
		2.6				13.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
		2.0																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/14/04				15.0	10.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4223

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4231

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Strearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 17, 2004
Finish March 17, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1	0.0	NO WELL INSTALLED			-ASPHALT-										
		1.1	52	5.0		0.5	SP	Loose, dark brown, poorly-graded SAND (SP), mps = 1.5 cm, no odor, moist.			25	50	15	10				
						1.5	CL	NOTE: Stained railroad fill, seam of red brick at 1.5 ft. Stiff, yellow, lean CLAY (CL), mps = 1 cm, no odor, wet.					5	95				
		1.1						Becoming yellow-brown at 4 ft.										
5			G2	5.0														
			56	10.0														
		0.7																
		0.7				8.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor. Wet at 8.5 ft.					85	15				
10			G3	10.0														
			60	15.0														
		0.8																
		1.1																
						14.0	CL-ML	Stiff, red-gray, lean CLAY (CL-ML), mps = 1 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
05/17/04					9.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4231

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4232

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 17, 2004
Finish March 17, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 50	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		0.8				0.7	SW	Loose, gray-brown, well-graded SAND (SW), mps = 2 cm, no odor, moist.	5	10	15	35	30	5				
						1.2	CL	-CONCRETE- Stiff, yellow-brown, lean CLAY (CL), mps = 1 cm, no odor, wet.					5	95				
		0.9																
						4.0	SM	Loose, yellow-brown, silty SAND (SM), no odor wet at 4 ft.					85	15				
5			G2 60	5.0 10.0														
		1.3																
		1.7				8.5	ML	Loose, red-gray SILT (ML) with sand, mps = 1 mm, no odor, wet.					15	85				
						9.0	CL	Medium stiff, red gray, lean CLAY with silt and sand (CL), mps = 1 mm, no odor, moist.					15	85				
10			G3 36	10.0 15.0														
						11.5	CL	Stiff, red-gray, lean CLAY (CL), mps = 1 mm, no odor, moist.					5	95				
						13.0		-Bottom of Exploration at 13.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/17/04					4.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4232

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4233

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 15, 2004
Finish March 15, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	S	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G1	0.0	NO WELL INSTALLED			-CONCRETE-										
		ND	24	5.0		0.6	SP	Loose, yellow-brown, poorly-graded SAND (SP), mps = 0.75 cm, no odor, moist.			5	10	85					
								Concrete at 4.0 ft.										
						4.0		-Bottom of Exploration at 4.0 feet.-										
5																		
10																		
15																		

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	15.0
Rock Cored (lin. ft.)	-
Samples	1G
Boring No.	**GP-4233**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4234

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start March 16, 2004
Finish March 16, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 50	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		0.3				0.5	SC	Loose, brown, clayey SAND (SC), mps = 1 cm, no odor, moist.			10	20	30	40				
		0.3				1.5	CL	Stiff, red-gray, CLAY (CL), mps = 1 mm, no odor, moist. Seam of dark brown, ash-like material and concrete pieces at 2 ft. Becoming yellow-brown at 3 ft.					5	95				
		0.3																
5			G2 60	5.0 10.0				Containing red-gray and dark brown mottling at 5 ft.										
		0.5																
		0.3				7.0	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor. Wet at 7 ft.					85	15				
		0.5																
10			G3	10.0 15.0														
		0.8				11.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 1 cm, no odor, moist.					5	95				
		0.6																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/16/04					11.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4234

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4235

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 15, 2004
Finish March 15, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 57	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
						0.5	SP	Medium dense, brown, poorly-graded SAND (SP), mps = 2.5 mm, no odor, moist.			5	10	85					
		ND				1.5	CL	Stiff, red-brown, lean CLAY (CL), mps = 5 mm, no odor, moist.					5	95				
								Becoming light brown at 4 ft.										
5			G2 54	5.0 10.0														
		ND				7.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor. Wet at 7.5 ft.					85	15				
10			G3 60	10.0 15.0														
						12.5	CL	Stiff, red-gray, lean CLAY (CL), mps = 5 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/15/04					7.5

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	15.0
Rock Cored (lin. ft.)	-
Samples	3G

Boring No. GP-4235

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4236

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 15, 2004
Finish March 15, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 45	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		ND				0.6	CL	Stiff, red-gray, lean CLAY (CL), mps = 3 mm, no odor, moist.					5	95				
		ND				1.5	CL	Stiff, yellow with brown, lean CLAY (CL), mps = 2 mm, no odor, moist. Fragments of coal at 4 ft.					5	95				
5			G2 60	5.0 10.0														
		ND				7.0	SP	Medium dense, yellow-brown, poorly-graded SAND (SP), mps = 1 mm, no odor, moist. Fine sand.					90	10				
		ND				8.0	SP	Loose, light brown, poorly-graded SAND (SP), mps = 1 mm, no odor. Wet at 8 ft.				5	85	10				
10		8.5	G3 60	10.0 15.0														
						11.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 1 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/15/04					8.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4236

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4237

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 18, 2004
Finish March 18, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 46	0.0 5.0	NO WELL INSTALLED		OL-OH	Stiff, dark brown, sandy ORGANIC SOIL (OL-OH), mps = 1 mm, no odor, moist.				5	25	70				
		ND				1.0	CL	Stiff, yellow-brown, sandy lean CLAY (CL), mps = 3 mm, no odor, moist.				5	30	65				
						2.0	CL	Stiff, yellow-brown, sandy lean CLAY (CL), mps = 1 cm, no odor, moist.				5	40	55				
		ND				3.0	SM	Loose, yellow-brown, silty SAND (SM), mps = 1.5 cm, no odor, moist.					85	15				
5			G2 48	5.0 10.0														
		0.1																
						7.0	SP	Medium dense, yellow-brown, poorly-graded SAND (SP), mps = 2 mm, no odor, moist.			5	70	15	10				
						7.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, moist. Wet at 8.5 ft					85	15				
		0.1																
10			G3 54	10.0 15.0														
						11.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 3 mm, no odor, moist.					5	95				
		0.6																
		0.6																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/18/04					8.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4237

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4239

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 17, 2004
Finish March 17, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1	0.0	NO WELL INSTALLED		OL-OH	Soft, dark brown, ORGANIC SOIL, mps = 1 mm, no odor, moist.					15	85				
		0.2	54	5.0		0.5	CL	Medium stiff, brown, lean CLAY with sand (CL), mps = 1 cm, no odor, moist.				10	10	80				
		0.5						Orange tint at 2 ft. Black cinders and slag at 2.5 ft. Becoming dark brown at 3 ft.										
						3.5	SP	Medium dense, yellow-brown, poorly-graded SAND (SP), mps = 2 mm, no odor, moist.				10	80	10				
		0.2				4.0	CL	Stiff, yellow-brown, lean CLAY (CL), mps = 1 mm, no odor, moist.					10	90				
5			G2	5.0														
			60	10.0														
		0.2																
						7.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, moist.					85	15				
		0.3				9.0	CL	Wet at 8 ft. Stiff, yellow-brown, lean CLAY (CL), mps = 1 mm.					5	95				
10		0.2	G3	10.0				Becoming red-gray at 10 ft.										
			48	15.0														
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/17/04					8.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4239

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4240

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 16, 2004
Finish March 16, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 48	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		0.6				0.5	CL	Medium stiff, light brown, lean CLAY (CL), mps = 1 mm, no odor, moist. Seam of black slag at 2.5 feet.					15	85				
		0.9				2.5	CL	Medium stiff, brown, lean CLAY (CL), mps = 1.75 cm, no odor, moist. Seam of dark brown ash, becoming light brown.					10	90				
5		5.1	G2 60	5.0 10.0		7.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 cm, no odor, moist. Wet at 8 ft.					85	15				
10		22.4	G3 56	10.0 15.0		11.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 1 mm, no odor, moist.					5	95				
		60																
15		0.4				15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/16/04					8.0

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 15.0
- Rock Cored (lin. ft.) -
- Samples 3G

Boring No. GP-4240

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4241

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 16, 2004
Finish March 16, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 56	0.0 5.0	NO WELL INSTALLED			-CONCRETE-										
		0.7				0.5	CL	Medium stiff, red-yellow, lean CLAY (CL), mps = 1 mm, no odor, moist. Dark seam with mps = 2 cm at 2 feet.					15	85				
		1.3				2.0	CL	Stiff, olive-gray, lean CLAY (CL), mps = 4 cm, no odor, moist.					15	85				
5		ND	G2 60	5.0 10.0		5.5	CL	Becoming light brown.										
		4.3				7.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, wet. Wet at 7.5 ft. NOTE: PID reading of 12.5 ppm questionable as there is no oil sheen visible.					85	15				
		12.5																
10			G3 60	10.0 15.0		11.0	ML	Very soft, red-gray SILT (ML), mps = 1 mm, no odor, wet.					10	90				
		36.5				12.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 1 mm, no odor, moist.					5	95				
		22.3																
15						15.0		Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/16/04					7.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4241

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4242

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 16, 2004
Finish March 16, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1	0.0	NO WELL INSTALLED			-CONCRETE-										
		0.3	52	5.0		0.5	CL	Stiff, yellow-brown, lean CLAY (CL), mps = 3 mm, no odor, moist.					10	90				
		0.7				1.5	CL	Stiff, dark brown, lean CLAY and fine sand (CL), some coarse sand and roots, mps = 2 mm, no odor, moist.					15	85				
		0.4				3.5	CL	Medium stiff, gray-brown, lean CLAY (CL), mps = 2 mm, no odor, moist.					5	95				
5			G2	5.0														
		0.3	50	10.0														
		0.4				9.0	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, wet at 9 feet.					85	15				
10			G3	10.0														
		0.4	48	15.0		10.5	CL	Stiff, red-gray, lean CLAY (CL), mps = 1 mm, no odor, moist.					5	95				
		0.3																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/16/04					9.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4242

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4243

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 17, 2004
Finish March 17, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1	0.0	NO WELL INSTALLED			-CONCRETE-										
		0.4	50	5.0		0.5	SC	Medium dense, dark brown, clayey SAND with gravel (SC), mps = 3 cm, no odor, moist.	10	20	10	10	10	40				
						1.5	CL	Stiff, light brown, lean CLAY (CL), mps = 1 mm, no odor, moist.					5	95				
		0.5						Becoming gray-brown at 4 ft.										
5			G2	5.0														
			54	10.0														
		0.3						Seam of dark brown ash, cinder and slag at 6.5 ft.										
						7.5		Seam of olive brown SILT from 7.5-9 ft., moist to wet.										
		0.4				9.0	CL	Stiff, gray brown, lean CLAY (CL), becoming soft at 10.5 ft.					5	95				
10			G3	10.0														
			60	15.0														
						11.5	CL	Stiff, red-gray, lean CLAY, mps = 1 mm, no odor, moist.					5	95				
		0.3																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/17/04					7.5

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4243

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4244

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 17, 2004
Finish March 17, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1	0.0	NO WELL INSTALLED			-CONCRETE-										
		9.5	52	5.0		0.5	CL	Stiff, light brown, lean CLAY (CL), mps = 2 cm, petroleum odor, moist. Seam of dark brown ash like material at 1.5 ft.					10	90				
						1.5	CL	Stiff, brown, lean CLAY (CL), mps = 2 mm, no odor, moist.					5	95				
		2.2						Seam of dark brown, clayey SAND and slag, organic material at 4 ft.										
5			G2	5.0														
			58	10.0				Becoming light brown at 6 ft.										
		0.4																
						8.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, wet at 8.5 ft.					85	15				
		0.2																
10			G3	10.0														
			60	15.0														
		0.1																
						12.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 3 mm, no odor, moist.					5	95				
		0.1																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/17/04					8.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4244

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4245

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 16, 2004
Finish March 16, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
			G1 56	0.0 5.0		0.5	CL	Medium stiff, light brown lean CLAY (CL), mps = 1 mm, no odor, moist.					15	85				
		0.1																
						2.5	CL	Stiff, olive-gray, lean CLAY (CL), mps = 1 mm, no odor, moist. Seam of dark brown slag and ash at 3 ft. Becoming light brown at 3.5 ft.					15	85				
		0.1																
5			G2 54	5.0 10.0	NO WELL INSTALLED													
		0.2																
						7.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, wet at 7.5 ft.					85	15				
		0.5																
10			G3 48	10.0 15.0														
		0.3				11.0	ML	Very soft, red-gray, SILT (ML), mps = 1 mm, no odor, wet.					10	90				
						12.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 1 mm, moist.					5	95				
		0.2																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/16/04					7.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3G

Boring No. GP-4245

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4261

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 23, 2004
Finish March 26, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 59	0.0 5.0	NO WELL INSTALLED		OL-OH	Stiff, dark brown, ORGANIC SOIL (OL-OH), mps = 5 mm, no odor, moist.				10	5	85				
		ND				1.0	CL	Stiff, yellow-brown, lean CLAY (CL), mps = 5 mm, no odor, moist.					5	95				
		0.6																
						4.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, wet.					85	15				
5		0.9	G2 54	5.0 10.0														
		33.4				7.0	CL	Stiff, light brown, lean CLAY (CL), mps = 5 mm, no odor, moist.					10	90				
						7.5	CL	Stiff, red-gray, lean CLAY (CL), mps = 1.5 cm, no odor, moist.					5	95				
		29.7																
10			G3 36	10.0 15.0														
		38.7																
		167						Granite fragment present at 13 ft., mps = 4 cm.										
15		1.6	G4 36	15.0 18.0		15.0	MH	Loose, red-gray, elastic SILT (MH), mps = 0.5 mm, no odor, wet.					10	90				
		0.2																
						18.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/23/04					4.5, 15.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4G

Boring No. GP-4261

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4263

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 23, 2004
Finish March 23, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	S	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Direct Push
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 54	0.0 5.0	NO WELL INSTALLED		OL-OH	Stiff, dark brown, ORGANIC SOIL (OL-OH), mps = 1 mm, no odor, wet.				5	10	85				
		0.2				1.5	CL	Stiff, yellow-brown, lean CLAY (CL), mps = 2 mm, no odor, moist.					10	90				
		0.8																
5		0.5	G2 60	5.0 10.0		5.0	SM	Loose, yellow-brown, silty SAND (SM), mps = 0.5 mm, no odor, wet.					85	15				
						6.5	CL	Stiff, light brown, lean CLAY (CL), mps = 1 mm, no odor, moist.					10	90				
		15.4				7.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 3 cm, no odor, moist.			5	5	5	85				
		9999																
10			G3 60	10.0 15.0														
		214																
		549																
		380				14.0	CL	Stiff, red-gray, silty CLAY (CL), mps = 0.5 mm, no odor, moist.				5	5	90				
15		380	G4 36	15.0 18.0		15.5	MH	Loose, red-gray, elastic SILT (MH), mps = 0.5 mm, no odor, wet.					5	95				
		99																
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/23/04					5.0, 15.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4G

Boring No. GP-4263

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4264

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 22, 2004
Finish March 22, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 60	0.0 5.0	NO WELL INSTALLED		OL-OH	Stiff, dark brown, ORGANIC SOIL (OL-OH), mps = 0.5 in., no odor, moist.				5	10	85				
		0.2				1.0	CL	-TOPSOIL- Stiff, light brown, lean CLAY (CL), mps = 1.5 cm, no odor, moist. Red-gray mottling.					5	95				
		0.6																
		0.5				4.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, moist. Wet at 5.5 ft.					85	15				
5			G2 60	5.0 10.0														
		6.7				7.0	CL	Stiff, light brown, lean CLAY (CL) with red gray mottling, mps = 5 mm, no odor, moist.					10	90				
		36				8.0	CL	Stiff, red-gray, lean CLAY (CL), mps = 5 mm, no odor, moist.					5	95				
10			G3 60	10.0 15.0														
		6245																
		2094						Oil sheen present at 13.5 ft. Slight odor, mps = 1 cm.										
15			G4 36	15.0 18.0														
		61.9				16.0	MH	Soft, red-gray, elastic SILT (MH), mps = 0.5 mm, no odor, wet.					5	95				
		0.6																
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/22/04					5.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4G

Boring No. GP-4264

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4265

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 24, 2004
Finish March 24, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 58	0.0 5.0	NO WELL INSTALLED		OL/OH	Stiff, dark brown, organic SOIL, mps: 1 cm, no odor, moist.				5	10	85				
		0.4				1.5	CL	Stiff, yellow brown, lean CLAY, mps: 1 mm, no odor, moist.					10	90				
		1.2																
5		2.9	G-2 60	5.0 10.0		5.0	SM	Loose, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		1.4				7.0	CL	Stiff, red gray, lean CLAY, mps: 1 cm, no odor, moist.					10	90				
		16.8						Seam of medium, black SAND at 8.5 ft.										
10		902.6	G-3 54	10.0 15.0				Petrochemical odor, slight oil sheen at 11.5 ft.										
		65.8				14.0	MH	Medium dense, red gray, clayey, elastic SILT, mps: 1 mm, no odor, wet.					10	90				
15		79.2	G-4 36	15.0 18.0														
		0.5				18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/24/04				18.0	5.0, 14.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4G

Boring No. GP-4265

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4262

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 23, 2004
Finish March 23, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	S	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: Cutting Head
Hammer Weight (lb.)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: Direct Push
				Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G1 56	0.0 5.0	NO WELL INSTALLED		OL-OH	Stiff, dark brown, ORGANIC SOIL (OL-OH), mps = 5 mm, no odor, moist.				10	10	90				
		0.2				1.0	CL	Stiff, yellow-brown, lean CLAY (CL), mps = 5 mm, no odor, moist.					5	95				
		0.6																
5						4.5	SM	Loose, yellow-brown, silty SAND (SM), mps = 1 mm, no odor, wet.										
		0.8	G2 60	5.0 10.0														
						6.5	CL	Stiff, light brown, lean CLAY (CL), mps = 1 mm, no odor, moist.					10	90				
		49.0																
						7.5	CL	Stiff, red-gray, lean CLAY (CL), mps = 0.75 mm, no odor, wet.					10	90				
		1.0					CL	Same as above.										
10			G3 52	10.0 15.0														
		0.4																
		86.0																
15		1220	G4 36	15.0 18.0		15.0	MH	Loose, red-gray, elastic SILT (MH), mps = 0.5 mm, no odor, wet.					10	90				
		1.8																
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/23/04					4.5, 15.0

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	18.0
Rock Cored (lin. ft.)	-
Samples	4G

Boring No. GP-4262

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4266

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 24, 2004
Finish March 24, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 54	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 5 mm, no odor, moist.				5	10	85				
		0.1				1.5	CL	Stiff, yellow brown, lean CLAY, mps: 8 mm, no odor, moist.					10	90				
		0.1																
5		2.0	G-2 58	5.0 10.0														
						6.0	SM	Loose, yellow brown, silty SAND, mps: 2 mm, no odor, wet.					85	15				
		1.4				7.0	CL	Stiff, red gray, lean CLAY, mps: 1.5 cm, no odor, moist.					10	90				
		29.1																
10			G-3 60	10.0 15.0														
		112																
								Medium, gray brown SAND seam at 12.5 ft.										
		29																
						14.0	MH	Medium dense, red gray, clayey, elastic SILT, mps: 1 mm, no odor, wet.					10	90				
15		18	G-4	15.0 18.0														
		ND						NOTE: PID malfunction due to rain; no odor.										
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/24/04				18.0	6.0, 14.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4G

Boring No. GP-4266

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4267

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: March 24, 2004
Finish: March 24, 2004
Driller: R. Christensen
H&A Rep.: J. LeGolvan
Elevation 756.4
Datum Estimated
Location
N 9,954
E 7,718

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G-1 52	0.0 5.0	NO WELL INSTALLED		OL/OH	Stiff, dark brown, organic SOIL, mps: 1 cm, no odor, moist.				5	10	85				
		ND				754.9 1.5	GL	Stiff, yellow brown, lean CLAY, mps: 3 mm, no odor, moist.					10	90				
		ND				751.9 4.5	SM	Loose, yellow brown, silty SAND, mps: 2 mm, no odor, wet.					85	15				
5			G-2 60	5.0 10.0		750.4 6.0												
		ND				749.9 6.5	CL	Stiff, yellow brown, lean CLAY, mps: 1 cm, no odor, moist.					5	95				
							CL	Stiff, red gray, lean CLAY, mps: 2 cm, no odor, moist.					10	90				
								Petrochemical odor at 9.0 ft.										
10		375	G-3 54	10.0 15.0														
		27.2				743.4 13.0	MH	Soft, red gray, clayey, elastic SILT, mps: 0.5 mm, no odor, wet.					15	85				
15		0.2	G-4	15.0 18.0														
		0.5				738.4 18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/24/04				18.0	4.5, 13.0

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4G

Boring No. GP-4267

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification and percentages based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4268

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 24, 2004
Finish March 24, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 59	0.0 5.0	NO WELL INSTALLED		OL/OH	Stiff, dark brown, organic SOIL, mps: 3 mm, no odor, moist.				5	10	85				
		2.0				1.5	CL	Stiff, yellow brown, lean CLAY, mps: 1.5 cm, no odor, moist.					10	90				
		2.8				4.0	CL	Stiff, yellow brown, lean CLAY, mps: 0.75 cm, no odor, moist. Some gray mottling.					15	85				
5		4.0	G-2 60	5.0 10.0		5.5	SM	Loose, yellow brown, silty SAND, mps: 2 cm, no odor, wet.					85	15				
		10.8				7.0	CL	Stiff, yellow brown, lean CLAY, mps: 0.75 cm, no odor, moist.				5	10	85				
		419				7.5	CL	Stiff, red gray, lean CLAY, mps: 1.5 cm, no odor, moist.				5	10	85				
10			G-3 48	10.0 15.0														
		11.6																
		3.0																
15		3.0	G-4 36	15.0 18.0		14.5	MH	Soft, red gray, clayey SILT with sand, mps: 0.5 mm, no odor, wet.					15	85				
		2.6				18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/24/04				18.0	5.5, 14.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4G

Boring No. GP-4268

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4269

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 25, 2004
Finish March 25, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 48	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 1 cm, no odor, moist.				5	10	85				
						1.0	SC	Medium dense, yellow brown, clayey SAND, mps: 4 mm, no odor, moist.				15	45	40				
						2.0	CL	Medium stiff, dark brown, lean CLAY, mps: 3 mm, no odor, moist. Becoming yellow brown at 2.5 ft.				5	10	85				
5			G-2 60	5.0 10.0														
						5.5	SM	Loose, yellow brown, silty SAND, mps: 2 mm, no odor, wet.					85	15				
						6.0	CL	Stiff, yellow brown, lean CLAY, mps: 0.5 mm, no odor, moist.					10	90				
						7.0	CL	Stiff, red gray, lean CLAY, mps: 2 cm, no odor, moist.				5	10	85				
10			G-3 14	10.0 15.0				Limestone cobble blocked sleave, preventing full recovery.										
15			G-4 36	15.0 18.0		15.0	MH	Very soft, red gray, elastic SILT with sand, mps: 0.5 mm, no odor, wet.				5	20	75				
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/25/04				18.0	5.5, 15.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4G

Boring No. GP-4269

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4270

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 25, 2004
Finish March 25, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G-1 58	0.0 5.0	NO WELL INSTALLED		OL/ OH	Medium stiff, dark brown, organic SOIL, mps: 2 mm, no odor, moist.				5	10	85				
		ND				1.5	CL	Stiff, yellow brown, lean CLAY, mps: 6 mm, no odor, moist.				5	10	85				
						4.0	SM	Loose, yellow brown, silty SAND, mpsL 1 mm, no odor, wet.					85	15				
5		2.5	G-2 60	5.0 10.0														
						6.0	CL	Stiff, yellow brown, lean CLAY, mps: 7 mm, no odor, moist.					15	85				
		79.2				7.0	CL	Stiff, red gray, lean CLAY, mps: 2 cm, no odor, moist.					10	90				
		0.1																
10			G-3 60	10.0 15.0														
		0.2																
		ND				14.0	MH	Soft, red gray, clayey, elastic SILT, no odor, wet.					15	85				
15			G-4 36	15.0 18.0				Similar to above except less clay.										
		0.1																
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/25/04				18.0	4.0, 14.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4270

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4271

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 25, 2004
Finish March 25, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G-1 56	0.0 5.0	NO WELL INSTALLED		OL/OH	Stiff, red gray, organic SOIL, mps: 2 mm, no odor, moist.				5	10	85				
		0.8				1.5	CL	Stiff, yellow brown, lean CLAY, mps: 1 mm, no odor, moist.					10	90				
5		0.8	G-2 60	5.0 10.0		4.5	SM	Loose, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		27.7				7.0	CL	Stiff, red gray, lean CLAY, mps: 2 cm, no odor, moist.				5	10	85				
		136																
10		51.5	G-3 57	10.0 15.0														
		0.5				14.0	ML	Medium stiff, red gray, clayey SILT, mps: 1 mm, no odor, moist.					10	90				
15		0.2	G-4 36	15.0 18.0		15.5	MH	Loose, red gray, elastic SILT, mps: 0.5 mm, no odor, wet.					10	90				
		0.2				18.0		-Bottom of Exploration at 18.0 feet.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/25/04				18.0	4.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4271

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4272

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 25, 2004
Finish March 25, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 56	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium, dark brown, organic SOIL, mps: 1 mm, no odor, moist.					10	90	S	L		
		1.5				1.0	CL	Medium stiff, light brown, lean CLAY, mps: 5 mm, no odor, moist.				5	15	80				
						2.0	CL	Stiff, yellow brown, lean CLAY, mps: 0.5 mm, no odor, moist.					10	90				
		1.6						4.5 ft.: Gray mottling.										
5		3.2	G-2 60	5.0 10.0		5.5	SM	Loose, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
		27.5				7.0	CL	Stiff, light brown, lean CLAY, mps: 1 mm, no odor, moist.					10	90				
		999.9				7.5	CL	Stiff, red gray, lean CLAY, mps: 1 cm, no odor, moist.				5	10	85				
10		154	G-3 60	10.0 15.0		10.0	SP	Loose, yellow brown, poorly graded SAND, mps: 1 mm, petrochemical odor, moist.				10	90					
		999.9				12.0	CL	Stiff, red gray, lean CLAY, mps: 1.5 cm, petrochemical odor, moist.				5	10	85				
15		999.9	G-4 36	15.0 18.0		15.5	MH	Soft, red gray, elastic SILT, mps: 0.5 mm, no odor, wet.					10	90				
		20.2				18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/25/04				18.0	5.5, 15.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4272

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4273

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 26, 2004
Finish March 26, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 30	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 2 mm, no odor, moist.				5	10	85				
		0.2				1.0	SP	Medium dense, yellow brown, poorly graded SAND, mps: 1 cm, no odor, moist.				10	75	15				
		0.4																
5		0.5	G-2 54	5.0 10.0				5.5 ft.: Wet.										
		0.2				7.0	CL	Stiff, red gray, lean CLAY, mps: 7 mm, no odor, moist.				5	10	85				
		0.3																
10		ND	G-3 60	10.0 15.0														
		0.2																
						14.0	ML	Soft, red gray, elastic SILT, mps: 4 cm, no odor, moist.					10	90				
15		ND	G-4 36	15.0 18.0														
						16.0	MH	Soft, red gray, elastic SILT, mps: 1 mm, no odor, wet.					10	90				
		ND																
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/26/04				18.0	5.5, 16.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4273

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4274

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 26, 2004
Finish March 26, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0		ND	G-1 54	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 3 mm, no odor, moist.				5	10	85				
		ND				1.5	CL	Stiff, yellow brown, lean CLAY, mps: 2 mm, no odor, moist.				10	10	80				
5			G-2 60	5.0 10.0				5 ft.: Wet.										
		5.3				5.5	SM	Loose, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		168				7.5	CL	Stiff, red gray, lean CLAY, mps: 1 mm, no odor, moist.					10	90				
10		8.9	G-3 36	10.0 15.0														
		4.9																
		ND				14.5	ML	Soft, red gray, clayey SILT, mps: 1 mm, no odor, moist.					10	90				
15		ND	G-4	15.0 18.0		15.5		Becoming soft, red gray, clayey SILT, mps: 1 mm, no odor, wet at 15.5 ft.					10	90				
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/26/04				18.0	5.0, 15.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4274

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4275

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 31, 2004
Finish March 31, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0			G-1 54	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 2 cm, no odor, moist.				5	10	85				
		0.3																
		0.2				1.5	CL	Medium stiff, yellow brown, lean CLAY, mps: 1 mm, no odor, moist.					10	90				
5		0.3	G-2 60	5.0 10.0		5.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		0.8																
		127				7.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
10			G-3 60	10.0 15.0														
		0.4																
		0.3																
						14.0	ML	Medium stiff, red gray, clayey SILT, mps: 0.5 mm, no odor, moist.					5	95				
15		0.3	G-4	15.0 18.0		15.5	MH	Medium stiff, red gray, elastic SILT, mps: 0.5 mm, no odor, wet.					5	95				
		0.3																
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/31/04				18.0	5.0, 15.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4275

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4276

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 31, 2004
Finish March 31, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 54	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 2 cm, no odor, moist.				5	10	85				
		0.4				1.5	CL	Stiff, light brown, lean CLAY, mps: 2 mm, no odor, moist.					10	90				
						2.0	SP	Medium dense, yellow brown, poorly graded SAND, mps: 3 mm, no odor, moist.					75	25				
		0.4				2.5	CL	Stiff, yellow brown, lean CLAY with red gray mottling, mps: 2 mm, no odor, moist.					10	90				
5		0.4	G-2 60	5.0 10.0		5.0	SP	Medium dense, yellow brown, poorly graded SAND, mps: 2 mm, no odor, moist.					75	25				
						6.0	CL	Stiff, gray brown, lean CLAY, mps: 4 mm, no odor, moist.					10	90				
		0.5				6.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		14.3				8.5		Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					10	90				
10		0.7	G-3 48	10.0 14.0														
		0.5																
						14.0		-Bottom of Exploration at 14.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/31/04				14.0	6.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 14.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4276

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4277

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 31, 2004
Finish March 31, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 48	0.0 5.0	NO WELL INSTALLED		OL/ OH	Soft, dark brown, organic SOIL, mps: 3 mm, no odor, moist.				5	10	85				
		0.4				1.0	CL	Soft yellow brown, lean CLAY, mps: 3 mm, no odor, moist.					15	85				
		0.4																
5		0.5	G-2 36	5.0 8.0				6 ft.: Brick fragment.										
		66.4						7 ft.: Limestone cobble.										
			G-3 20	8.0 10.0		7.5	CL	Stiff, red gray, lean CLAY, mps: 2 mm, no odor, moist.					10	90				
		90.0																
10			G-4 24	10.0 12.0														
		14.2																
						12.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/31/04				12.0	

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	12.0
Rock Cored (lin. ft.)	-
Samples	4

Boring No. GP-4277

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4278

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 31, 2004
Finish March 31, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 53	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 1 cm, no odor, moist.				5	10	85				
		0.4				1.5	CL	Medium stiff, yellow brown, lean CLAY, mps: 7 mm, no odor, moist.					10	90				
		5.0																
						4.5	SM	Medium dense, yellow brown, silty SAND, mps: 2 mm, no odor, wet.					85	15				
5		0.5	G-2 36	5.0 8.0														
						6.0	CL	Stiff, yellow brown, lean CLAY, mps: 1 cm, no odor, moist.					10	90				
		110				7.0	CL	Stiff, red gray, lean CLAY, mps: 3 cm, no odor moist.					10	90				
			G-3 21	8.0 10.0														
		18.7						9.5 ft.: Becoming siltier.										
10						10.0		-Bottom of Exploration at 10.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/31/04				10.0	4.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 10.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4278

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4279

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 31, 2004
Finish March 31, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 48	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.				5	10	85				
		0.5				1.0	CL	Medium stiff, light brown, lean CLAY, mps: 2 cm, no odor, moist.					10	90				
		0.5																
5		0.5	G-2 36	5.0 8.0														
						6.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		0.4				7.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.										
			G-3 20	8.0 10.0														
		0.5																
10						10.0		-Bottom of Exploration at 10.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/31/04				10.0	6.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 10.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4279

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4280

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 1, 2004
Finish April 1, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G-1 48	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 2 mm, no odor, moist.				5	10	85				
		0.2				1.0	CL	Stiff, yellow brown, lean CLAY, mps: 1 cm, no odor, moist.										
5		ND				4.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		0.1	G-2 36	5.0 8.0		5.5	CL	Stiff, yellow brown, lean CLAY, mps: 1.5 cm, no odor, moist.			5	5	10	80				
		ND	G-3	8.0 10.0		8.0	CL	Stiff, red gray, lean CLAY, mps: 2 mm, no odor, moist.			5	5	5	85				
10						10.0		-Bottom of Exploration at 10.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/01/04				10.0	4.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 10.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4280

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4281

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 1, 2004
Finish April 1, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G-1 54	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 2 mm, no odor, moist.				5	10	85				
		0.1				1.5	CL	Stiff, yellow brown, lean CLAY with red gray mottling, mps: 2.5 cm, no odor, moist.					10	90				
5		0.1	G-2 60	5.0 10.0		5.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		463				6.5	CL	Stiff, red gray, lean CLAY, mps: 1.5 cm, no odor, moist.					5	95				
		195.6																
10			G-3 60	10.0 15.0														
		9949																
		3080																
15			G-4 12	15.0 16.0		14.5	MH	Soft, red gray, elastic SILT, mps: 0.5 mm, no odor, wet.					5	95				
						16.0		-Bottom of Exploration at 16.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/01/04				16.0	5.0, 14.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4281

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4282

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 1, 2004
Finish April 1, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 54	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 2 mm, no odor, moist.				5	10	85				
		0.2				1.5	CL	Stiff, yellow brown, lean CLAY, some red gray mottling, mps: 1.5 cm, no odor, moist.					10	90				
		7.0																
5		1.5	G-2 36	5.0 8.0		5.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		2.2				7.5	CL	Stiff, red gray, lean CLAY, mps: 1 mm, no odor, moist.					10	90				
		26.8	G-3 24	8.0 10.0														
10						10.0		-Bottom of Exploration at 10.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/01/04				10.0	5.5

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram	
	Riser Pipe
	Screen
	Filter Sand
	Cuttings
	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	10.0
Rock Cored (lin. ft.)	-
Samples	3

Boring No. GP-4282

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4283

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 1, 2004
Finish April 1, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 57	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 2 mm, no odor, moist.				5	10	85				
		0.2				1.0	CL	Medium stiff, yellow brown, lean CLAY, mps: 1.5 cm, no odor, moist.					10	90				
		0.8																
5		1.5	G-2 36	5.0 8.0		5.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		0.4																
			G-3 24	8.0 10.0		8.0	CL	Stiff, red gray, lean CLAY, mps: 1 cm, no odor, moist.					10	90				
		0.6																
10						10.0		-Bottom of Exploration at 10.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/01/04				10.0	5.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 10.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4283

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4284

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 1, 2004
Finish April 1, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 53	0.0 5.0	NO WELL INSTALLED		OL/OH	Loose, brown, sandy organic SOIL, mps: 1 mm, no odor, moist.				5	50	45				
		4.0				1.5	CL	Medium stiff, yellow brown, lean CLAY, mps: 1 cm, no odor, moist.					10	90				
		0.5																
5		ND ND	G-2 36	5.0 8.0		5.5	CL	Soft, yellow brown, sandy lean CLAY, mps: 1 mm, no odor, wet.					30	70				
		ND				6.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		41.0	G-3 24	8.0 10.0		8.0	CL	Stiff, red gray, lean CLAY, mps: 2 mm, no odor, moist.					10	90				
10		13.0	G-4 24	10.0 12.0														
						12.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/01/04				12.0	5.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4284

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4285

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 1, 2004
Finish April 1, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 56	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.				5	10	85				
		0.3				1.5	CL	Medium stiff, yellow brown, lean CLAY, some red gray mottling, mps: 2 mm, no odor, moist.					10	90				
		1.3																
5		9.5	G-2 36	5.0 8.0		5.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
						6.5	CL	Stiff, yellow brown, lean CLAY, mps: 3 mm, no odor, moist.					10	90				
		128				7.0	CL	Stiff, red gray, lean CLAY, mps: 8 mm, no odor, moist.				5	10	85				
		449	G-3 22	8.0 10.0														
10		131	G-4 22	10.0 12.0														
		1.2	G-5 23	12.0 14.0														
						13.5	ML	Medium stiff, red gray, clayey SILT, mps: 0.5 mm, no odor, wet.					5	95				
						14.0		-Bottom of Exploration at 14.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/01/04				14.0	5.5, 13.5

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 14.0
Rock Cored (lin. ft.) -
Samples 5

Boring No. GP-4285

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4286

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 7, 2004
Finish April 7, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 60	0.0 5.0	NO WELL INSTALLED		OL/OH	Stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.					15	85				
		0.1				1.0	CL	Stiff, yellow brown, lean CLAY, some red gray mottling, mps: 1 cm, no odor, wet.					10	90				
		0.6																
						4.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
5		0.7	G-2 36	5.0 8.0														
		254				6.5	CL	Stiff, yellow brown, lean CLAY, mps; 5 mm, no odor, moist.					5	95				
		149	G-3 24	8.0 10.0		7.5	CL	Stiff, red gray, lean CLAY, mps: 1 cm, no door, moist.					10	90				
10		3708	G-4 20	10.0 12.0														
		55.2	G-5 22	12.0 14.0														
						13.8	ML	Medium stiff, red gray, clayey SILT, mps: 0.5 mm, no odor, wet.					10	90				
						14.0		-Bottom of Exploration at 14.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/07/04				14.0	4.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 14.0
Rock Cored (lin. ft.) -
Samples 5

Boring No. GP-4286

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4287

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 7, 2004
Finish April 7, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 56	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.					15	85				
		0.2				1.0	CL	Stiff, yellow brown, lean CLAY, some red gray mottling, mps: 1 cm, no odor, moist.					10	90				
		0.8																
						4.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
5		0.3	G-2 36	5.0 8.0														
						6.0	CL	Stiff, yellow brown, lean CLAY, mps: 2 cm, no odor, moist.					5	95				
		146				7.0	CL	Stiff, red gray, lean CLAY, mps: 1 cm, no odor, moist.					10	90				
		0.8	G-3 24	8.0 10.0														
10						10.0		-Bottom of Exploration at 10.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/07/04				10.0	4.0

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 10.0
- Rock Cored (lin. ft.) -
- Samples 3

Boring No. GP-4287

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4288

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 7, 2004
Finish April 7, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 60	0.0 5.0	NO WELL INSTALLED		OL/OH	Medium stiff, brown, organic SOIL, mps: 1 mm, no odor, moist.					15	85				
		0.3				1.0	CL	Stiff, yellow brown, lean CLAY, some red gray mottling, mps: 5 mm, no odor, moist.					10	90				
		0.9																
						4.5	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
5		0.7	G-2 36	5.0 8.0														
						6.0	CL	Stiff, yellow brown, lean CLAY, mps: 3 mm, no odor, moist.					5	95				
		1409				7.0	CL	Stiff, red gray, lean CLAY, mps: 7 mm, no odor, moist.					10	90				
			G-3 24	8.0 10.0														
		390																
10			G-4 22	10.0 12.0														
		571																
			G-5 21	12.0 14.0		12.0	MH	Medium stiff, red gray, clayey SILT, mps: 0.5 mm, no odor, wet.					5	95				
		478																
						13.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
						14.0		-Bottom of Exploration at 14.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/07/04				14.0	4.5, 12.0

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 14.0
Rock Cored (lin. ft.) -
Samples 5

Boring No. GP-4288

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. GP-4289

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 7, 2004
Finish April 7, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 58	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.					15	85				
		0.5				1.5	CL	Stiff, yellow brown, lean CLAY with some red gray mottling, mps: 2 cm, no odor, moist.					10	90				
		0.7																
5		0.4	G-2 36	5.0 8.0		5.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
						7.5	CL	Stiff, red gray, lean CLAY, mps: 7 mm, no odor, moist.					10	90				
		16.2	G-3 24	8.0 10.0														
		63.4						Cobble at 9 ft. Becoming siltier at 9.5 ft.										
10			G-4 24	10.0 12.0		10.5	SP-SM	Soft, red gray, poorly graded SAND with silt, mps: 0.5 mm, no odor, wet.					90	10				
		0.5				11.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
						12.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/07/04				12.0	5.5. 10.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4289

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4290

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 8, 2004
Finish April 8, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0		ND	G-1 60	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.				5	10	85				
		ND				1.5	CL	Medium stiff, yellow brown, lean CLAY with some red gray mottling, mps: 3 mm, no odor, moist.					5	95				
5		0.1	G-2 36	5.0 8.0		5.0	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
		36.6	G-3 19	8.0 10.0		7.5	CL	Stiff, red gray, lean CLAY, mps: 4 mm, no odor, moist.					10	90				
10		0.4	G-4 21	10.0 12.0														
						12.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/08/04				12.0	5.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4290

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4291

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 8, 2004
Finish April 8, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 60	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.				5	10	85				
		0.1				1.5	CL	Medium stiff, yellow brown, lean CLAY some red gray mottling, mps: 3 mm, no odor, moist.					5	95				
		0.1																
5		0.2	G-2 36	5.0 8.0		5.0	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
		0.2				7.5	CL	Stiff, red gray, lean CLAY, mps: 4 mm, no odor, moist.					10	90				
		0.3	G-3 18	8.0 10.0														
10						10.0		-Bottom of Exploration at 10.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/08/04				10.0	5.0

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	10.0
Rock Cored (lin. ft.)	-
Samples	3

Boring No. GP-4291

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4292

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 8, 2004
Finish April 8, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 60	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.				5	10	85				
		0.2				1.0	CL	Medium stiff, yellow brown, lean CLAY, mps: 4 mm, no odor, moist.					5	95				
		0.1																
5		0.1	G-2 36	5.0 8.0		5.0	SM	Medium dense, yellow brown, silty SAND, mps: 1.5 mm, no odor, wet.					85	15				
		1.3				7.5	CL	Stiff, red gray, lean CLAY, mps: 2 mm, no odor, wet.					10	90				
			G-3 20	8.0 10.0														
		0.3						Seam of medium SAND at 9.5 ft.										
10						10.0		-Bottom of Exploration at 10.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/08/04				10.0	5.0

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram	
	Riser Pipe
	Screen
	Filter Sand
	Cuttings
	Grout
	Concrete
	Bentonite Seal

Summary	
Overburden (lin. ft.)	10.0
Rock Cored (lin. ft.)	-
Samples	3

Boring No. GP-4292

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4293

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 8, 2004
Finish April 8, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G-1 57	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 3 mm, no odor, moist.				5	10	85				
		0.5				1.5	CL	Medium stiff, yellow brown, lean CLAY, mps: 2 mm, no odor, moist.					5	95				
5		0.2	G-2 36	5.0 8.0		4.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		13.3				5.5	CL	Medium stiff, yellow brown, lean CLAY, mps: 2 mm, no odor, moist.					10	90				
		3.1	G-3 19	8.0 10.0		7.5	CL	Stiff, red gray, lean CLAY, mps: 2 mm, no odor, moist.					10	90				
10						10.0		-Bottom of Exploration at 10.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/08/04				10.0	4.5

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 10.0
- Rock Cored (lin. ft.) -
- Samples 3

Boring No. GP-4293

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4294

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 8, 2004
Finish April 8, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 60	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.					5	95				
		0.5				1.0	CL	Medium stiff, dark brown, lean CLAY with some red gray mottling, mps: 1 mm, no odor, moist.										
		0.4																
5		0.7	G-2 36	5.0 8.0		5.5	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
						6.5	CL	Stiff, yellow brown, lean CLAY, mps: 7 mm, no odor, moist.					10	90				
		265						Becoming red gray at 7.5 ft.										
			G-3 12	8.0 10.0														
		1682																
10			G-4 16	10.0 12.0														
		489																
			G-5 14	12.0 14.0														
		1120																
						13.5	ML	Medium stiff, red gray, clayey SILT, mps: 0.5 mm, no odor, wet.					5	95				
			G-6 14	14.0 16.0														
15		906																
			G-7 18	16.0 18.0														
		3.4																
						18.0		-Bottom of Exploration at 18.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/08/04				18.0	5.5, 13.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples 7

Boring No. GP-4294

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4295

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 15, 2004
Finish April 15, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 57	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 2 mm, no odor, moist.				5	10	85				
		ND				1.0	CL	Stiff, yellow brown, lean CLAY with red gray mottling, mps: 1 cm, no odor, moist.					10	90				
5		ND	G-2 36	5.0 8.0		5.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		0.6				7.0	CL	Stiff, yellow brown, lean CLAY, mps: 3 mm, no odor, moist.					10	90				
		34.7	G-3 16	8.0 10.0		8.0	CL	Stiff, red gray, lean CLAY with sand, mps: 2.5 cm, no odor, moist.					15	85				
10		0.1	G-4 24	10.0 12.0				Seam of medium, gray brown SAND at 11 ft.										
						12.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/15/04				12.0	5.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4295

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4296

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 15, 2004
Finish April 15, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 48	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.				5	10	85				
		0.1				1.0	CL	Medium stiff, brown, lean CLAY with sand, mps: 1 mm, no odor, moist.					15	85				
		0.1					CL	Stiff, yellow brown, lean CLAY, mps: 3 mm, no odor, moist.					10	90				
5		0.2	G-2 36	5.0 8.0		5.0	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, wet.					85	15				
		22.2				6.5	CL	Stiff, yellow brown, lean CLAY, mps: 2 mm, no odor, moist. Becoming red gray at 7.5 ft., mps: 2 cm.					15	85				
		3.5	G-3 18	8.0 10.0														
10			G-4	10.0 12.0		10.0		-Bottom of Exploration at 10.0 feet.-										
			G-5	12.0 14.0														

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/15/04				10.0	5.0

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 10.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4296

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4297

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 15, 2004
Finish April 15, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0			G-1 58	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.				5	10	85				
		0.2				1.0	CL	Stiff, yellow brown, lean CLAY with some red gray mottling, mps: 3.5 cm, no odor, moist.					10	90				
		0.4																
5		2.0	G-2 36	5.0 8.0		5.0	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
						6.0	CL	Stiff, yellow brown, lean CLAY, mps: 1 mm, no odor, moist.					5	95				
		23.2						Petrochemical ordor at 7.5 ft.										
			G-3 22	8.0 10.0		8.0	CL	Stiff, red gray, lean CLAY with sand, mps: 3 cm, no odor, moist.					15	85				
		333																
10			G-4 21	10.0 12.0		10.0	SP	Medium dense, tan, poorly graded SAND, mps: 8 mm, petrochemical odor, moist.					5	95				
		1272				11.5	ML	Medium stiff, light brown, SILT with sand, mps: 0.5 mm, no odor, wet.					20	80				
			G-5 23	12.0 14.0		12.0	SP	Medium dense, tan, poorly graded SAND, mps: 0.5 mm, petrochemical odor, wet.					95	5				
		234																
			G-6 24	14.0 16.0		14.0	SP	Medium dense, red gray, poorly graded SAND with silt, mps: 0.5 mm, no odor, wet.					90	10				
15		172																
			G-7 20	16.0 18.0														
		156				17.0	SP	Medium dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.					90	10				
			G-8 12	18.0 20.0														
		199																
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/15/04				27.0	5.0, 11.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 27.0
Rock Cored (lin. ft.) -
Samples 10

Boring No. GP-4297

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4297
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20			G-9 12	20.0 22.0			SP	Medium dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.					90	10				
		186																
			G-10	22.0 27.0														
		4.7																
25		0.6																
		1.1																
						27.0		-Bottom of Exploration at 27.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4297

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4298

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 15, 2004
Finish April 15, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 54	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 1 mm, no odor, moist.				5	10	85				
		1.0				1.5	CL	Stiff, yellow brown, lean CLAY, mps: 2 mm, no odor, moist.					10	90				
		1.4																
						4.5	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, wet.					85	15				
5		2.3	G-2 36	5.0 8.0		5.5	CL	Stiff, yellow brown, lean CLAY, mps: 2.5 cm, no odor, moist.					5	95				
		24.4						Becoming red gray at 7.5 ft.										
			G-3 24	8.0 10.0														
		754																
10			G-4 20	10.0 12.0														
		1473				11.0	ML	Stiff, red gray SILT, mps: 0.5 mm, no odor, moist.					5	95				
			G-5 22	12.0 14.0				Wet at 12 ft.										
		9999																
			G-6 60	14.0 19.0														
15		147																
						15.5	SP	Medium dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.					90	10				
		12.3																
		3.0																
						19.0		-Bottom of Exploration at 19.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/15/04				19.0	4.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 19.0
Rock Cored (lin. ft.) -
Samples 6

Boring No. GP-4298

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4299

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 15, 2004
Finish April 15, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0			G-1 60	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL.				5	10	85				
		2.6																
		7.2				3.0	CL	Medium stiff, yellow brown, lean CLAY, mps: 7 mm, no odor, moist.					10	90				
5		9.3	G-2 36	5.0 8.0														
		17.2																
			G-3 15	8.0 10.0		8.0	SP	Medium dense, tan, poorly graded SAND, mps: 0.5 mm, no odor, moist.					10	90				
		48.5																
10			G-4 24	10.0 12.0														
		98.8																
			G-5 19	12.0 14.0														
		53.3																
			G-6 18	14.0 16.0				Wet at 14.5 ft.										
15		351				14.5	SP	Dense, light brown, poorly graded SAND, mps: 1 mm, no odor, wet.					85	15				
			G-7 48	16.0 21.0														
		229																
		284				19.0	SP	Dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.				10	80	10				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/15/04				21.0	14.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 21.0
Rock Cored (lin. ft.) -
Samples 7

Boring No. GP-4299

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4299
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field T Dilatancy	Toughness	Plasticity	Strength
20							SP											
		28.4						Dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.				10	80	10				
						21.0		-Bottom of Exploration at 21.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4301

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 7, 2004
Finish April 7, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 45	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 2 mm, no odor, moist.				5	15	80				
		0.3				1.0	SP	Medium dense, yellow brown, poorly graded SAND, mps: 1.5 cm, no odor, moist.		5	5	75	10	5				
						2.0	CL	Stiff, dark brown, lean CLAY with sand, mps: 2 mm, no odor, moist.			5	5	5	85				
		0.4				3.5	CL	Stiff, yellow brown, lean CLAY with some red gray mottling, mps: 5 mm, no odor, moist.					10	90				
5		0.4	G-2 60	5.0 10.0														
		0.3				7.5	SM	Medium dense, yellow brown, silty SAND, mps: 0.5 mm, no odor, moist. Wet at 9 ft.					85	15				
10		0.3	G-3 60	10.0 15.0														
		0.3				12.0	SP	Medium dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.				50	45	5				
15		0.3	G-4 60	15.0 20.0		14.5	SP-SC	Medium dense, red gray, poorly graded SAND with clay, mps: 2 mm, no odor, wet.			5	70	15	10				
		0.6				16.5	CL	Stiff, red gray, lean CLAY, mps: 2 mm, no odor, moist.					10	90				
20		0.3						-Bottom of Exploration at 20.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/07/04				20.0	9.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 20.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4301

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4302

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 7, 2004
Finish April 7, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 52	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 3 cm, no odor, moist.				5	15	80				
		0.2				1.5	CL	Stiff, yellow brown, lean CLAY, mps: 2.5 cm, no odor, moist.					10	90				
		0.4																
5		0.3	G-2 60	5.0 10.0														
		0.4				7.5	SM	Medium dense, yellow brown, silty SAND mps: 0.5 mm, no odor, moist. Wet at 8 ft.					85	15				
		0.3																
10			G-3 52	10.0 15.0														
		0.6				12.0	SP	Medium dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.				90	45	5				
		0.5																
15		0.4	G-4	15.0 20.0		14.5	SP-SC	Medium dense, red gray, poorly graded SAND with clay, mps: 2 mm, no odor, wet. Similar to above.										
						17.0	CL	Stiff, red gray, lean CLAY, mps: 2 mm, no odor, moist.										
20								-Bottom of Exploration at 20.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/07/04				20.0	8.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 20.0
Rock Cored (lin. ft.) -
Samples 4

Boring No. GP-4302

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4304

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 29, 2004
Finish March 29, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 48	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, oprganic SOIL, mps: , no odor, moist.		5	10	10	20	55				
		ND				1.0	CL	Medium stiff, brown, lean CLAY, mps: 1 mm, no odor, moist.					5	95				
		ND						Becoming yellow brown at 4 ft.										
5			G-2 58	5.0 10.0														
		ND				7.0	SM	Medium dense, yellow brown, silty SAND, mps 1 mm, no odor, moist. Wet at 8 ft.					85	15				
		ND				9.0	SM	Medium dense, red gray, silty SAND, mps: 1 mm, no odor, wet.				5	80	15				
10		0.2	G-3 60	10.0 15.0														
		2.9				13.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
		ND																
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/29/04				15.0	8.0

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4304

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4305

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 29, 2004
Finish March 29, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		ND	G-1 42	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 3 mm, no odor, moist.			10	10	15	65				
		ND				1.0	CL	Medium stiff, olive brown, lean CLAY, mps: 7 m, no odor, moist.					10	90				
						4.0	CL	Medium stiff, light brown, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
5		0.2	G-2 60	5.0 10.0														
		0.2				6.5	SM	Medium dense, light brown, silty SAND, mps: 3 mm, no odor, moist.					85	15				
		0.1				7.5	SM	Medium dense, gray brown, silty SAND, mps: 2 mm, no odor, wet.				10	75	15				
10		0.1	G-3	10.0 15.0														
		0.2																
		0.4				14.0	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/29/04				15.0	7.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4305

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4306

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 29, 2004
Finish March 29, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
Hammer Weight (lb.)	-	-	-	Drill Mud: None
Hammer Fall (in.)	-	-	-	Casing: Direct Push
				Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0		ND	G-1 54	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 2 cm, no odor, moist.			5	10	20	65				
		ND				1.5	CL	Medium stiff, olive brown, lean CLAY, mps: 1 mm, no odor, moist.										
		ND				4.0	CL	Stiff, light brown, lean CLAY with some red gray mottling, mps: 0.5 mm, no odor, moist.					5	95				
5			G-2 60	5.0 10.0														
		ND				7.5	SM	Medium dense, yellow brown, silty SAND, mps: 1 mm, no odor, moist. Wet at 8.5 ft.					85	15				
		ND				9.0	SM	Medium dense, gray brown, silty SAND, mps: 1 mm, no odor, wet.				5	80	15				
10			G-3	10.0 15.0														
		ND				14.5	CL	Stiff, red gray, lean CLAY, mps: 0.5 mm, no odor, moist.					5	95				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/29/04				15.0	8.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 3

Boring No. GP-4306

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4307

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 16, 2004
Finish April 16, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			G-1 58	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 2 mm, no odor, moist.				5	10	85				
		0.5				1.0	CL	Medium stiff, yellow brown, lean CLAY with sand, mps: 3 mm, no odor, moist.					15	85				
		0.3																
5		2.4	G-2 36	5.0 8.0														
		3.3					CL	Stiff, light brown, lean CLAY, mps: 3 cm, no odor, moist.					10	90				
		58.1	G-3 19	8.0 10.0		8.0	SP	Medium dense, tan, poorly graded SAND, mps: 0.5 mm, no odor, moist.					10	90				
10		9.3	G-4 21	10.0 12.0														
		77.6	G-5 60	12.0 17.0			SP	Dense, light brown, poorly graded SAND, mps: 0.5 mm, no odor, wet.				5	90	5				
15		65.2					SP	Dense, light brown, poorly graded SAND, mps: 1 mm, no odor, wet.					85	15				
		48.8	G-6 60	17.0 22.0			SP	Dense, light brown, poorly graded SAND, mps: 0.5 mm, no odor, wet. Becoming red gray at 17 ft.					10	90				
		33.0																
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/16/04				33.5	13.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 33.5
Rock Cored (lin. ft.) -
Samples 9

Boring No. GP-4307

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4307
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20						20.0	SP	Dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.				5	85	10				
		3.2																
			G-7	22.0														
			60	27.0														
		9.3																
25		4.4						1 in. seam of CLAY at 25.5 ft.										
		0.5	G-8	27.0														
				32.0			SP	Dense, red gray, poorly graded SAND, mps: 1.5 cm, no odor, wet.				50	35	15				
		0.1																
30		0.2																
			G-9	32.0														
			0	33.5		32.5	CL	Refusal at 33.5 ft., no sample recovered.										
						33.5		-Bottom of Exploration at 33.5 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. GP-4307

TEST BORING REPORT

HALEY & ALDRICH

Boring No. GP-4308

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 16, 2004
Finish April 16, 2004
Driller R. Christensen
H&A Rep. J. LeGolvan
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	-	G	-	Rig Make & Model: 66 DT Track
Inside Diameter (in.)	-	1 7/8	-	Bit Type: -
				Drill Mud: None
Hammer Weight (lb.)	-	-	-	Casing: Direct Push
Hammer Fall (in.)	-	-	-	Hoist/Hammer: - Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0			G-1 54	0.0 5.0	NO WELL INSTALLED		OL-OH	Medium stiff, dark brown, organic SOIL, mps: 1.5 cm, no odor, moist.				5	10	85				
		0.3				2.0	CL	Stiff, yellow brown, lean CLAY with sand, mps: 3.5 cm, no odor, moist.					15	85				
		0.3																
5		0.3	G-2 57	5.0 10.0														
		0.3					CL	Stiff, red brown, lean CLAY, mps: 3 cm, no odor, moist.					10	90				
		0.3				9.0	ML	Stiff, light brown, clayey SILT with sand and gravel, mps: 2.5 cm, no odor, moist.		5	5	5	5	80				
10		0.5	G-3 58	10.0 15.0														
		7.7				12.0	SP	Medium dense, tan, poorly graded SAND, mps: 0.5 mm, no odor, moist.					10	90				
							SP	Dense, light brown, poorly graded SAND, mps: 1 mm, no odor, wet.					85	15				
15		25.6	G-4 60	15.0 20.0														
		1.9						Becoming red gray at 17 ft.										
		2.2				19.5	SM	Dense, red gray, silty SAND, mps: 0.5 mm, no odor, wet.					80	20				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
04/16/04				34.0	13.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 34
Rock Cored (lin. ft.) -
Samples 7

Boring No. GP-4308

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. GP-4308
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plastic	Field Test Strenc
20			G-5 55	20.0 25.0		20.0	SP	Dense, red gray, poorly graded SAND, mps: 0.5 mm, no odor, wet.				10	90					
		1.5					SP	Dense, red gray, poorly graded SAND, mps: 1 mm, no odor, wet.			5	85	10					
		0.9					SP	Dense, red gray, poorly graded SAND, mps: 0.5 mm, no odor, wet.				10	90					
							SP	Dense, red gray, poorly graded SAND, mps: 1.5 mm, no odor, wet.				85	15					
25		0.5	G-6 60	25.0 30.0														
		0.5																
		0.6																
30			G-7	30.0 34.0			SP	Dense, red gray, poorly graded SAND, mps: 3 mm, no odor, wet.			5	85	10					
		0.7					SP	Dense, red gray, poorly graded SAND with gravel, mps: 3 cm, no odor, wet.		15	50	25	10					
		0.1																
						33.5	CL	Hard, red gray, lean CLAY with sand, mps: 2 cm, no odor, dry.			5	5	10	80				
						34.0		-Bottom of Exploration at 34.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4008

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 30, 2003
Finish May 30, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.0
Datum HRC Site Specific
Location N 8,302 E 7,562

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				757.5		-CONCRETE-										
	1 2 1	S-1 14	0.5 2.0		SP	Loose, tan SAND, mps < 1 mm, no odor, moist. PID = ND ppm -FILL-					100					
	5 3 7 5	S-2 10	2.0 4.0	754.0		Soil sample S-1 4008-053003-0940 collected from 0.5 to 2.0 feet. PID = ND ppm										
5	1 2 2 3	S-3 20	4.0 6.0		ML	Stiff brown and gray mottled SILT, mps < 1mm, no odor, moist. PID = 27.9 ppm -GLACIAL TILL- Soil sample S-2 4008-053003-1015 collected from 4.0 to 6.0 feet.					10	90				
	2 3 3 2	S-4 14	6.0 8.0			Same, except slight organic odor. PID = 4.8 ppm										
	1 2 3 4	S-5 18	8.0 10.0	748.3		Soil sample S-3 4008-053003-1045 collected from 8.0 to 10.0 feet. PID = 9.0 ppm Water present at 9.6 feet. GW sample 4008-060503-1600 collected.										
10	2 4 10 14	S-6 14	10.0 12.0		SP	Loose, gray to brown, fine SAND, mps < 1 mm, no odor, wet. PID = 0.9 ppm -GLACIAL TILL-					100					
	10 13 14 6	S-7 13	12.0 14.0	744.0		Same except containing fines. PID = N/A ppm					95	5				
15	2 3 4 6	S-8 22	14.0 16.0	742.0	CL	Medium stiff, gray, lean CLAY, mps < 1 mm, no odor, moist. PID = ND ppm -GLACIAL TILL-						100				
						-Bottom of Exploration at 16.0 feet-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4008

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4009

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 29, 2003
Finish May 29, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 757.1
Datum HRC Site Specific
Location N 8,221 E 7,572

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				756.8		-ASPHALT-										
				756.1		-CONCRETE-										
	3 3	S-1 12	1.0 2.0		SP	Very loose, tan, fine SAND, mps < 1 mm, no odor, moist. PID = ND ppm					100					
	1 1 1 1	S-2 12	2.0 4.0		SP	-FILL- Same, with black staining at 2.5 feet and organic odor. Water present at 2.0 feet. PID = 65.1 ppm										
				753.1												
	1/12 1/12	S-3 22	4.0 6.0		SP	Same except strong odor. PID = 699.9 ppm										
5																
	1 1 1 2	S-4 9	6.0 8.0		SP	PID = 536.0 ppm										
	1 1 4 9	S-5 20	8.0 10.0			PID = 755.8 ppm										
				748.1												
				747.6	ML	Soft, brown and black SILT, mps < 1 mm, organic odor, wet.					10	90				
				747.1	SP-SM	-GLACIAL TILL-					90	10				
10	4 8 8 10	S-6 15	10.0 12.0			Medium dense, gray, poorly-graded SAND with silt, mps < 1mm, organic odor, wet. PID = 40.3 ppm -GLACIAL TILL-										
				745.1												
	2 3 4 6	S-7 17	12.0 14.0		CL	Medium dense, gray, lean CLAY, mps: 1.3 cm, very slight organic odor, moist. -GLACIAL TILL-						100				
				743.1		-Bottom of Exploration at 14.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 14.0
Rock Cored (lin. ft.) -
Samples S 1-2, GW 1

Boring No. MW-4009

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4009D

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start March 23, 2004
Finish March 24, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. G. Laird
Elevation
Datum Estimated
Location Executive garage area

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-ASPHALT-										
	5 7 7 6	0.4	S-1 10	0.0 2.0		0.3	SM	Soft, dark brown and black, sandy SILT, mps: 1/4 in., no odor, moist.					50	50				
								-FILL-										
	2 2 1 3	ND	S-2 12	2.0 4.0		2.0	ML	Soft, red brown and gray, mottled SILT, mps: 1 mm, no odor moist.					10	90				
								-GLACIAL TILL-										
5	2 2 3 4		S-3 9	4.0 6.0				Similar to above except light brown and gray mottled.										
	2 2 2 3		S-4 16	6.0 8.0				Similar to above, mps: 3/4 in.										
	2 2 4 5	1204	S-5 17	8.0 10.0				Simialr to above except strong organic odor, becomes moist to wet.										
						9.0	SP	Soft, yellow brown, poorly graded, fine SAND, mps: 1 mm, faint odor, wet.					95	5				
10	2 7 7 8	2.5	S-6 12	10.0 12.0				-GLACIAL TILL- Water at 9 ft. Similar to above.										
	12 17 11 13	0.8	S-7 15	12.0 14.0				Similar to above except becoming gray brown at 13 ft.										
	3 4 4 6	ND	S-8 17	14.0 16.0		14.0	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist.						100				
15								-GLACIAL TILL-										
	3 4 4 3	ND	S-9 18	16.0 18.0				Similar to above except fine SAND present.					10	90				
	2 2 2 3	ND	S-10 19	18.0 20.0		18.0	CL	Soft, gray, lean CLAY with sand, mps: 1/4 in., no odor, moist.					20	80				
								-GLACIAL TILL-										
20								Similar to above.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 36.0
Rock Cored (lin. ft.) -
Samples 18S

Boring No. MW-4009D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4009D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plastic	Field Test Strenc
20	5 5 7 7	ND	S-11 20	20.0 22.0		21.0	CL	Soft, gray, sandy, lean CLAY, mps: 1/2 in., no odor, moist.					40	60				
								-GLACIAL TILL-										
	5 10 21 25	ND	S-12 21	22.0 24.0		22.0	CL	Soft, gray, lean CLAY with sand, mps: 1/4 in., no odor, moist.					20	80				
25	8 12 17 22		S-13 17	24.0 26.0				Similar to above.										
	5 7 11 15	ND	S-14 21	26.0 28.0		26.0	SM	Soft, gray, silty SAND, mps: 1/2 in., no odor, wet. -GLACIAL TILL-					60	40				
	5 10 11 15	ND	S-15 23	28.0 30.0		28.0	SP	Soft, gray, poorly graded SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					95	5				
30	6 5 18 16		S-16 24	30.0 32.0				Similar to above except no fines present.					100					
	8 10 13 11	ND	S-17 17	32.0 34.0		32.0	CL	Dense, gray, lean CLAY, mps: 1/4 in., no odor, moist. -GLACIAL TILL-					10	90				
35	5 9 8 10		S-18 14	34.0 36.0				Similar to above.										
						36.0		-Bottom of Exploration at 36.0 feet. NOTE: Water at 9 ft. 10in. casing set from 0.5 ft. to 15 1/2 ft.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4010

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 24, 2004
Finish March 24, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. G. Laird
Elevation Datum Estimated
Location Executive garage area

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-ASPHALT-										
	1 5 8 4	ND	S-1 4	0.0 2.0		0.5	SM	Soft, dark brown, sandy SILT, mps: 1/2 in., no odor, moist. -FILL-					50	50				
	4 3 3 5	ND	S-2 12	2.0 4.0		2.0	ML	Dense, gray and yellow brown, mottled SILT, mps: 1/4 in., no odor, moist. -GLACIAL TILL-					10	90				
5	2 2 3 2	ND	S-3 19	4.0 6.0				Water at 5.5 ft.										
	1 1 3 5	ND	S-4 14	6.0 8.0		6.5	SP-SM	Soft, light brown, poorly graded SAND with silt, mps: 1 mm, no odor, wet. -GLACIAL TILL-					90	10				
	2 2 4 5	ND	S-5 16	8.0 10.0				Similar to above except becoming gray brown at 9.5 ft.										
10	4 5 5 7	ND	S-6 12	10.0 12.0				Similar to above.										
						11.5	CL	Soft, gray, lean CLAY, mps: 1/4 in., no odor, moist.					5	95				
						12.0		-GLACIAL TILL- -Bottom of Exploration at 12.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples 6S

Boring No. MW-4010

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

WELL DECOMMISSIONING REPORT

Well No.

MW-4115

PROJECT	Dort Highway	H&A FILE NO.	49017-035
LOCATION	Flint, MI	PROJECT MGR.	Lloyd Ross
CLIENT	Delphi Corporation	FIELD REP.	Rachel Kornak
CONTRACTOR	Stearns Drilling	REMOVAL DATE	3/16/2004

Well Designation	MW-4115
Well Diameter	2" PVC
Decommissioning Technique	Pulled Casing
Depth to Groundwater	NA
Total Depth of Well	1 - 50 lb bag, 9.0 ft.

	Cement (Lbs. - Bags*)	Additive (Lbs. - Gals.)	Water (Gals.)	Final Quantity (Gals.)
Type	**Holeplug**	**N/A**		
Manufacturer	**Bariod**	**N/A**		
Quantity	**1-50lb bag**	**N/A**		

***1 Bag = 94 Lbs.**

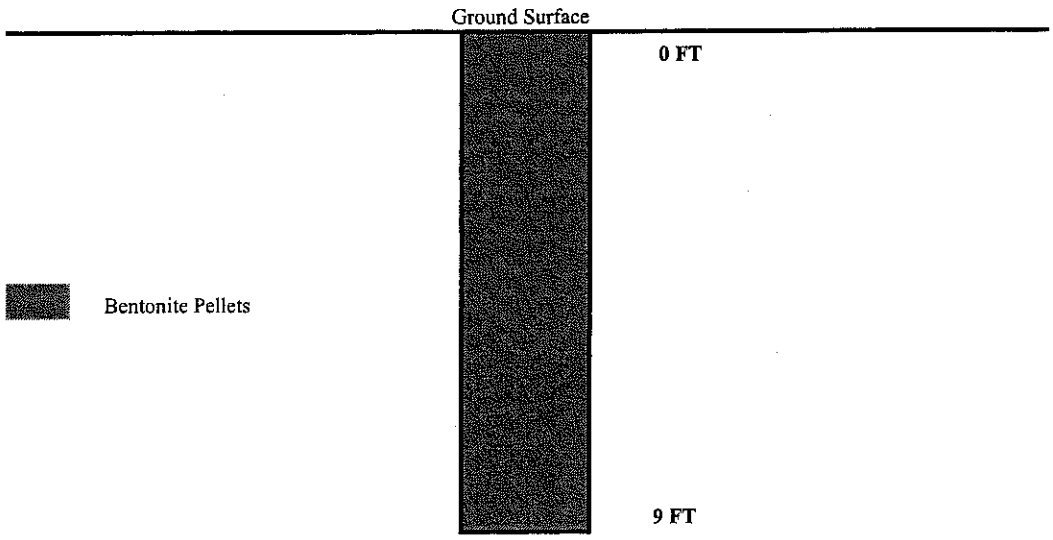
Exlanation of Well Decommissioning Techniques:

A. Shallow Wells:

These wells may either be removed by pulling the casing out of the ground, or plugged in-place using bentonite grout. If the well is plugged in-place, the casing must be plugged above the screen using a bentonite/cement grout (see grout placement guidelines), and the casing should be cut-off a minimum of 3 feet below the ground surface. If the well is pulled, care should be taken to compact the soils to avoid significant ground subsidence.

B. Deep Wells: Deep wells must be plugged using a bentonite/cement grout, which will fill the casing and annular space (see grout placement guidelines). The casing must be terminated 3 feet below the ground surface.

Sketch:



COMMENTS: Monitoring Well casing was pulled with CME-1050. Borehole was abandoned to ground surface with Bentonite Holeplug.

Form # 3010

HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4115R

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start March 16, 2004
Finish March 16, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. R. Kornak
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	Steel	Rig Make & Model: CME-1050
Inside Diameter (in.)	9	4.25	9	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: HSA
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	5 7 8 8	ND ND	S1 15	0.0 2.0		0.3	OL- OH CH	Medium stiff, dark brown top soil with roots mps = 0.05 mm. Very stiff, dark brown, sandy, fat CLAY (CH), no odor, moist.					50 40	50 60				
	6 4 2 2	ND	S2 17	2.0 6.0		2.0	SP	Loose, yellow-brown, poorly-graded SAND (SP), mps = 1 mm, no odor, moist.				10	90					
5	3 2 4 5		S3 14	4.0 6.0														
	2 4 5 4	ND ND ND	S4 20	6.0 8.0		6.0 7.3	SM SP	Approximately 3 in., of ceramic debris at 6.0 ft. Very loose, Light brown, silty SAND (SM), mps = 0.03 mm, no odor, moist. Loose, yellow brown, poorly-graded SAND (SP), mps: 1 mm, no odor, moist.				10	60 90	40				
	5 6 9 11	ND	S5 12	8.0 10.0		8.3	CL- ML	Medium stiff, red-gray, silty CLAY (CL/ML), mps = 0.075 mm, no odor, moist.						100				
10	8 5 5 4		S6 24	10.0 12.0														
	3 3 7 8	ND	S7 15	12.0 14.0		12.0	ML	Soft, gray brown, sandy SILT (ML), mps = 0.03 mm, no odor, moist.					50	50				
15	3 3 5 4		S8 19	14.0 16.0														
	2 5 3 2	ND ND	S9 16	16.0 18.0		16.0	SM	Wet at 15.75 ft. Very loose, gray-brown, silty SAND (SM), mps = 0.3 mm, no odor, wet.					80	20				
20	2 3 3 5	ND	S10 15	18.0 20.0		18.0	ML	Soft, gray brown, sandy SILT (ML), mps: 0.3 mm, no odor, wet.					50	50				

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/16/04			0.625???	36.0	15.75

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 36.0
Rock Cored (lin. ft.) -
Samples 18S

Boring No. MW-4115R

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4115R
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plastic*	Field Test Strer
20	2 2 4 2		S11 16	20.0 22.0			ML											
	3 4 4 3	ND	S12 16	22.0 24.0		22.0	SM	Loose, gray-brown, silty SAND (SM), mps = 0.03 mm, no odor, wet.					90	10				
25	2 5 3 3		S13 24	24.0 26.0														
	2 2 4 5	ND	S14 22	26.0 28.0		27.5	SM	Seam of very loose, gray-brown, silty SAND (SM), mps = 0.03 mm, no odor, wet.					75	25				
	3 4 6 7	ND	S15 19	28.0 30.0		27.8		Similar to silty SAND (SM) in S12 and S13.										
30	7 9 9 10		S16 24	30.0 32.0														
	10 9 9 11	ND	S17	32.0 34.0		33.0	CH	Stiff, dark brown, fat CLAY (CH), mps = 0.02 mm, no odor, moist.					10	90				
35	11 10 8 10		S18	34.0 36.0														
						36.0		-Bottom of Exploration at 36.0 ft.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

OBSERVATION WELL INSTALLATION REPORT

Well No. MW-4115 R

Boring No. MW-4115 R

PROJECT	Delphi - Dort Hwy RFI Activities	H&A FILE NO.	49017-035
LOCATION	Flint, MI	PROJECT MGR.	Lloyd Ross
CLIENT	Delphi Corporation	FIELD REP.	R. Kornak
CONTRACTOR	Stearns Drilling Company	DATE INSTALLED	3/16/2004
DRILLER		WATER LEVEL	

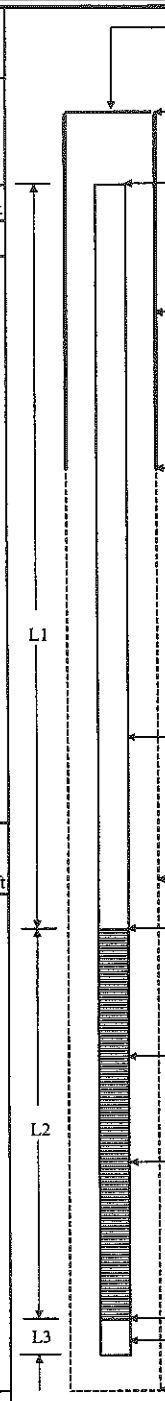
Ground El. _____ ft
El. Datum _____

Location: ~10 feet NW of 411S

☐ Guard Pipe
☑ Roadway Box

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL
See Boring Log (0.0 ft)	0.0 ft
CLAY (2.0 ft)	SAND 0.25 ft; 0.25 ft Hole Plug 1.0 ft
8.3 ft	Bentonite Slurry
Silty CLAY & Sandy SILT (15.8 ft)	
Silty SAND (18.0 ft)	
SILT (22.0 ft)	
	24.0 ft
	Hole Plug 26.0 ft
26.1 FT; Silty SAND (33.0 ft)	SAND
34.0 ft	34.0 ft

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)



(Not to Scale)

Type of protective cover/lock	Flushmount	
Height/Depth of top of guard pipe/roadway box above/below ground surface	0.0	ft
Height/Depth of top of riser pipe above/below ground surface		ft
Type of protective casing:	Flushmount	
Length	1.000	ft
Inside Diameter	9.000	in
Depth of bottom of guard pipe/roadway box	1.000	ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Bentonite Hole Plug	0.25	1.0
Bentonite Slurry	1.0	24.0
Bent Hole Plug	24.0	2.0

Type of riser pipe:	Schedule 40 PVC	
Inside diameter of riser pipe	2.0	in
Type of backfill around riser	Bentonite Hole Plug Bentonite Slurry, #6	
Diameter of borehole	8.0	in
Depth to top of well screen	28.0	ft
Type of screen	Schedule 40 PVC	
Screen gauge or size of openings	0.010	in
Diameter of screen	2.0	in
Type of backfill around screen	#6 Sand	
Depth of bottom of well screen	33.0	ft
Bottom of Silt trap	33.3	ft
Depth of bottom of borehole	34.0	ft

28 ft	+	5 ft	+	0.3 ft	=	33.3 ft
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length

COMMENTS:

Form # 3010

TEST BORING REPORT

Boring No. MW-4118D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start May 19, 2003
Finish May 21, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 757.9
Datum Estimated
Location N 7,678 E 8,499

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Steel	S	NA	Rig Make & Model: CME - 750
Inside Diameter (in.)	10"	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: 4 1/2" HSA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	2 2 5 9	S1 21	0.0 2.0	756.9	OL/OH	Medium stiff, dark brown, organic SOIL with sand, moist with no odor.	PID = ND ppm					15	85				
				755.9		Sample 118D-0519030930 obtained from 0-2'. Gravel present, black staining, mps: 1 cm, no odor.	PID = ND ppm										
	5 4 5 6	S2 12	2.0 4.0		CL	Medium stiff, yellow-brown mottled gray, lean CLAY with trace sand, mps: coarse sand, moist with no odor.	PID = ND ppm			5		5	90				
5	4 5 7 10	S3 24	4.0 6.0	751.9													
	5 5 7 9	S4 16	6.0 8.0	751.4	ML	Silt lens, gray and moist.	PID = ND ppm						100	R	L	N	
					SM	Medium dense, yellow-brown, silty SAND, mps: fine sand moist, no odor.	PID = ND ppm					50	50				
	7 10 9 7	S5 16	8.0 10.0	748.4		Sample 118D-0519030955 obtained from 6.5'. Wet at 7.8'.											
10	3 3 4 4	S6 24	10.0 12.0	745.9	CL	Medium stiff, gray, lean CLAY, moist, no odor.	PID = ND ppm						100	NS	M	H	
	1 2 3 3	S7 20	12.0 14.0		CL	Medium stiff, gray, lean CLAY, no odor, moist, trace of sand and gravel, trace of pink grain coloration, mps: 5 mm.	PID = ND ppm		5		5		90	N	M	H	H
15	1 1 3 5	S8 18	14.0 16.0	741.9													
	2 4 7 7	S9 24	16.0 18.0		CL	Stiff, gray, lean CLAY with sand and gravel, moist, no odor, mps: 1.5 cm.	PID = ND ppm		10	5	5		80	N	M	H	H
	7 11 17 24	S10 24	18.0 20.0			Dry at 18'.											
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 44
Rock Cored (lin. ft.)
Samples S 1-2, GW 1

Boring No. MW-4118D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4118D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	6 14 20 21	S11 24	20.0 22.0		CL											
	4 8 10 11	S12 24	22.0 24.0													
25	2 4 8 10	S13 24	24.0 26.0	732.4												
				732.2	SC	Two inches of clayey SAND seam, wet, fine grained sand. PID = ND ppm										
	3 7 11 17	S14 24	26.0 28.0		CL	Same as 18' to 25.5'. PID = ND ppm Becoming very silty and sandy at 28' with coarse gravel throughout.										
	6 30 36 25	S15 24	28.0 30.0	727.9												
30	3 21 3 4	S16 24	30.0 32.0		SW-SM	Wet at 30'. PID = ND ppm Medium dense, gray, silty, well-graded SAND, wet. Driller noted heaving sand conditions at 32' to 42'.			10	30	40	20				
	10 10 12 16	S17 24	32.0 34.0	723.9												
35	8 9 17 17	S18 24	34.0 36.0		SW-SM	Coarse sand and gravel more prevelant. PID = ND ppm		10	40	20	10	20				
	4 11 21 32	S19 24	36.0 38.0	719.9												
	2 4 10 14	S20 24	38.0 40.0		SP	Same as above except gravel and coarse SAND, even more prominent at 38' well-graded sand wet. PID = ND ppm		20	50	15	10	5				
40	8 9 14 17	S21 24	40.0 42.0													
	12 22 25 29	S22 24	42.0 44.0	713.9		-Bottom of Exploration at 44 feet.-										
						NOTE: 4 1/4" HSA and continous sample to 44'. 12 1/4" HSA and jet to 10" steel casing to 10 ft below ground surface.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4122

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Steams Drilling

File No. 49017
Sheet No. 1 of 1
Start May 16, 2003
Finish May 16, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 754.8
Datum HRC Site Specific
Location N 8,369 E 8,337

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				754.2		-CONCRETE-											
	3 3 3 3	S-1 17	1.0 3.0		SM	Loose, brown, poorly-graded, silty SAND, mps: medium sand, no odor, wet.	PID = ND ppm PID = ND ppm				30	50	20				
	1 1 1 1	S-2 12	3.0 5.0	750.8		3.0 to 5.0 feet: interbedded layers of loose, brown, poorly-graded, silty SAND, moist.	PID = ND ppm										
				750.3	CL	Soft blue to gray, lean CLAY, sticky with black staining, no odor, moist.							100				
				749.8	SM	Loose, brown, poorly-graded, silty SAND, moist.											
5	0 0 1 1	S-3 18	5.0 7.0		CL	Very soft, blue to gray, lean CLAY, trace sand, very sticky, black staining, no odor.	PID = ND ppm						100	N	M	M	
				747.8													
	2 3 5 7	S-4 24	7.0 9.0		CL	Medium stiff, yellow-brown mottled gray, lean CLAY with sand, trace gravel, mps: 2 cm.	PID = ND ppm		5	15			80	N	M	M	
	2 3 7 8	S-5 24	9.0 11.0			Same except becoming grayish brown at 9.0 feet.	PID = ND ppm										
10				743.8													
	4 5 8 10	S-6 24	11.0 13.0	743.3	SM	Poorly-graded, silty SAND seam, wet.	PID = ND ppm					80	20				
					CL	Stiff, gray, lean CLAY, trace sand, mps: coarse sand, no odor, dry.				5			95	L	M	M-H	
				741.8													
	NA	U-7 20	13.0 15.0			Note: Shelby tube: VHC-4003, Sample ID: 4003-051603-1000 collected from 13.0 to 15.0 feet.											
						GW sample 122-060403-1055 collected.											
				739.8													
15						-Bottom of Exploration at 15.0 feet.-											

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4122

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4417

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 16, 2003
Finish May 16, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 757.5
Datum HRC Site Specific
Location N 8,811 E 7,819

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				756.9		-CONCRETE-											
	6 12	S-1 12	0.7 2.0		SP	Loose, black, fine SAND, mps < 1 mm, no odor, moist. -FILL- Soil sample S-1 M17-051603-1120 collected from 0.0 to 2.0 feet.	PID = 0.7 ppm					100					
	2 6 7 6	S-2 16	2.0 4.0	753.5		Same, except tan to brown coloring.	PID = ND ppm										
5	4 5 5 4	S-3 10	4.0 6.0		ML	Stiff, tan SILT, mps: 6.4 mm, no odor, moist. -GLACIAL TILL-	PID = ND ppm					10	90				
	2 3 3 4	S-4 24	6.0 8.0				PID = ND ppm										
	2 3 4 5	S-5 21	8.0 10.0			Soil sample S-2 M17-051603-1145 collected from 8.0 to 10.0 feet.	PID = ND ppm										
10	3 6 9 10	S-6 23	10.0 12.0	747.0			PID = ND ppm										
					SP	Loose, tan, fine SAND, mps < 1 mm, no odor, moist. -GLACIAL TILL-	PID = 3.0 ppm					95	5				
	7 18 16 17	S-7 15	12.0 14.0			Soil sample S-3 M17-051603-1210 collected from 11.0 to 13.0 feet. Water present at 13.0 feet. GW sample 4417-060503-1235 collected.	PID = 2.8 ppm										
	4 5 5 8	S-8 19	14.0 16.0	742.5			PID = 1.1 ppm										
15				742.0	CL	Stiff, gray, lean CLAY, mps < 1 mm, no odor, moist. -GLACIAL TILL-							100				
				741.6	SP							100					
	4 5 8 10	S-9 20	16.0 18.0		CL	Loose, gray, fine SAND, mps < 1 mm, no ododr, wet. -GLACIAL TILL- Stiff, gray, lean CLAY, mps < 1 mm, no odor, moist.	PID = ND ppm						100				
				739.5		See VHC-4004 for Shelby tube information. -Bottom of Exploration at 18.0 feet.-											

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4417

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4418

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 21, 2003
Finish May 21, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 757.8
Datum HRC Site Specific
Location N 8,675 E 7,845

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				756.8		-CONCRETE-										
	4 2	S-1 12	1.0 2.0	755.8	SP	Very loose, tan, fine SAND, mps < 1 mm, no odor, moist to dry. PID = 8.3 ppm					100					
	1 2 1 2	S-2 24	2.0 4.0	753.8		Same, except becoming gray at approximately 4.25 feet and oily substance present. PID = 14.8 ppm										
5	3 1 2 2	S-3 19	4.0 6.0	751.8												
	1 5 6 8	S-4 24	6.0 8.0	750.8		Same as above. PID = 4.5 ppm					100					
				749.8	ML	Medium stiff to stiff, gray, sandy SILT, mps < 1 mm, petroleum odor, moist.					40	60				
	3 7 9 11	S-5 22	8.0 10.0	747.8	SM	-GLACIAL TILL- PID = 1.6 ppm Medium dense, gray, silty SAND, petroleum odor, mps < 1 mm, moist. -GLACIAL TILL-					80	20				
10	6 11 12 12	S-6 22	10.0 12.0	745.8		Same as above, except wet. PID = 1.5 ppm										
	6 5 4 6	S-7 19	12.0 14.0	744.8		PID = ND ppm										
				743.8	CL	Stiff, gray, lean CLAY, mps < 1mm, no odor, moist. -GLACIAL TILL-						100				
						-Bottom of Exploration at 14.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 14.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4418

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4419

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start March 23, 2004
Finish March 23, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. G. Laird
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2.0	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0	5 9 8 5	ND	S1 2	0.0 2.0				-CONCRETE-										
						0.5	ML	Soft, brown, SILT (ML), mps = 0.25 in., no odor, moist. -GLACIAL TILL-					10	90				
	3 3 4 3	0.1	S2 12	2.0 4.0				Similar to above.										
	4 5 15 17	NA	S3 0	4.0 6.0		4.0		No recovery.										
5	5 5 4 5		S4 10	6.0 8.0		6.0	ML	Soft, brown SILT (ML), mps: 0.25 in., no odor, moist.					10	90				
						7.0	SM	Soft, yellow-brown, silty SAND, mps = 1 mm, no odor, moist. -GLACIAL TILL-					85	15				
	6 8 7 9	0.1	S5 16	8.0 10.0				Water at 8 ft.										
10	8 9 9 10	ND	S6 13	10.0 12.0				Similar to above except becoming gray-brown at 11.5 ft.										
	4 3 2 2	ND	S7 13	12.0 14.0		13.5	CL	Soft, gray, lean CLAY (CL), mps = 1 mm, no odor, moist. -GLACIAL TILL-					10	90				
15	3 4 4 4	ND	S8 18	14.0 16.0				Similar to above. Similar to above.										
						16.0		-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples 8S

Boring No. MW-4419

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4420

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start April 7, 2004
Finish April 7, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. G. Laird
Elevation
Datum Estimated
Location Gridley area

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2.0	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
	4 7 11	3.4	S-1 15	0.5 2.0		0.5	SP	Soft, yellow brown, poorly graded, fine SAND, mps: 1 mm, no odor, moist. -FILL-					100					
	4 9 11 17	2.2	S-2 20	2.0 4.0				Similar to above.										
5	4 9 12 11	2.4	S-3 21	4.0 6.0		4.0	SW	Soft, dark brown, well graded, SAND with gravel, mps: 1 in., no odor, moist. -FILL-		40	20	20	20					
						5.5	ML	Soft, dark brown and yellow brown, mottled SILT, mps: 1/2 in., no odor, moist.					10	90				
	4 7 9 11	3.5	S-4 21	6.0 8.0		6.0	SM	-GLACIAL TILL- Soft, olive brown, silty SAND, mps: 1 mm, no odor, moist. -GLACIAL TILL-					15	85				
	4 10 11 15		S-5 24	8.0 10.0				Similar to above.										
10	4 9 12 14	2.6	S-6 24	10.0 12.0				Water at 11.5 ft.										
	6 9 10 9	2.5	S-7 20	12.0 14.0		12.0	SP	Soft, red gray, poorly graded, fine SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					95	5				
15	2 3 4 6	2.4	S-8 21	14.0 16.0		14.0	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL-						100				
						16.0		-Bottom of Exploration at 16.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples 8S

Boring No. MW-4420

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4601D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Prosonic Corp.

File No. 49017
Sheet No. 1 of 2
Start May 13, 2002
Finish May 15, 2002
Driller D. Bond
H&A Rep. G. Liedel

Elevation 755.9
Datum HRC Site Specific

Location
N 9,959
E 8,307

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	140	NA	-	Casing: NA
Hammer Fall (in.)	30	NA	-	Hoist/Hammer: Cat-Head, Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1	0.0 2.0	754.9		Dark brown, clayey TOPSOIL, trace sand and silty with brick fragments, moist.	PID = ND ppm					15	85	L	L	M	M
			2.0 4.0		CL	Dark brown, silty CLAY, trace sand, gray and red mottling, moist.	PID = ND ppm					5	95	L	L	M	M
			4.0 6.0														
5			6.0 8.0	749.4	SM	Gray-brown, fine grained, silty SAND, wet.	PID = ND ppm					60	40	L	L	L	L
			8.0 10.0														
10		S-2 18	10.0 12.0	745.9		Note: End hand augering.											
					SM	Gray-brown, fine grained, silty SAND, wet.	PID = ND ppm					55	45	H	L	L	L
		S-3 18	12.0 14.0														
		S-4 21	14.0 16.0	741.4	CL	Stiff, gray, silty CLAY with some fine sand, moist.	PID = ND ppm					10	90	L	H	M	M
15		S-5 21	16.0 18.0														
		S-6 24	18.0 20.0														
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 38.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4601D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4601D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20		S-7 24	20.0 22.0	734.4	CL											
		S-8 15	22.0 24.0		SM	Gray to gray-brown, fine to very fine-grained, silty SAND, wet. PID = ND ppm					60	40	H	L	L	L
		S-9 15	24.0 26.0													
25		S-10 24	26.0 28.0	728.9												
		S-11 24	28.0 30.0		SM	Gray-brown, silty SAND and some coarse sand, moist. PID = ND ppm			5	10	40	45	L	M	L	L
30		S-12 20	30.0 32.0	724.9												
		S-13 20	32.0 34.0		SM	Coarse, silty SAND, wet. PID = ND ppm			20	10	30	40	H	L	L	L
		S-14 20	34.0 36.0	722.4	SM	Coarse, silty SAND, moist. PID = ND ppm			5	10	50	35	L	M	L	L
35		S-15 20	36.0 38.0			Note: Due to stratigraphy, backfilled to 29.0 feet with bentonite; placed 2.0' feet of sand and then installed well. Fine filter sand used to construct well due to the large amount of fine sand and silt.										
				717.9		-Bottom of Exploration at 38.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4601D

TEST BORING REPORT

Boring No. MW-4604D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Prosonic Corp.

File No. 49017
Sheet No. 1 of 2
Start May 13, 2002
Finish May 14, 2002
Driller D. Bond
H&A Rep. G. Liedel
Elevation 759.2
Datum HRC Site Specific
Location N 9,601 E 7,394

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	2.0	NA	Bit Type: Cutting Head
Hammer Weight (lb.)	140	NA	-	Drill Mud: None
Hammer Fall (in.)	30	NA	-	Casing: NA
				Hoist/Hammer: Cat-Head, Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1	0.0 2.0	758.2		Dark brown, clayey TOPSOIL, "loam", some sand, moist. PID = ND ppm					15	85	L	L	M	M
					SM	Yellow-brown, silty SAND, trace gravel, moist. PID = ND ppm		5			70	25				
5																
		S-2	8.0 10.0			Note: End hand augering.										
10		S-3 30	10.0 14.0	749.2	SM	Brown to yellow-brown, silty SAND, moist. PID = ND ppm					80	20	L	L	M	M
		S-4 15	14.0 16.0													
15		S-5 15	16.0 18.0	743.2	SP-SM	Yellow-brown, medium to fine-grained, poorly-graded, SAND with silt, moist. PID = ND ppm				10	80	10	L	L	M	M
		S-6 15	18.0 20.0	741.2	SP-SM	Yellow-brown, poorly-graded, medium-grained SAND with silt, wet. PID = ND ppm				10	80	10	H	L	M	M
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 38.0
Rock Cored (lin. ft.) -
Samples 2S

Boring No. MW-4604D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4604D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		% Coarse (Gravel)	% Fine (Gravel)	% Coarse (Sand)	% Medium (Sand)	% Fine (Sand)	% Fines	Dilatancy (Field Test)	Toughness (Field Test)	Plasticity (Field Test)	Strei (Field Test)
20		S-7 15	20.0 22.0		SP-SM												
		S-8 15	22.0 24.0	736.7	SP-SM	Gray-brown, poorly-graded, medium to fine-grained SAND with silt, wet.	PID = ND ppm				10	80	10	H	L	M	M
25		S-9 15	24.0 26.0														
		S-10 12	26.0 28.0		SP-SM	Note: Sand blowback in augers.	PID = ND ppm				10	80	10	H	L	M	M
		S-11 12	28.0 30.0	729.7													
30		S-12 15	30.0 32.0		SP-SM	Advanced augers to 34.0'.	PID = ND ppm					85	15	L	M	M	M
						Gray, poorly-graded SAND with silt, some coarse sand, wet.											
		S-13 15	32.0 34.0	725.2													
		S-14 15	34.0 36.0	724.2	SW-SM	Very coarse to fine-grained SAND with silt, well-graded, wet.	PID = ND ppm			20	20	40	20	H	L	L	L
35					CL	Very stiff, gray, silty CLAY with trace gravel.	PID = ND ppm		5	5	5	5	80	L	H	M	H
		S-15 15	36.0 38.0			Note: Approximately 30 gallons of water used to advance borehole.											
				721.2		-Bottom of Exploration at 38.0 feet.-											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4605D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Prosonic Corp.

File No. 49017
Sheet No. 1 of 2
Start May 13, 2002
Finish May 13, 2002
Driller D. Bond
H&A Rep. A. Guianen
Elevation 759.8
Datum HRC Site Specific
Location N 9,204 E 7,397

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	2.0	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	140	NA	-	Casing: NA
Hammer Fall (in.)	30	NA	-	Hoist/Hammer: Cat-Head, Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 0	0.0 2.0	759.3		Dark brown, silty clayey "loam" TOPSOIL.	PID = ND ppm										
				757.8	CL	Yellow-brown, silty CLAY with trace gravel and gray mottling, moist.	PID = ND ppm	5				10	85	L	L	M	M
				756.8	ML	Yellow-brown, clayey SILT, gray mottling, moist.	PID = ND ppm						100	L	M	M	M
5					SM	Yellow-brown, fine-grained, silty SAND, some mottling, moist.	PID = ND ppm					60	40	L	M	L	L
				752.6	SM	Brown, silty SAND, wet.	PID = ND ppm					50	50	M	L	M	M
				751.6	ML	Brown to yellow-brown, sandy, clayey SILT, moist.	PID = ND ppm					40	60				
		S-2 0	8.0 10.0	749.8	SM	Brown, silty SAND with trace coarse sand, moist to wet. Note: End hand augering.	PID = ND ppm			5		55	40	L	M	M	L
10		S-3 24	10.0 12.0	747.8	CL	Soft, gray, silty CLAY, moist.	PID = ND ppm					20	80	L	L	M	L
		S-4 24	12.0 14.0	745.6	CL	Stiff, gray, silty CLAY, some reddish mottling.	PID = ND ppm						100	L	H	L	H
15		S-5 18	14.0 16.0		SP-SM	Brown, well-graded, fine to medium-grained SAND with silt, wet.	PID = ND ppm				5	80	15	H			
		S-6 18	16.0 18.0	741.8													
		S-7 18	18.0 20.0		SM	Gray, fine-grained, silty SAND, wet.	PID = ND ppm					80	20	H			
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary

Overburden (lin. ft.)	38.0
Rock Cored (lin. ft.)	-
Samples	3S

Boring No. MW-4605D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4605D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strer
20		S-8 18	20.0 22.0		SM												
		S-9 21	22.0 24.0	737.3	SM	Gray, fine to medium-grained, silty SAND, wet.	PID = ND ppm				10	70	20	H			
		S-10 21	24.0 26.0														
25				734.3	SM	Gray, fine-grained, silty SAND, wet.	PID = ND ppm					80	20	H			
		S-11 15	26.0 28.0	732.8	SM	Gray, well-graded, medium-grained, SAND with silt, wet.	PID = ND ppm				60	30	10	H			
		S-12 15	28.0 30.0	729.8													
30		S-13 18	30.0 32.0	729.3	SM	Gray, fine-grained, silty SAND, wet.	PID = ND ppm					80	20	H			
					SP-SM	Gray, well-graded, medium to fine-grained, silty SAND, wet.	PID = ND ppm				30	50	20	H			
		S-14 18	32.0 34.0														
		S-15 21	34.0 36.0	725.3	CL	Stiff, gray, silty CLAY, moist.	PID = ND ppm					5	95	L	H	H	M
35		S-16 21	36.0 38.0	721.8		-Bottom of Exploration at 38.0 feet.-											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4606D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start May 13, 2003
Finish May 15, 2003
Driller B. Graham
H&A Rep. J. Davis

Elevation 759.0
Datum Estimated

Location
N 8,308
E 7,426

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Steel	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	10"	1 7/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: 4 1/2" HSA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 2 3 3	S-1 24	0.0 2.0	758.5	OL/OH	Soft, dark brown, sandy, organic SOIL with trace gravel, mps: 1.6 mm, no odor, moist. PID = ND ppm					40	60				
				758.0	CL											
					SP	Medium stiff, yellow-brown to gray mottling, sandy, lean CLAY, trace gravel, mps: 1.3 cm, no odor, moist.				60	30	10				
	2 1 1 2	S-2 12	2.0 4.0	757.0		Loose, yellow-brown, poorly-graded SAND, mps: medium sand, no odor, moist. Black staining present. PID = ND ppm										
				756.0		Soil sample S-1 M06D-051303-1710 collected from 0.0 to 2.0 feet.										
	2 2 2 3	S-3 24	4.0 6.0		CL	Soft, yellow-brown, lean CLAY with gray mottling, trace coarse sand, no odor, moist. PID = ND ppm						100	N	M	M	H
5	1 1 2 3	S-4 18	6.0 8.0			PID = ND ppm										
	1 1 1 4	S-5 20	8.0 10.0			Soil sample S-2 M06D-051303-1720 collected from 8.0 to 10.0 feet. PID = ND ppm										
10	1 4 8 10	S-6 18	10.0 12.0	748.0		PID = ND ppm										
					SP	Medium dense, yellow-brown, poorly-graded, clayey, fine SAND, no odor, wet. PID = ND ppm					70	30				
	9 10 17 17	S-7 24	12.0 14.0			Same except becoming gray at 13.0 feet. PID = ND ppm										
	2 3 5 6	S-8 24	14.0 16.0	744.5	CL	Medium dense, gray, lean CLAY, no odor, moist. PID = ND ppm						100	N	M	H	
15	2 2 3 4	S-9 24	16.0 18.0			PID = ND ppm										
	1 2 3 4	S-10 24	18.0 20.0			PID = ND ppm										
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
5/14/03	0700	12		15'	9.5

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 34.0
Rock Cored (lin. ft.) -
Samples S 1-2, GW 1

Boring No. MW-4606D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4606D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strer.
20		S-11 24	20.0 22.0			Same, except becoming sandy at 21.5 feet. PID = ND ppm 1" lens of fine to medium sand with 2 cm piece of gravel at 21.7 feet, wet.										
	5 16 18 21	S-12 24	22.0 24.0	736.5	CL	PID = ND ppm Gray, lean CLAY with sand and gravel, mps: 6.3 mm, no odor, moist. 1" seam of fine sand at 23.5 feet, wet.		10	10			80		M	M	
	25 30 44 6	S-13 24	24.0 26.0	735.0	CL	Interbedded layers of wet, gray, fine SAND with gravel from 24 to 27 feet, mps: 3 cm, no odor. PID = ND ppm Note: PID not functioning properly due to severe rain.		10				90	R	L	N	
25	4 16 23 28	S-14 24	26.0 28.0	732.0	SP	Very dense, gray-brown, poorly-graded SAND, mps: medium sand, no odor, wet. Note: 2" interbedded layers of dry, hard SILT at 29.0 to 29.5 feet.				10	80	10				
	10 12 9 17	S-15 24	28.0 30.0													
30	4 8 12 12	S-16 24	30.0 32.0	728.0	CL	Very stiff, gray, lean CLAY, no odor, dry.						100	S	H	H	
	3 5 11 15	S-17 24	32.0 34.0	725.0		GW sample 606D-060603-1710 collected.										
						-Bottom of Exploration at 34.0 feet.-										

NOTE: 10" Casing set to 15.5' below ground surface.

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4606D

TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4608D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start May 12, 2003
Finish May 14, 2003
Driller B. Graham
H&A Rep. J. Davis

Elevation 758.5
Datum HRC Site Specific

Location
N 7,527
E 7,702

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				758.2		-ASPHALT-										
	2 2 2 3	S-1 24	0.5 2.5		SP	Very loose, brown to yellow-brown SAND, mps: 2 mm, no odor, moist. PID = ND ppm Soil sample S-1 M08D-051203-1645 collected from 0.0 to 2.0 feet.				80	20					
	2 1 1	S-2 18	2.5 4.0			Water present at 2.5 feet. PID = ND ppm GW sample 608D-060603-1700 collected.										
	1/12" 1/12"	S-3 20	4.0 6.0			PID = ND ppm										
5																
	1 3 3 6	S-4 24	6.0 8.0			PID = ND ppm										
				751.0	CL	Stiff, yellow-brown, lean CLAY with sand, trace gravel, mps: 6.3 mm, no odor, moist to wet. PID = ND ppm			10			90				
	3/6" 8/6"	S-5	8.0 9.0	750.0	SP	Very loose, yellow-brown, poorly-graded SAND, no odor, mps: 2 mm, wet. PID = ND ppm					100					
	4 5 10 11	S-6 10	9.0 11.0													
10																
	6 10 12 10	S-7 24	11.0 13.0			PID = ND ppm										
				746.0												
				745.5	CL	Very stiff, gray, lean CLAY, trace medium sand, no odor, moist.						100	N	M	M	H
	NA	U-8 24	13.0 15.0			Shelby tube: VHC 4001, Sample ID: 4001-051403-1100 collected from 13.0 to 15.0 feet. PID = ND ppm										
				743.5												
15	1 1 2 2	S-9 18	15.0 17.0			PID = ND ppm										
	1 1 2 3	S-10 18	17.0 19.0			Same except becoming more moist. PID = ND ppm										
	1 1	S-11 18	19.0 21.0			PID = ND ppm										
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 25.0
Rock Cored (lin. ft.) -
Samples S 1, GW 1

Boring No. MW-4608D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4608D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plastic†	Field Test Stren.
20	1 6			737.5		PID = ND ppm										
	5 9 9 11	S-12 23	21.0 23.0	735.5	SP-CL	Interbedded layers of stiff, gray, lean, moist CLAY and gray, poorly-graded, fine, wet SAND.					20	80				
	3 10 14 23	S-13 24	23.0 25.0	733.5	CL	Very stiff, gray, lean CLAY, no odor, dry. PID = ND ppm						100	N	N	H	H
25						-Bottom of Exploration at 25.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4608D

TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4610D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Prosonic Corp.

File No. 49017
Sheet No. 1 of 2
Start May 16, 2002
Finish May 17, 2002
Driller D. Bond
H&A Rep. F. Palatka
Elevation 756.6
Datum HRC Site Specific
Location N 7,529 E 8,527

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: NA
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: Cat-Head, Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 36	0.0 2.0	754.6	CL	Brown CLAY with fine sand, yellow-brown mottling present, moist, trace silt. PID = ND ppm					30	70	L	L	M	M
5				750.6	SM	Light brown, silty SAND, wet, hydrocarbon odor.					70	30	L	L	L	L
		S-2 36	6.0 7.0	749.6	SM	Black staining, wet, at 7 feet. PID = 200 ppm										
					CL	Gray-brown CLAY, mottling present, moist, odors. PID = 275 ppm					5	95	L	L	M	M
		S-3 36	8.0 8.5	748.1	CL	Gray-brown CLAY, moist. PID = < 1 ppm					5	95	-	M	M	
10		S-4 46	10.0 14.0	746.6	CL	NOTE: 10" steel casing stalled to 14.0 feet.										
		S-5 36	14.0 17.0	742.6	CL	Gray-brown CLAY with some medium-grained sand, moist. PID = ND ppm				10	15	75	N	M	M	
15						Same as above.										
		S-6 34	18.0 21.0													
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4610D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4610D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Stren.
20					CL												
				735.6													
					SM	Gray-brown, silty SAND, wet.	PID = ND ppm					70	30	R			
				734.6													
		S-7 35	22.0 26.0		SP-SM	Gray-brown SAND, with interbedded silt.	PID = ND ppm					90	10				
25																	
		S-8 46	26.0 30.0														
				728.1													
					CL	Gray-brown CLAY, moist.	PID = ND ppm						100				
30																	
				724.6		-Bottom of Exploration at 32.0 feet.-											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4610D

TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4610S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Prosonic Corp.

File No. 49017
Sheet No. 1 of 1
Start May 16, 2002
Finish May 16, 2002
Driller D. Bond
H&A Rep. F. Palatka
Elevation 756.4
Datum Estimated
Location N 7,529 E 8,516

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: Cutting Head
Hammer Weight (lb.)	140	NA	-	Drill Mud: None
Hammer Fall (in.)	30	NA	-	Casing: NA
				Hoist/Hammer: Cat-Head, Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 36	0.0 2.0	754.4	CL	Brown CLAY with fine sand, yellow-brown mottling present, moist, trace silt. PID = ND ppm					30	70	L	L	M	M
				750.4	SM	Light brown, silty SAND, wet, hydrocarbon odor.					70	30	L	L	L	L
5		S-2 36	6.0 7.0	749.4	SM	Black staining, wet, at 7 feet. PID = 200 ppm										
					CL	Gray-brown CLAY, mottling present, moist, odors. PID = 275 ppm					5	95	L	L	M	M
		S-3 36	8.0 8.5	747.9	CL	Gray-brown CLAY, moist. PID = < 1 ppm					5	95	-	M	M	
10				746.4		-Bottom of Exploration at 10.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 10.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4610S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

WELL DECOMMISSIONING REPORT

Well No.

MW-4613

PROJECT	Dort Highway	H&A FILE NO.	49017-035
LOCATION	Flint, MI	PROJECT MGR.	Lloyd Ross
CLIENT	Delphi Corporation	FIELD REP.	Rachel Kornak
CONTRACTOR	Stearns Drilling	REMOVAL DATE	3/16/2004

Well Designation	MW-4613
Well Diameter	2"
Decommissioning Technique	Pulled Casing
Depth to Groundwater	
Total Depth of Well	13.5 Ft

	Cement (Lbs. - Bags*)	Additive (Lbs. - Gals.)	Water (Gals.)	Final Quantity (Gals.)
Type	Holeplug	N/A		
Manufacturer	Baried	N/A		
Quantity	2 - 50 lb bags	N/A		

Exlanation of Well Decommissioning Techniques:

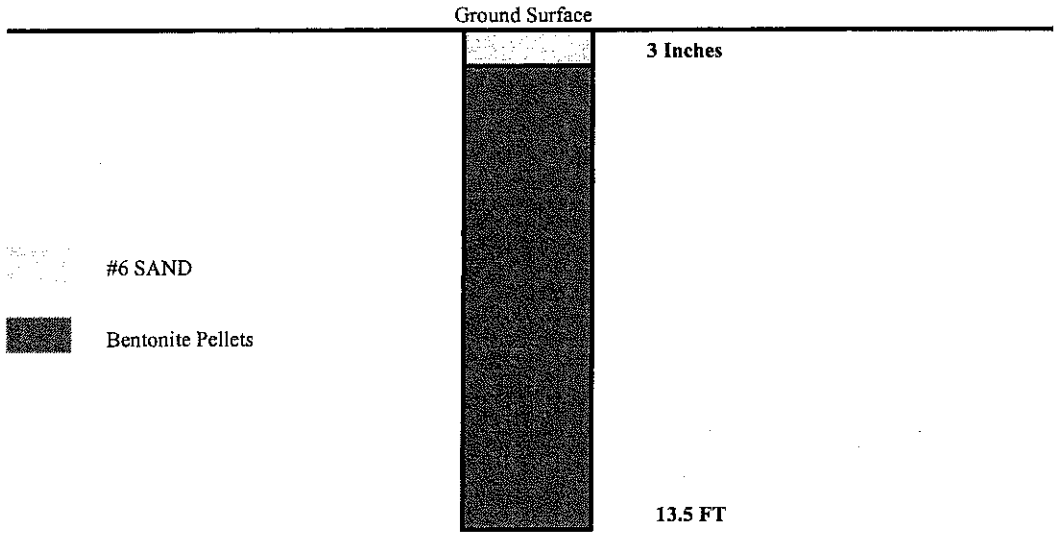
A. Shallow Wells:

These wells may either be removed by pulling the casing out of the ground, or plugged in-place using bentonite grout. If the well is plugged in-place, the casing must be plugged above the screen using a bentonite/cement grout (see grout placement guidelines), and the casing should be cut-off a minimum of 3 feet below the ground surface. If the well is pulled, care should be taken to compact the soils to avoid significant ground subsidence.

B. Deep Wells: Deep wells must be plugged using a bentonite/cement grout, which will fill the casing and annular space (see grout placement guidelines). The casing must be terminated 3 feet below the ground surface.

***1 Bag = 94 Lbs.**

Sketch:



COMMENTS: Pulled Well casing with CME-1050. Borehole was abandoned to ground surface with Bentonite Holeplug.

Form # 3010

HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4613R

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start March 16, 2004
Finish March 16, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. R. Kornak
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	Steel	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	1 3/8	9	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: HSA
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	3 5 5 4	ND ND	S1 16	0.0 2.0		0.3	OL-OH	Medium stiff, dark brown ORGANIC SOIL (OL-OH), mps = 0.05 mm, no odor, moist.					50 30	50 70	N	M	H	
							CH	Medium stiff, olive-brown, sandy fat CLAY (CH), mps = 0.5 mm, no odor, moist.										
	8 7 9 11		S2 23	2.0 6.0														
5	2 4 4 7	ND	S3 16	4.0 6.0				Becoming light brown at 4.0 ft.										
	7 9 9 12	ND	S4 24	6.0 8.0		6.0	SM	Loose, light brown, silty SAND (SM), mps = 3 mm, no odor, moist.				20	35	45				
	5 6 9 9	ND	S5 23	8.0 10.0														
10	7 11 10 5		S6 23	10.0 12.0		9.5	ML	Stiff, dark brown SILT (ML), mps = 0.03 mm, no odor, moist.					5	95				
	2 2 3 2	ND ND ND	S7 17	12.0 14.0		12.0	SM	Wet at 11.75 ft. Three inch seam of light brown, silty SAND (SM).				20	35 50	45 50				
						12.3	ML	Stiff, dark brown, sandy SILT (ML), mps = 0.03 mm, no odor, wet.										
15	2 5 7 7		S8 10	14.0 16.0														
	2 6 5 5	ND ND	S9 17	16.0 18.0		16.0	SP-SM	Loose, dark brown, poorly-graded SAND with silt (SP-SM), mps = 5 mm, no odor, wet.			10	20	30 50	40 50				
						16.1	ML	Stiff, dark brown, sandy SILT (ML), mps: 0.03 mm, no odor, wet.										
	3 8 6 3		S10 18	18.0 20.0														
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
03/16/04			0.625??	26.0	16.75

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 26.0
Rock Cored (lin. ft.) -
Samples 13S

Boring No. MW-4613R

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4613R
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plastic	Field Test Strenc
20	2		S11	20.0			ML											
	3		24	22.0														
	6																	
	6	ND				21.5	GP	Dense, dark brown, poorly-graded GRAVEL with sand (GP), mps = 1 in., no odor, wet.	10	60	15		10	5				
	9		S12	22.0														
	21		24	24.0														
	25																	
	33	ND				23.5	CH	Hard, dark brown, fat CLAY with sand (CH), mps = 1.5 in., no odor, moist.		10			10	80				
	24		S13	24.0														
	29		12	26.0														
25	38																	
	45																	
		ND				26.0		-Bottom of Exploration at 26.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

OBSERVATION WELL INSTALLATION REPORT

Well No. 4613R

Boring No. 4613 R

PROJECT	Delphi - Dort Hwy RFI Activities	H&A FILE NO.	49017-035
LOCATION	Flint, MI	PROJECT MGR.	Lloyd Ross
CLIENT	Delphi Corporation	FIELD REP.	R. Kornak
CONTRACTOR	Stearns Drilling Company	DATE INSTALLED	3/16/2004
DRILLER		WATER LEVEL	15.75 ft BGS

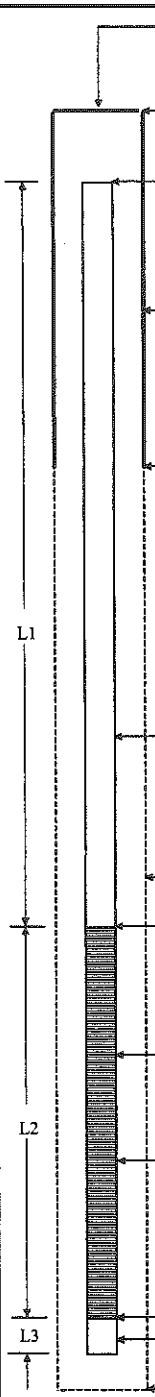
Ground El. _____ ft
El. Datum _____

Location ~ 10 ft west of 4613

☐ Guard Pipe
☑ Roadway Box

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL
See Boring Log (0.0 ft)	0.0 ft
3 Inches CLAY (6.0 ft)	#6 SAND (1.0 ft)
Silty SAND (9.5 ft)	Bentonite Hole Plug
(16.0 ft)	(16.0 ft)
SAND (16.2 ft)	
Sandy SILT (21.5 ft)	SAND; #6 Sand
GRAVEL (23.5 ft)	
CLAY	
24.0 ft	24.0 ft

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)



(Not to Scale)

Type of protective cover/lock	Flushmount	
Height/Depth of top of guard pipe/roadway box above/below ground surface	0.0	ft
Height/Depth of top of riser pipe above/below ground surface		ft
Type of protective casing:	Flushmount	
Length	0.6	ft
Inside Diameter	9.000	in
Depth of bottom of guard pipe/roadway box	0.6	ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Bentonite Hole Plug	1.0	15.0

Type of riser pipe:	Schedule 40 PVC	
Inside diameter of riser pipe	2.0	in
Type of backfill around riser	Bentonite pellets, #6 Sand	
Diameter of borehole	8.00	in
Depth to top of well screen	18.0	ft
Type of screen	Schedule 40 PVC	
Screen gauge or size of openings	0.010	in
Diameter of screen	2.0	in
Type of backfill around screen	# 6 Sand	
Depth of bottom of well screen	23.0	ft
Bottom of Silt trap	23.3	ft
Depth of bottom of borehole	24.0	ft

Riser Pay Length (L1)	+	Length of screen (L2)	+	Length of silt trap (L3)	=	Pay length
18 ft		5 ft		0.3 ft		23.3 ft

COMMENTS:

Form # 3010

TEST BORING REPORT

Boring No. MW-4615S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Prosonic Corp.

File No. 49017
Sheet No. 1 of 1
Start May 16, 2002
Finish May 17, 2002
Driller D. Bond
H&A Rep. G. Liedel
Elevation 762.3
Datum HRC Site Specific
Location N 8,665 E 8,734

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	1 5/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	140	NA	-	Casing: NA
Hammer Fall (in.)	30	NA	-	Hoist/Hammer: Cat-Head, Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1	0.0 2.0	760.3	SP-SM	Brown, silty, fine-grained SAND with red and yellow mottling, moist. PID = ND ppm					70	30	L	L	L	L
					CL	Yellow-brown, sandy CLAY, trace silt, gray mottling, moist. PID = ND ppm					40	60	L	L	M	M
5		S-2	5.0 6.0	756.3		Same as above.					40	60	L	L	M	M
						Water present at 6.0 feet. PID = ND ppm										
10		S-3	10.0 12.0	752.3	CL	Stiff, light brown CLAY, moist. PID = ND ppm						100				
				750.3		Bottom of Exploration at 12.0 feet.										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 12.0
- Rock Cored (lin. ft.) -
- Samples -

Boring No. MW-4615S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4620D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start June 11, 2002
Finish June 11, 2002
Driller M. Hefferan
H&A Rep. G. Leidel
Elevation 758.3
Datum HRC Site Specific
Location N 9,378 E 7,806

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	2	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: NA
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: Cat-Head Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 60	0.0 5.0	757.6		-CONCRETE-										
					CL	Yellow-brown, silty CLAY, some mottling, moist. PID = ND ppm					5	95				
						Note: End hand augering (5 ft).										
5	4 5 5 5	S-2 24	5.0 7.0	752.8	SP-SM	Yellow-brown, fine SAND with some silt, moist. PID = ND ppm					70	30				
	3 4 3 5	S-3 24	7.0 9.0			Same as above. PID = ND ppm					70	30				
10	2 3 3 4	S-4 24	9.0 11.0			Same as above. PID = ND ppm					70	30				
	1 2 1 5	S-5 24	11.0 13.0			Same as above. PID = ND ppm					70	30				
	6 11 13 15	S-6 24	13.0 15.0	743.8		Same as above. PID = ND ppm Water present at 14.0 feet.					70	30				
15	7 11 11 11	S-7 24	15.0 17.0	741.8	ML	Gray, sandy SILT, wet PID = ND ppm					30	70				
	5 7 9 10	S-8 24	17.0 19.0		SM	Gray, silty SAND, wet. PID = ND ppm					60	40				
20	5 10	S-9 24	19.0 21.0			Same as above. PID = ND ppm										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.5
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4620D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4620D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tes* Dilatancy	Toughness	Plasticity	Streng.
20	10 8			737.8													
	2 4 8 7	S-10 24	21.0 23.0		SP-SM	Olive, fine-grained SAND with silt, wet.	PID = ND ppm					75	25				
	2 2 3 4	S-11 24	23.0 25.0	735.3	SP-SM	Same as above except containing fine- to medium-grained SAND.	PID = ND ppm				20	75	5				
25	3 3 6 6	S-12 24	25.0 27.0			Same as above except becoming olive, medium-grained SAND with silt, wet.	PID = ND ppm				85		15				
	4 8 23 23	S-13 24	27.0 29.0	729.8	SP	Olive, medium- to coarse-grained SAND with gravel, trace fine-grained sand, wet.	PID = ND ppm		5	45	45	5					
	9 18 24 28	S-14 24	29.0 31.0			Gray, 4" silty CLAY layer with gravel and sand at 30.0'.	PID = ND ppm		15			5	80	L	L	L	H
30				727.3		Gray, coarse-grained SAND with gravel, wet from 30.3 to 31 feet.	PID = ND ppm		10	70	15	5					
	19 46 91	S-14 18	31.0 32.5	725.8	CL	Very hard CLAY with gravel and silt.	PID = ND ppm		5				95	L	L	L	H
						-Refusal at 32.5 feet.											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4620D

TEST BORING REPORT

Boring No. MW-4620S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start June 12, 2002
Finish June 12, 2002
Driller M. Hefferan
H&A Rep. G. Leidel
Elevation 758.3
Datum HRC Site Specific
Location N 9,382 E 7,807

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	1 3/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Cat-Head Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 24	0.0 2.0	757.6		-CONCRETE-										
					CL	Yellow-brown, silty CLAY, some mottling, moist. PID = ND ppm					5	95				
						Note: End hand augering (5 ft).										
5				752.8	SP-SM	Yellow-brown, fine SAND with some silt, moist. PID = ND ppm					70	30				
						PID = ND ppm										
						Same as above. PID = ND ppm					70	30				
	3 5 5 9	S-2 24	8.0 10.0			Same as above. PID = ND ppm					70	30				
10						Same as above. PID = ND ppm					70	30				
	11 12 16 19	S-3 24	12.0 14.0			Same as above. PID = ND ppm					70	30				
				743.8		Water present at 14.0 feet.										
15					ML	Gray, sandy SILT, wet PID = ND ppm					30	70				
				741.8	SM	Gray, silty SAND, wet. PID = ND ppm					60	40				
				740.3		- Bottom of Exploration at 18.0 feet.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4620S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4621D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start June 12, 2002
Finish June 14, 2002
Driller M. Hefferan
H&A Rep. G. Leidel
Elevation 758.2
Datum HRC Site Specific
Location N 8,382 E 7,981

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	1 3/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Cat-Head Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 60	0.0 5.0		CL	Sandy CLAY with concrete, bricks, spark plugs. -FILL-	PID = ND ppm					50	50				
				755.2	CL	Brown, silty CLAY with trace fine-grained sand, brown and gray mottling, moist.	PID = ND ppm					10	90	L	M	M	L
5	3 5 7 9	S-2 24	5.0 7.0	753.2		Note: End hand augering (5 ft).	PID = ND ppm					10	90	L	M	M	L
	7 8 9 11	S-3 24	7.0 9.0			Same as above.	PID = ND ppm					10	90	L	M	M	
				749.2	CL	Gray, silty CLAY with sand.	PID = ND ppm					15	85	L	M	M	L
10	4 5 8 17	S-4 24	9.0 11.0	747.7	SP-SM	Very fine-grained SAND with silt, product present, wet.	PID = ND ppm					70	30				
	6 8 11 12	S-5 24	11.0 13.0	746.2	CL	Gray, silty CLAY with fine-grained sand, moist to wet.	PID = ND ppm					10	90	L	M	L	L
	2 3 5 6	S-6 24	13.0 15.0			Same as above.	PID = ND ppm										
15	3 4 4 7	S-7 24	15.0 17.0			Water present at 15.0 feet. Same as above.	PID = ND ppm										
	3 3 5 7	S-8 24	17.0 19.0			Same as above.											
20	2 4	S-9 24	19.0 21.0														

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 34.5
Rock Cored (lin. ft.) -
Samples -

Boring No. MW-4621D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4621D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	5 6																
	3 9 17 31	S-10 24	21.0 23.0			Same as above. 2" fine-grained sand seam at 22.0', wet.	PID = ND ppm										
	5 25 62 refusal	S-11 0	23.0 25.0			Note: No Recovery from 23 feet to 25 feet.	PID = ND ppm										
				733.2													
25	5 13 24 28	S-12 24	25.0 27.0		CL	Firm, gray, silty CLAY with sand, moist	PID = ND ppm					10	90	L	M	L	M
				732.2													
					SP	Fine-grained SAND, trace silt, wet.	PID = ND ppm					95	5				
	4 9 15 23	S-13 24	27.0 29.0			Same as above.											
	11 25 37 50	S-14 24	29.0 31.0			Same as above.											
30				727.2													
	6 14 15 26	S-15 24	31.0 33.0		CL	Gray, silty CLAY, moist	PID = ND ppm						100				
	11 14 12	S-16 18	33.0 34.5	724.2 723.7													
	-					-Bottom of Exploration at 34.5 feet-											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4621D

TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4621S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start June 13, 2002
Finish June 13, 2002
Driller J. Caryska
H&A Rep. G. Leidel
Elevation 758.3
Datum HRC Site Specific
Location N 8,382 E 7,988

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	1 3/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Cat-Head Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**; structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1 60	0.0 5.0	755.3	CL	Sandy CLAY with concrete, bricks, spark plugs. -FILL- PID = ND ppm					50	50				
				753.3	CL	Brown, silty CLAY with trace fine-grained sand, brown and gray mottling, moist. PID = ND ppm					10	90	L	M	M	L
5	3 5 7 9	S-2 24	5.0 7.0			Note: End hand augering (5 ft). PID = ND ppm					10	90	L	M	M	L
	7 8 9 11	S-3 24	7.0 9.0	749.3		Same as above. PID = ND ppm					10	90	L	M	M	
10	4 5 8 17	S-4 24	9.0 11.0	747.8	CL	Gray, silty CLAY with sand. PID = ND ppm					15	85	L	M	M	L
					SP-SM	Very fine-grained SAND with silt, product present, wet. PID = ND ppm					70	30				
	6 8 11 12	S-5 24	11.0 13.0	746.3 745.3	CL	Gray, silty CLAY with fine-grained sand, moist to wet. PID = ND ppm -Bottom of Exploration at 13.0 feet.-					10	90	L	M	L	L

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary
Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples -

Boring No. MW-4621S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4622D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 3
Start June 11, 2002
Finish June 13, 2002
Driller M. Hefferan
H&A Rep. G. Leidel
Elevation 758.3
Datum HRC Site Specific
Location N 8,077 E 7,832

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: LC-60
Inside Diameter (in.)	NA	1 3/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Cat-Head Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0		S-1 60	0.0 5.0	757.8		-CONCRETE-	PID = 6 ppm										
					CL	Black fly ash and cinders, hydrocarbon odor.	PID = ND ppm					5	95	L	M	M	M
				756.3			PID = 20 ppm										
					CL	Yellow-brown, silty CLAY with mottling, moist.	PID = ND ppm					5	95				
							PID = 28 ppm										
5	5 7 9 11	S-2 24	5.0 7.0														
	4 6 9 10	S-3 24	7.0 9.0	749.8			PID = ND ppm										
					SM	Yellow-brown, fine-grained, silty SAND, wet.	PID = ND ppm					70	30				
	3 6 10 17	S-4 24	9.0 11.0				PID = ND ppm										
10																	
	9 14 12 8	S-5 24	11.0 13.0	746.8													
					ML	Gray SILT, with fine-grained sand, wet.	PID = ND ppm					25	75	L	L	L	L
				745.3			PID = ND ppm										
	2 2 3 3	S-6 24	13.0 15.0		CL	Silty CLAY, moist to wet.	PID = ND ppm										
							PID = ND ppm					5	95	L	M	H	L
				743.3			PID = ND ppm										
15	1 2 3 3	S-7 24	15.0 17.0		CL	CLAY, trace silt, moist.	PID = ND ppm					5	95	L	M	L	L
	1 2 2 2	S-8 24	17.0 19.0			Same as above.	PID = ND ppm					5	95	L	M	L	L
	1 5	S-9 24	19.0 21.0			Same as above.	PID = ND ppm										
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 61.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4622D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4622D
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	9 13																
	4 9 10 12	S-10 24	21.0 23.0			Same as above.											
				735.3													
	3 11 16 18	S-11 24	23.0 25.0		SM	Gray, silty SAND, trace gravel, wet to moist.	PID = ND ppm					50	50				
25	9 14 26 29	S-12 24	25.0 27.0			Same as above.	PID = ND ppm				5	45	45				
	7 5 10 24	S-13 24	27.0 29.0			Same as above.	PID = ND ppm										
				730.3													
					SP-SM	Gray coarse- to fine-grained SAND with silt and gravel, wet.	PID = ND ppm		5	50	30	10	5				
	6 13 26 42	S-14 24	29.0 31.0			Becoming gray, fine-grained SAND, wet.	PID = ND ppm					100					
30						Note: 2" coarse SAND seam at 30 feet.											
				727.3													
	5 25 31 40	S-15 24	31.0 33.0		SP-SC	Gray coarse- to fine-grained SAND with clay, trace gravel, wet.	PID = ND ppm			15	50	20	15				
	9 19 28 30	S-16 24	33.0 35.0			Same as above.	PID = ND ppm			15	50	20	15				
35	14 10 23 25	S-17 24	35.0 37.0			Same as above.	PID = ND ppm										
	14 31 29 21	S-18 24	37.0 39.0			Same as above.											
	9 11 19 22	S-19 24	39.0 41.0			Same as above.											
40	8 21 44 65	S-20 24	41.0 43.0		SP	Same as above except becoming gray medium- to coarse-grained SAND, wet.	PID = ND ppm				30	70					
							PID = ND ppm										
	4 7 15 17	S-21 24	43.0 45.0			Same as above except becoming gray, medium-grained SAND with trace coarse- and fine-grained sand, wet.	PID = ND ppm			10	80	10					
							PID = ND ppm										
45	12 28 31 39	S-22 24	45.0 47.0														
				712.3													
					SP	Brown, coarse- to medium-grained SAND and gravel, little fine sand, wet.	PID = ND ppm		40	45	15						
	7 18 26 28	S-23 24	47.0 49.0			Same as above.	PID = ND ppm										
	7	S-24	49.0			Same as above.											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4622D
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
50	21 22 47	24	51.0	707.3												
	4 8 14 21	S-25 24	51.0 53.0		SP	Gray coarse-grained SAND and gravel, wet. PID = ND ppm		50	50							
	7 21 24 27	S-26 24	53.0 55.0			Same as above. PID = ND ppm										
55	5 19 21 24	S-27 24	55.0 57.0			Same as above.										
	6 14 22 42	S-28 24	57.0 59.0			Same as above.										
	4 20 26 28	S-29 24	59.0 61.0			Same as above.										
60				697.3		-Bottom of Exploration at 61.0 feet.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4622D

TEST BORING REPORT

Boring No. MW-4622S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start June 11, 2002
Finish June 11, 2002
Driller M. Hefferan
H&A Rep. G. Leidel
Elevation 758.3
Datum HRC Site Specific
Location N 8,073 E 7,832

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: LC-60
Inside Diameter (in.)	NA	1 3/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Cat-Head Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0		S-1 60	0.0 5.0	757.8		-CONCRETE-	PID = 6 ppm										
					CL	Black fly ash and cinders, hydrocarbon odor.	PID = ND ppm					5	95	L	M	M	M
				756.3			PID = 20 ppm										
					CL	Yellow-brown, silty CLAY with mottling, moist.	PID = ND ppm					5	95				
							PID = 28 ppm										
5	5 7 9 11	S-2 24	5.0 7.0														
	4 6 9 10	S-3 24	7.0 9.0				PID = ND ppm										
				749.8	SM	Yellow-brown, fine-grained, silty SAND, wet.	PID = ND ppm					70	30				
	3 6 10 17	S-4 24	9.0 11.0				PID = ND ppm										
10				746.8													
	9 14 12 8	S-5 24	11.0 13.0	746.3	ML	Gray SILT, with fine-grained sand, wet.	PID = ND ppm					25	75	L	L	L	L
						-Bottom of Exploration at 12.0 feet.-											

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4622S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4623D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Prosonic Corp.

File No. 49017
Sheet No. 1 of 2
Start May 13, 2002
Finish May 14, 2002
Driller D. Bond
H&A Rep. G. Liedel

Elevation 758.9
Datum HRC Site Specific
Location N 9,874 E 7,392

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	2.0	NA	Bit Type: Cutting Head
Hammer Weight (lb.)	140	NA	-	Drill Mud: None
Hammer Fall (in.)	30	NA	-	Casing: NA
				Hoist/Hammer: Cat-Head, Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1	0.0 2.0			Dark brown, clayey TOPSOIL with trace sand and silt, moist. PID = ND ppm					25	75	L	L	M	M
				756.9	CL	Yellow-brown, silty CLAY, trace sand, moist. PID = ND ppm					5	95	L	L	M	M
				754.4	CL	Yellow-brown, CLAY with silt and trace sand, moist. PID = ND ppm					5	95	L	L	M	M
5				752.9	SM	Yellow-brown, fine-grained, silty SAND, moist. PID = ND ppm					70	30	L	L	L	L
		S-2	8.0 10.0													
				748.9		NOTE: End hand augering.										
10		13	10.0 12.0		SP-SM	Yellow-brown, medium-grained SAND with silt, moist. PID = ND ppm				70	15	15	L	L	L	L
						Same as above.										
		S-3 13	12.0 14.0													
				744.9												
15		15	14.0 16.0		SP-SM	Yellow-brown, well-graded, medium to fine-grained, silty SAND, wet. PID = ND ppm				30	40	30	H	L	L	L
						Same as above.										
		15	16.0 18.0													
				740.9												
		15	18.0 20.0		SP-SM	Gray-brown, well-graded, medium to fine-grained, silty SAND, wet. PID = ND ppm				30	40	30	H	L	L	L
20				738.9												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
5/14/02	1840	1.75	43.9	-	17.8

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 44.0
Rock Cored (lin. ft.) -
Samples 3S

Boring No. MW-4623D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4623D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strengt.
20		15	20.0 22.0	738.3	SM	Gray-brown, fine-grained, silty SAND, wet.	PID = ND ppm					60	40	H	L	L	L
					SM	Gray-brown, well-graded, medium-grained silty SAND, wet.	PID = ND ppm			5	40	25	30	H	L	L	L
		15	22.0 24.0			Same as above.											
25		15	24.0 26.0														
		12	26.0 28.0	732.5	SM	Same as above except becoming gray-brown, coarse-grained, silty SAND, wet.	PID = ND ppm			20	30	30	20	H	L	L	L
		12	28.0 30.0														
30		20	30.0 32.0	728.9	SM	Same as above except becoming gray-brown, moderately well-graded, medium-grained, silty SAND.	PID = ND ppm			5	40	20	35	H	L	L	L
				727.9	SW	Medium to coarse-grained SAND with silt and gravel, well-graded, wet.	PID = ND ppm		10	15	30	25	20	H	L	L	L
		20	32.0 34.0			Same as above.											
35		18	34.0 36.0			Same as above.											
		18	36.0 38.0	720.9	SW	Gray-brown, coarse SAND with silt and gravel, well-graded, wet.	PID = ND ppm		15	30	25	20	10	H	L	L	L
		18	38.0 40.0														
40		15	40.0 42.0	718.1	CL	Note: Blowback in augers from 40.0 to 40.8 feet. Stiff, gray, silty CLAY with gravel and sand.	PID = ND ppm	5		5	5	85		L	H	M	H
		15	42.0 44.0			Same as above.											
				714.9		-Bottom of Exploration at 44.0 feet.-											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4623S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Prosonic Corp.

File No. 49017
Sheet No. 1 of 2
Start May 14, 2002
Finish May 14, 2002
Driller D. Bond
H&A Rep. A. Guianen
Elevation 758.6
Datum HRC Site Specific
Location N 9,874 E 7,395

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME 85
Inside Diameter (in.)	NA	NA	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: NA
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: Cat-Head, Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S-1	0.0 2.0			Dark brown, clayey TOPSOIL with trace sand and silt, moist.					25	75	L	L		M
				756.6	CL	Yellow-brown, silty CLAY, trace sand, moist.					5	95	L	L	M	M
				754.1	CL	Yellow-brown, CLAY with silt and trace sand, moist.					5	95	L	L	M	M
5				752.6	SM	Yellow-brown, fine-grained, silty SAND, moist.					70	30	L	L	L	L
		S-2	8.0 10.0													
				748.6		Note: End hand augering.										
10		13	10.0 12.0		SP-SM	Yellow-brown, medium-grained SAND with silt, moist. Same as above.				70	15	15	L	L	L	L
		S-3 13	12.0 14.0													
				744.6												
15		15	14.0 16.0		SP-SM	Yellow-brown, poorly-graded, medium to fine-grained, silty SAND, wet. Same as above.										
		15	16.0 18.0													
				740.6												
		15	18.0 20.0		SP-SM	Gray-brown, poorly-graded, medium to fine-grained, silty SAND, wet.				30	40	30	L	L	L	L
20				738.6												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
5/14/02	1840	0.75	20	-	16.9

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 20.5
Rock Cored (lin. ft.) -
Samples 3S

Boring No. MW-4623S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4623S
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Te Dilatancy	Toughness	Plasticity	Strength
20		15	20.0 22.0		738.0	SM	Gray-brown, fine-grained, silty SAND, wet. -Bottom of Exploration at 20.5 feet.-				30	40	30	L	L	L	L

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4624D
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	1 2 1 1	S-11 16	20.0 22.0		SP	Same except no silt present.	PID = ND ppm					100					
				734.9													
	1 1 1 1	S-12 14	22.0 24.0		SP		PID = ND ppm										
				732.9													
	2 2 1 1	S-13 8	24.0 26.0		SP		PID = ND ppm										
25				730.9													
	3/24	S-14 6	26.0 28.0		SP		PID = ND ppm										
				728.9													
	1 3 3 1	S-15 20	28.0 30.0		SP	Same except grains become finer at approximately 29.25 feet.	PID = ND ppm					100					
				726.9													
30	6 6 2 3	S-16 24	30.0 32.0	726.2	SP	Loose, gray, poorly-graded SAND with gravel, mps: 2.5 cm, no odor, wet.	PID = ND ppm		20		25	50	5				
					SP	-GLACIAL TILL- Loose, gray, poorly-graded SAND, mps < 1 mm, no odor, wet.					30	70					
				724.9		-GLACIAL TILL-											
	8 7 11 14	S-17 24	32.0 34.0	723.9	SP	Loose, gray, poorly-graded SAND with gravel, mps: 2.5 cm, no odor, wet.	PID = ND ppm		20		50	25	5				
					SP	-GLACIAL TILL- Loose, gray, poorly-graded SAND, mps < 1 mm, wet.	PID = ND ppm				30	70					
	13 15 19 19	S-18 24	34.0 36.0	721.9	SP	Loose, gray, poorly-graded SAND with gravel, mps: 2.5 cm, wet.	PID = ND ppm		20		50	25	5				
35	21 32 42 50/5	S-19 21	36.0 38.0	719.9	ML	Very stiff, gray SILT, mps: 1.3 cm, no odor, slightly moist. -GLACIAL TILL-			10	5			85				
				718.9		-Bottom of Exploration at 38.0 feet.-											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4624S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start May 14, 2003
Finish May 14, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 756.8
Datum HRC Site Specific
Location N 10,048 E 7,660

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	1 2 2 5	S-1 15	0.0 2.0	756.3	ML	Soft, brown SILT with sand, mps: 1.3 cm, no odor, moist. PID = ND ppm					20	80				
				755.8	SP	-FILL-					100					
				754.8	ML	Loose, brown, fine SAND, mps < 1 mm, no odor, moist. -FILL-		10			10	80				
	3 2 2 2	S-2 14	2.0 4.0		ML	Soft, brown SILT containing slag. PID = ND ppm					15	85				
						Soft, brown and olive SILT with sand, mps: 3.2 mm, no odor, moist. -GLACIAL TILL-										
5	2 2 3 3	S-3 8	4.0 6.0		ML	PID = ND ppm										
				750.8												
	1 5 6 9	S-4 22	6.0 8.0		ML	Stiff, brown and gray SILT with sand and gravel, mps: 1.3 cm, no odor, moist. PID = ND ppm -GLACIAL TILL-		10			15	75				
				748.8												
	3 5 7 8	S-5 17	8.0 10.0		ML	Same except more gray containing less gravel. PID = ND ppm		5			20	75				
				746.8												
10	2 3 4 4	S-6 21	10.0 12.0		ML	Stiff, gray SILT, mps: 6.4 mm, no odor, fairly moist. PID = ND ppm -GLACIAL TILL-		5		5	5	85				
	3 2 2 2	S-7 20	12.0 14.0		ML	PID = ND ppm					15	85				
				743.8	SP	Loose, gray, fine SAND, mps < 1 mm, no odor wet. -GLACIAL TILL-					95	5				
				742.8	SP	Water present at 13.0 ft. GW sample 624D-060203-1250 collected. PID = ND ppm										
15	1 1 1 1	S-8 22	14.0 16.0													
	1 2 2 2	S-9 16	16.0 18.0		SP	PID = ND ppm										
	1 3 3 2	S-10 18	18.0 20.0		SP	PID = ND ppm										
20				736.8												

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (lin. ft.) 23.0; Rock Cored (lin. ft.) -; Samples GW 1

Boring No. MW-4624S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4624S
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20						SP	Same except no silt present. PID = ND ppm					100					
					734.8		-Bottom of Exploration at 22 feet.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4625D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Steel	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	10"	1 7/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: 4 1/2" HSA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

File No. 49017
Sheet No. 1 of 2
Start May 13, 2003
Finish May 14, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 756.1
Datum Estimated
Location N 10,048 E 7,854

Depth (ft.)	*SPT	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 3 4 6	S-1 18	0.0 2.0		OL-OH	Medium stiff, dark brown, organic TOPSOIL with sand and roots, organic odor, mps: 1 mm, moist. PID = ND ppm					10	90				
	1 1 2 2	S-2 20	2.0 4.0	753.6	CL	PID = ND ppm										
	1 1 1 2	S-3 20	4.0 6.0	752.1	CL	Soft, yellow-brown, lean CLAY with fine SAND, gray mottling, no odor, moist. PID = ND ppm					10	90	N	M	M	
5				750.1												
	3 4 5 5	S-4 24	6.0 8.0	749.6	CL	PID = ND ppm										
					SP	Loose, yellow-brown, poorly-graded SAND, trace fines, mps: 2 mm, no odor.			60	40						
	5 8 10 10	S-5 18	8.0 10.0	748.1	SP	Water present at 8.0 feet. PID = ND ppm										
				747.1	SP	Medium dense, gray, poorly-graded SAND, mps: 0.42 mm, no odor, wet. PID = ND ppm					100					
10				746.1	SP	1" layer of gray, lean CLAY at 10 feet.										
	4 7	S-6 6	10.0 11.0	745.1	SP	Gray, poorly-graded SAND, wet. PID = ND ppm					90	10				
	4 7 3 3	S-7 18	11.0 13.0	744.1	CL	Medium stiff, gray, lean CLAY, trace sand and gravel, very sticky, no odor, moist. PID = ND ppm						100	N	M	M	H
	2 3 4 6	S-8 24	13.0 15.0	743.1	CL	PID = ND ppm										
15				741.1												
	2 3 4 7	S-9 20	15.0 17.0	739.1	CL-ML	Medium stiff, gray, elastic SILT/lean CLAY with sand and trace gravel, mps: 1 cm, no odor, moist. PID = ND ppm		5	5	5	5	80	S	M	M	
	2 2 4 5	S-10 20	17.0 19.0	737.1	CL-ML	PID = ND ppm										
20	2 2	S-11 24	19.0 21.0		ML	Loose, gray, elastic SILT, no odor, wet. PID = ND ppm						100	R	L	N	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 29.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4625D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4625D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	*SPT	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	4 4			735.1	ML	Water present at 19.0 feet. GW sample 625D-060203-1600 collected.										
	2 2 1 2	S-12 12	21.0 23.0	733.1	ML	PID = ND ppm										
	3 2 2 2	S-13 24	23.0 25.0		SM	Gray, poorly-graded, silty SAND, mps: fine sand, no odor, wet. PID = ND ppm					80	20				
25	1 2 5 6	S-14 20	25.0 27.0	729.6												
	6 4 9 13	S-15 24	27.0 29.0	727.1	SW	Medium dense, gray, well-graded SAND with gravel, mps: 3 cm, no odor, wet. PID = ND ppm	5	10	45	20	10	10				

-Bottom of Exploration at 29.0 feet.-

NOTE: 10" Casing set to 13' below ground surface.

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4625S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 14, 2003
Finish May 14, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 756.2
Datum HRC Site Specific
Location N 10,048 E 7,849

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 3 4 6	S-1 18	0.0 2.0		OL/OH	Medium stiff, dark brown, organic TOPSOIL with sand and roots, organic odor, mps: 1 mm, moist. PID = ND ppm					10	90				
	1 1 2 2	S-2 20	2.0 4.0	753.7	CL	Soft, yellow-brown, lean CLAY with fine sand, gray mottling, no odor, moist. PID = ND ppm					10	90	N	M	M	
5	1 1 1 2	S-3 20	4.0 6.0	752.2	CL	PID = ND ppm										
	3 4 5 5	S-4 24	6.0 8.0	750.2 749.7	CL	PID = ND ppm										
	5 8 10 10	S-5 18	8.0 10.0	748.2	SP	Loose, yellow-brown, poorly-graded SAND, trace fines, mps: 2 mm, no odor. Water present at 8.0 feet. PID = ND ppm			60	40						
10	4 7	S-6 6	10.0 11.0	747.2 746.2	SP	Medium dense, gray, poorly-graded SAND, mps: 0.42 mm, no odor, wet. PID = ND ppm					100					
	4 7 3 3	S-7 18	11.0 13.0	745.2 744.2	SP	1" layer of gray lean CLAY at 10 feet. Gray, poorly-graded SAND, wet. PID = ND ppm					90	10				
				743.2	CL	Medium stiff, gray, lean CLAY, trace sand and gravel, very sticky, no odor, moist. PID = ND ppm						100	N	M	M	H

-Bottom of Exploration at 13.0 feet.-

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary
Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4625S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4626D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start May 15, 2003
Finish May 17, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 756.4
Datum Estimated
Location N 9,960 E 7,753

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Steel	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	10"	1 7/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: 4 1/2" HSA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 3 3 5	S-1 24	0.0 2.0	754.9	OL/OH	Medium stiff, dark brown, organic SOIL with some sand, no odor, moist.					15	85				
						Note: PID not functioning properly.										
	3 5 4 3	S-2 24	2.0 4.0		CL	Medium stiff, yellow-brown, gray mottled, lean CLAY, trace gravel, mps: 3 mm, no odor.						100	L	M	M	
	1 6 6 7	S-3 24	4.0 6.0	751.4												
5					SM	Loose, yellow-brown, silty SAND, poorly-graded, mps: fine sand, no odor, moist.					70	30				
	1 6 6 7	S-4 24	6.0 8.0	748.9												
					CL	Stiff, brown, lean CLAY with sand and trace gravel, mps: 6.4 mm, no odor, moist.		5	15			80	N-S	M	M-H	
	5 6 8 9	S-5 24	8.0 10.0	747.9	CL	Same, except becoming gray with some pink grain coloration.										
10	2 4 4 5	S-6 18	10.0 12.0	744.4												
	3 4 7 8	S-7 20	12.0 14.0		ML	Stiff, gray SILT with trace coarse sand, no odor, moist.			5			95	R	L	N	N-L
15	1 3 4 7	S-8 18	14.0 16.0	740.4												
	2 5 6 7	S-9 18	16.0 18.0	739.4	ML	Water present at 16.0 feet. GW sample 626D-060603-1210 collected. Same, except containing more sand (fine to very fine sand) at 17.0 feet.										
	4 7 7 7	S-10 18	18.0 20.0	736.4												
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4626D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4626D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Streng
20	3 5 4 4	S-11 16	20.0 22.0		ML	Stiff, gray, sandy SILT, mps: fine sand, no odor, wet.					50	50				
	2 3 3 2	S-12 16	22.0 24.0													
25	3 4 4 5	S-13 16	24.0 26.0	730.9												
	3 4 4 5	S-14 16	26.0 28.0		SM	Medium SAND present at 25.5 feet grading into a silty SAND, wet. Driller noted heaving conditions from 25.0 to 30.0 feet.				20	40	40				
	2 9 3 8	S-15 12	28.0 30.0	727.4	SP-SM	Very loose, gray, poorly-graded SAND with silt, no odor, wet.				70	20	10				
30	3 18 25 30	S-16 22	30.0 32.0	726.4	SW	Dense, gray, well-graded SAND with gravel, mps: 2 cm, no odor, wet.		10	60	15	10	5				
				725.4	CL	Hard, gray, lean CLAY with sand and gravel, mps: 1 cm, no odor, dry.		5	20			75				
				724.4		-Bottom of Exploration at 32.0 feet.-										

NOTE: 10" Casing set to 10' below ground surface.

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4626M

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start May 15, 2003
Finish May 17, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 756.3
Datum Estimated
Location N 9,960 E 7,739

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Steel	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	10"	1 7/8	NA	Bit Type: Cutting Head
Hammer Weight (lb.)	NA	140	-	Drill Mud: None
Hammer Fall (in.)	NA	30	-	Casing: 4 1/2" HSA
				Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	4 3 3 5	S-1 24	0.0 2.0	755.3	OL/OH	Medium stiff, dark, brown organic SOIL with roots and fine sand, mps: fine sand, organic topsoil odor, moist.					10	90	R	L	N	
					CL	NOTE: PID not functioning. Medium stiff, yellow-brown, lean CLAY with sand, gray mottling, trace gravel, mps: 3.2 mm, no odor, moist.		5	15			80	L	M	M	
	2 3 5 0	S-2 24	2.0 4.0	752.3												
5	3 4 5 8	S-3 24	4.0 6.0		SM	Loose, yellow-brown, poorly-graded, silty SAND, mps: fine sand, no odor, moist.					70	30				
	4 6 8 11	S-4 24	6.0 8.0	749.3	CL	Stiff, brown, lean CLAY with sand and trace gravel, dry, no odor. Pink coloration on some grains.		5	20			75	N-S	M	M-H	H
				748.3	CL	Same as above except becoming gray at 8.0 feet.										
	4 5 7 10	S-5 24	8.0 10.0	746.3												
10	1 2 4 6	S-6 24	10.0 12.0		CL	Same as above except medium stiff and no pink coloration.										
	2 4 4 7	S-7 24	12.0 14.0	742.8	CL	Same as above except becoming more silty with slower dilatancy.										
15	2 4 3 5	S-8 20	14.0 16.0	740.3												
	3 4 7 6	S-9 24	16.0 18.0	738.3	ML	Medium stiff, gray, sandy SILT, no odor, moist to wet. Water present at 16.0 feet.					30	70	R	L	N	N-L
20	3 4 5 5	S-10 22	18.0 20.0		ML	Medium stiff, gray, sandy SILT, mps: fine sand, no odor, wet.					50	50				

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary
Overburden (lin. ft.) 26.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4626M

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4626M
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	3 4 5 5	S-11 20	20.0 22.0		ML											
				734.3												
	2 4 5 6	S-12 12	22.0 24.0		SM	Loose, gray, silty SAND, mps: medium sand, no odor, wet.				20	40	40				
		S-13 24	24.0 26.0													
25				730.3												
						-Bottom of Exploration 26.0 feet.-										

NOTE: 10" Casing set to 8.5' below ground surface.

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4626M

TEST BORING REPORT

Boring No. MW-4626S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Steams Drilling

File No. 49017
Sheet No. 1 of 1
Start May 17, 2003
Finish May 17, 2003
Driller B. Graham
H&A Rep. J. Davis

Elevation 756.4
Datum HRC Site Specific

Location
N 9,960
E 7,728

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head
Hammer Weight (lb.)	NA	140	-	Drill Mud: None
Hammer Fall (in.)	NA	30	-	Casing: NA
				Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 2 3 3	S-1 24	0.0 2.0	754.4	OL/ OH	Medium stiff, dark brown, organic TOPSOIL, moist. PID = ND ppm					10	90	R	L	N	
	5 6 6 9	S-2 24	2.0 4.0		CL	Stiff, yellow-brown mottled gray, lean CLAY with sand, no odor, moist. PID = ND ppm						100				
	4 5 6 6	S-3 12	4.0 6.0	751.4	CL	PID = ND ppm										
5				750.4	SM	Medium dense, yellow-brown, silty SAND, mps: fine sand, no odor, moist.					70	30				
	4 7 9 10	S-4 24	6.0 8.0	749.4	CL	Very stiff, yellow-brown, lean CLAY with sand and trace gravel, mps: 1 cm, no odor, dry. PID = ND ppm		5	20			75	N-S	M	M-H	H
					CL	Same except becoming gray at 7.0 feet.										
						Note: Augered to 9.5 feet.										
				746.9		-Bottom of Exploration at 9.5 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	9.5
Rock Cored (lin. ft.)	-
Samples	GW 1

Boring No. MW-4626S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4627D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

File No. 49017
Sheet No. 1 of 1
Start May 17, 2003
Finish May 17, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 9,732 E 7,528

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				757.8		-CONCRETE-										
	4 5 7	S-1 10	0.5 2.0	756.3	ML	Stiff, dark brown SILT, mps: 1.3 cm, no odor, moist. PID = 2.3 ppm -FILL- Soil sample S-1 M27D-051703-1030 collected from 0.5 to 2.0'.					10	90				
	2 11 60 -	S-2 13	2.0 4.0	754.3	ML	Same, except concrete possibly present from 3.0 to 4.0 feet. PID = 0.6 ppm					15	85				
5	3 10 10 11	S-3 17	4.0 6.0	752.3	SP	Loose, tan, fine SAND, mps < 1 mm, no odor, moist. PID = 1.2 ppm -GLACIAL TILL-					100					
	4 4 5 5	S-4 21	6.0 8.0	750.3	SP	PID = 3.3 ppm										
	3 8 10 14	S-5 22	8.0 10.0	748.3	SP	Same, except color is becoming light tan and dry. PID = 1.4 ppm Soil sample S-5 M27D-051703-1100 collected from 8.0 to 10.0 feet.					100					
10	3 11 13 22	S-6 17	10.0 12.0	746.3	SP	PID = 2.1 ppm										
	6 10 12 15	S-7 22	12.0 14.0	744.3	SP	PID = 4.8 ppm										
15	8 16 18 18	S-8 24	14.0 16.0	742.3	SP	Soil sample S-3 M27D-051703-1135 collected from 15.0 to 17.0 feet. PID = 8.2 ppm										
	8 6 5 6	S-9 17	16.0 18.0	741.3	SP	PID = 16.8 ppm										
	6 8 12 14	S-10 24	18.0 20.0	740.3 738.3	SP SP	Loose, gray, brown and black, medium SAND, mps < 6.4 mm, no odor, wet. Water present at 17.0 feet. PID = 19.4 ppm GW sample 627D-060303-1835 collected. Same, except containing more fine sand.			10	80 50	10 50					
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 37.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4627D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4627D
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	2 4 8 14	S-11 23	20.0 22.0		SP	PID = 8.5 ppm				60	40					
				736.3												
	3 4 5 6	S-12 18	22.0 24.0		SP	Note: PID equiment not functioning properly.										
				735.3												
					ML	Loose, gray, silty SAND, mps < 1 mm, no odor, wet. -GLACIAL TILL-										
				734.3												
	4 6 5 6	S-13 20	24.0 26.0		SP	Loose, gray, brown and black medium SAND, mps < 6.4 mm, no odor, wet.				30	60	10				
25				732.3												
	3 4 6 8	S-14 21	26.0 28.0		SP	Loose, gray, brown and black medium SAND, mps < 6.4 mm, no odor, wet. Occasional soft, gray, silty SAND lenses, mps < 1 mm, no odor, wet.				50	50					
	4 5 7 10	S-15 20	28.0 30.0													
				728.3												
30						Augered from 30.0 to 32.0 feet. Driller noted change in subsurface. No sample obtained.										
				726.3												
	9 12 11 24	S-16 24	32.0 34.0		SP	Loose, gray, brown and black medium SAND, mps < 6.4 mm, no odor, wet.				55	45					
				724.3												
						Augered from 34.0 to 35.0 feet. Silt possibly detected at approximately 34.0 feet.										
				723.3												
35	11 39 89 -	S-17 37	35.0 37.0		ML	Stiff, gray SILT, mps: 6.4 mm, no odor, moist to dry. -GLACIAL TILL-					10	90				
				721.3		-Bottom of Exploration at 37.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4627S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 19, 2003
Finish May 19, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 9,734 E 7,526

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0				757.8		-CONCRETE-											
	4 5 7	S-1 10	0.5 2.0	756.3	ML	Stiff, dark brown SILT, mps: 1.3 cm, no odor, moist. -FILL-	PID = 2.3 ppm					10	90				
	2 11 60 -	S-2 13	2.0 4.0	754.3	ML	Same, except concrete possibly present from 3.0 to 4.0 feet.	PID = 0.6 ppm					15	85				
5	3 10 10 11	S-3 17	4.0 6.0	752.3	SP	Loose, tan, fine SAND, mps < 1 mm, no odor, moist. -GLACIAL TILL-	PID = 1.2 ppm					100					
	4 4 5 5	S-4 21	6.0 8.0	750.3	SP		PID = 3.3 ppm										
	3 8 10 14	S-5 22	8.0 10.0	748.3	SP	Same, except color is becoming a light tan and drier.	PID = 1.4 ppm					100					
10	3 11 13 22	S-6 17	10.0 12.0	746.3	SP		PID = 2.1 ppm										
	6 10 12 15	S-7 22	12.0 14.0	744.3	SP		PID = 4.8 ppm										
15	8 16 18 18	S-8 24	14.0 16.0	742.3	SP		PID = 8.2 ppm										
	8 6 5 6	S-9 17	16.0 18.0	741.3	SP		PID = 16.8 ppm										
				740.3	SP	Loose, gray, brown and black medium SAND, mps < 6.4 mm, no odor, wet.				10	80	10					
	6 8 12 14	S-10 24	18.0 20.0	738.3	SP	Water present at 17.0 feet. GW sample 627D-060303-1835 collected. Same, except more fine sand.	PID = 19.4 ppm				50	50					
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 27.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4627S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4627S
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20						SP	PID = 8.5 ppm				60	40					
					736.3	SP	Note: PID equiment not functioning properly.										
					735.3	ML	Loose, gray, silty SAND, mps < 1 mm, no odor, wet. -GLACIAL TILL-										
					734.3	SM	Loose, gray, brown and black medium SAND, mps < 6.4 mm, no odor, wet.				30	60	10				
25					732.3		Monitoring Well set at 27 feet. -End of Boring at 27 feet.-										
					731.3												

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4627S

TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4628D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 19, 2003
Finish May 20, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 9,554 E 7,679

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				757.6		-CONCRETE-											
	3 5 6	S-1 14	0.7 2.0	756.3	ML	Stiff, brown, sandy SILT, mps: 6.4 mm, no odor, moist. -GLACIAL TILL-	PID = ND ppm					40	60				
	4 5 7 8	S-2 4	2.0 4.0	754.3	ML		PID = ND ppm										
5	4 5 7 7	S-3 4	4.0 6.0	752.3	ML		PID = ND ppm										
	3 3 4 7	S-4 22	6.0 8.0	750.3	SP	Loose, tan, fine SAND, mps < 1 mm, no odor, dry to moist. -GLACIAL TILL-	PID = ND ppm					100					
	3 3 3 3	S-5 24	8.0 10.0	748.3	SP		PID = ND ppm										
10	2 3 3 6	S-6 24	10.0 12.0	746.3	SP	Same, except becoming gray at 13.5 feet.	PID = ND ppm					100					
	3 5 6 7	S-7 16	12.0 14.0	744.3	SP		PID = ND ppm										
15	4 4 6 7	S-8 20	14.0 16.0	742.3	SP		PID = ND ppm										
	4 9 9 10	S-9 15	16.0 18.0	740.3	SP	Water present at 16.5 feet, medium dense from 16-18'.	PID = ND ppm										
20	2 2 2 5	S-10 16	18.0 20.0	738.3	SP	Same as above except loose from 18-20'.	PID = ND ppm										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 34.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4628D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4628D
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	1 1 3 6	S-11 17	20.0 22.0	736.3	SP	PID = ND ppm										
	3 8 12 12	S-12 21	22.0 24.0	735.3	SP	Medium dense, gray, fine SAND, mps < 1 mm, no odor, wet. PID = ND ppm				30	70					
				734.3	SP	Encountering coarser sand at 23.0 feet			60	40						
25	2 2 5 6	S-13 24	24.0 26.0	732.3	SP	PID = ND ppm										
				730.3		Augered from 26.0 to 28.0 feet. No sample obtained.										
	5 4 6 15	S-14 24	28.0 30.0	728.3	SP	Loose, gray, fine SAND, mps < 1 mm, no odor, wet. PID = ND ppm				20	80					
30				726.3		Augered from 30.0 to 32.0 feet. No sample obtained.										
	5 9 60/3	S-15 8	32.0 34.0	724.3	ML	Hard, gray SILT, mps: 3 mm, trace sand and fine gravel, no odor, moist to dry. -GLACIAL TILL-					5	95				
						-Bottom of Exploration at 34.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4628S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 19, 2003
Finish May 19, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 9,550 E 7,678

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				757.7		-CONCRETE-										
	3 5 6	S-1 14	0.7 2.0	756.3	ML	Stiff, brown, sandy SILT, mps: 6.4 mm, no odor, moist. -GLACIAL TILL- PID = ND ppm					40	60				
	4 5 7 8	S-2 4	2.0 4.0	754.3	ML	PID = ND ppm										
5	4 5 7 7	S-3 4	4.0 6.0	752.3	ML	PID = ND ppm										
	3 3 4 7	S-4 22	6.0 8.0	750.3	SP	Loose, tan, fine SAND, mps < 1 mm, no odor, dry to moist. -GLACIAL TILL- PID = ND ppm					100					
	3 3 3 3	S-5 24	8.0 10.0	748.3	SP	PID = ND ppm										
10	2 3 3 6	S-6 24	10.0 12.0	746.3	SP	Same, except becoming gray at 13.5 feet. PID = ND ppm					100					
	3 5 6 7	S-7 16	12.0 14.0	744.3	SP	PID = ND ppm										
15	4 4 6 7	S-8 20	14.0 16.0	742.3	SP	PID = ND ppm										
	4 9 9 10	S-9 15	16.0 18.0	740.3	SP	Water present at 16.5 feet, medium dense 16-18'. PID = ND ppm										
20	2 2 2 5	S-10 16	18.0 20.0	738.3	SP	Same, loose from 18-20'. PID = ND ppm										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 26.5
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4628S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4628S
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	1	S-11	20.0		SP		PID = ND ppm										
	1	17	22.0														
	3																
	6			736.3													
	3	S-12	22.0		SP	Medium dense, gray, fine SAND, mps < 1 mm, no odor, wet.	PID = ND ppm				30	70					
	8	21	24.0	735.3													
	12				SP	Encountering coarser sand at 23.0 feet				60	40						
	12			734.3													
	2	S-13	24.0		SP		PID = ND ppm										
25	2	24	26.0														
	5																
	6			732.3		-Bottom of Exploration at 26.5 feet.-											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4628S

TEST BORING REPORT

Boring No. MW-4629D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 28, 2003
Finish May 28, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 760.6
Datum HRC Site Specific
Location N 9,496 E 7,287

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				760.3		-CONCRETE-											
	1 1 1	S-1 15	0.3 2.0	758.6	ML	Soft, brown SILT with sand, mps: 6.3 mm, no odor, moist. -GLACIAL TILL-	PID = ND ppm					20	80				
	2 3 3 4	S-2 22	2.0 4.0	756.6	ML		PID = ND ppm					25	75				
5	1 2 3 3	S-3 19	4.0 6.0	754.6	ML		PID = ND ppm					25	75				
	2 3 3 2	S-4 15	6.0 8.0	752.6	SP	Loose, tan, fine SAND, mps < 1 mm, no odor, moist. -GLACIAL TILL-	PID = ND ppm					100					
	3 3 2 1	S-5 20	8.0 10.0	750.6	SP		PID = ND ppm					100					
10	2 2 2 2	S-6 10	10.0 12.0	748.6	SP		PID = ND ppm					100					
	1 3 4 6	S-7 22	12.0 14.0	746.6	SP		PID = ND ppm					100					
15	3 7 10 10	S-8 21	14.0 16.0	744.6	SP	Becoming medium dense from 14-18'. -GLACIAL TILL-	PID = ND ppm					100					
	4 6 9 10	S-9 20	16.0 18.0	742.6	SP		PID = ND ppm					100					
20	4 6 8 11	S-10 17	18.0 20.0	740.6	SP	Same as above, except wet at 18.0 feet.	PID = ND ppm					100					

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 44.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4629D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4629D
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	1 3 5 7	S-11 15	20.0 22.0		SP	Same, except containing medium sand at 21.0 feet.	PID = ND ppm				20	80					
				738.6													
	2 3 7 8	S-12 24	22.0 24.0		SP		PID = ND ppm				20	80					
				736.6													
25						Augered from 24.0 to 28.0 feet. No samples collected.	PID = N/A ppm										
				732.6													
	2 3 4 8	S-13 21	28.0 30.0		SP	Loose, brown SAND, mps < 1 mm, no odor, wet. -GLACIAL TILL-	PID = ND ppm				20	80					
				730.6													
30						Augered from 30.0 to 34.0 feet. No samples collected.	PID = N/A ppm										
				726.6													
	4 10 16 18	S-14 24	34.0 36.0		SW	Medium dense, gray SAND, mps: 1.3 cm, no odor, wet. -GLACIAL TILL-	PID = ND ppm			10	70	20					
35				724.6													
						Augered from 36.0 to 40.0 feet. No samples collected.	PID = N/A ppm										
				720.6													
40	NA	S-15 17	40.0 42.0	719.8	SW	Loose, gray SAND, mps: 1.3 cm, no odor, wet. -GLACIAL TILL-	PID = ND ppm			10	70	20					
				718.6	ML	Hard, gray SILT, mps: 1.9 cm, no odor, moist to dry. -GLACIAL TILL-						10	90				
	25 32 31 43	S-16 18	42.0 44.0		ML		PID = ND ppm					10	90				
				716.6		-Bottom of Exploration at 44.0 feet.-											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4629S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 29, 2003
Finish May 29, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 760.6
Datum HRC Site Specific
Location N 9,490 E 7,287

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0				760.3		-CONCRETE-	PID = ND ppm										
	1 1 1	S-1 15	0.3 2.0	758.6	ML	Soft, brown SILT with sand, mps: 6.4 mm, no odor, moist. -GLACIAL TILL-	PID = ND ppm					20	80				
	2 3 3 4	S-2 22	2.0 4.0	756.6	ML		PID = ND ppm					25	75				
5	1 2 3 3	S-3 19	4.0 6.0	754.6	ML		PID = ND ppm					25	75				
	2 3 3 2	S-4 15	6.0 8.0	752.6	SP	Soft, tan, fine SAND, mps < 1 mm, no odor, moist. -GLACIAL TILL-	PID = ND ppm					100					
	3 3 2 1	S-5 20	8.0 10.0	750.6	SP		PID = ND ppm					100					
10	2 2 2 2	S-6 10	10.0 12.0	748.6	SP		PID = ND ppm					100					
	1 3 4 6	S-7 22	12.0 14.0	746.6	SP		PID = ND ppm					100					
15	3 7 10 10	S-8 21	14.0 16.0	744.6	SP	Soft, tan, fine SAND, mps < 1 mm, no odor, moist. -GLACIAL TILL-	PID = ND ppm					100					
	4 6 9 10	S-9 20	16.0 18.0	742.6	SP		PID = ND ppm					100					
20	4 6 8 11	S-10 17	18.0 20.0	740.6	SP	Same, except wet at 18.0 feet.	PID = ND ppm					100					

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 28
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4629S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4629S
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	1 3 5 7	S-11 15	20.0 22.0		SP	Same, except coarser at 21.0. PID = ND ppm				20	80					
				738.6												
	2 3 7 8	S-12 24	22.0 24.0		SP	PID = ND ppm				20	80					
				736.6												
						Augered from 24.0 to 28.0 feet. PID = N/A ppm No samples collected.										
25																
				732.6		-Bottom of Exploration at 28.0 feet.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4630D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Steel	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	10"	1 7/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: 4 1/2" HSA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

File No. 49017
Sheet No. 1 of 3
Start May 20, 2003
Finish May 21, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 758.6
Datum Estimated
Location N 9,430 E 7,055

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	3 2 2 3	S-1 20	0.0 2.0	757.6	OL/OH	Soft, dark brown, organic SOIL, roots, trace sand and gravel, mps: 1 cm, moist. PID = ND ppm		5	5	5	5	80	R	L	N	
					CL	Soil sample 630D-052003-0830 collected from 0 to 2.0 feet.										
	2 3 7 7	S-2 24	2.0 4.0	756.6	CL	Stiff, yellow-brown mottled gray, lean CLAY, trace sand, mps: coarse sand, no odor, moist. PID = ND ppm			5		5	90				
	2 3 5 8	S-3 24	4.0 6.0	754.6	CL	Brown, gray, lean CLAY with sand and trace gravel, moist. PID = ND ppm		10	10		5	75				
5	2 7 8 9	S-4 24	6.0 8.0	752.6 752.1	CL	PID = ND ppm										
					SM	Medium dense, yellow-brown, poorly-graded, silty SAND, mps: fine sand, moist.					50	50				
		S-5 16	8.0 10.0	750.6	SM	Sample 630D-0520030850 collected from 8-8.5 feet. PID = ND ppm Same except wet at 8.9 feet.										
10	3 4 4 5	S-6 24	10.0 12.0	748.6	CL	Medium stiff, brown, lean CLAY, no odor. PID = ND ppm Becoming gray and sticky at 11.0 feet.						100	N	M	M-H	
	1 2 4 8	S-7 12	12.0 14.0	746.6 745.1	CL	PID = ND ppm										
				744.6	ML	Medium stiff, gray SILT, no odor, moist.						100	R	L	N-L	L
15	2 3 4 6	S-8 20	14.0 16.0	742.6	ML	Wet at 15.5 feet. PID = ND ppm										
	3 6 4 3	S-9 12	16.0 18.0	740.6	ML	PID = ND ppm										
20	2 4 4 4	S-10 17	18.0 20.0	738.6	ML	Medium stiff, gray SILT, no odor, moist. PID = ND ppm										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 56.0
Rock Cored (lin. ft.) -
Samples S 1-2, GW 1

Boring No. MW-4630D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4630D
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	2 5 5 7	S-11 18	20.0 22.0		SP	Same, except fine sand present at 20.0 feet, wet.	PID = ND ppm					5	95				
				737.1													
				736.6	SM	Loose, gray, poorly-graded, silty SAND, mps: fine sand, no odor, wet.						70	30				
	2 3 3 5	S-12 18	22.0 24.0				PID = ND ppm										
				734.6													
	2 4 4 5	S-13 18	24.0 26.0		SM		PID = ND ppm										
25				732.6													
	2 3 4 9	S-14 15	26.0 28.0		SM	Same, except medium dense sand prevalent at 27.5 feet.	PID = ND ppm				40	30	30				
				730.6													
	4 5 7 9	S-15 20	28.0 30.0		SM		PID = ND ppm										
				728.6													
30	3 4 5 8	S-16 20	30.0 32.0		SM		PID = ND ppm										
				727.6													
					SW	Well-graded SAND with trace gravel, wet.	PID = ND ppm		10	40	30	10	10				
				726.6													
	2 4 6 9	S-17 24	32.0 34.0		SW		PID = ND ppm										
				724.6													
	2 4 4 7	S-18 24	34.0 36.0		SW		PID = ND ppm										
35				722.6													
	2 5 14 12	S-19 24	36.0 38.0		SW		PID = ND ppm										
				721.6													
					SW	Medium dense, gray, well-graded SAND with gravel, mps: 2.5 cm, no odor, wet.	PID = ND ppm		20	60	15	5					
				720.6													
	4 12 18 31	S-20 24	38.0 40.0		SW		PID = ND ppm										
				719.6													
					CL	Dense, gray, lean CLAY with sand and gravel, mps: 1 cm, no odor, dry to moist.			10	10			80	N	M	M	
				718.6													
40	5 19 29 60	S-21 24	40.0 42.0		CL	Interbedded, 6-inch layers of CLAY and SAND from 40 to 42 feet trace gravel, wet.	PID = ND ppm										
				716.6													
	12 56 68 67	S-22 24	42.0 44.0		SM	Dense, gray, silty SAND, mps: fine sand, no odor, wet. 3.0 cm gravel pieces at 43.0 to 43.1 feet.	PID = ND ppm					50	50				
				714.6													
	10 12 12 33	S-23 12	44.0 46.0		SM		PID = ND ppm										
45				712.6													
	7 8 15 37	S-24 24	46.0 48.0		SM		PID = ND ppm										
				710.6													
	9 29 24	S-25 24	48.0 50.0		SM		PID = ND ppm										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4630D
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tr Dilatancy	Toughness	Plasticity	Strength
	31			708.6												
50	7 18 13 23	S-26 24	50.0 52.0	706.6	ML	Hard, gray SILT, no odor, wet. PID = ND ppm						100	R	L	N-L	
	10 7 18 47	S-27 17	52.0 54.0	704.6	SW	Medium dense, gray, well-graded SAND with gravel, no odor, wet. PID = ND ppm		20	60	15	5					
	6 27 35 46	S-28 24	54.0 56.0	703.6 702.6	SW CL	PID = ND ppm Hard, gray, lean CLAY with coarse sand and trace gravel, dry.		5	10			80	L	M	M	
55						-Bottom of Exploration at 56.0 feet.-										

NOTE: 10" Casing set at 12 ft below ground surface.

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4630M

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start May 23, 2003
Finish May 23, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 758.5
Datum Estimated
Location N 9,422 E 7,055

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Steel	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	10"	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: 4 1/2" HSA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 2 3 3	S-1 20	0.0 2.0	757.5	OL/OH	Soft, dark brown, organic SOIL, roots, trace sand and gravel, mps: 1 cm, moist. PID = ND ppm		5	5	5	5	80				
					CL	Soil sample 630D-052003-0830 collected from 0 to 2.0 feet.										
	3 4 6 7	S-2 24	2.0 4.0	756.5	CL	Stiff, yellow-brown mottled gray, lean CLAY, trace sand, mps: coarse sand, no odor, moist. PID = ND ppm			5		5	90				
	3 4 8 10	S-3 24	4.0 6.0	754.5	CL	Brown, gray, lean CLAY with sand and trace gravel, mois PID = ND ppm		10	10		5	75				
5	3 5 7 8	S-4 17	6.0 8.0	752.5 752.0	CL	PID = ND ppm										
					SM	Medium dense, yellow-brown, poorly-graded, silty SAND, mps: fine sand, moist.					50	50				
	4 8 11 16	S-5 15	8.0 10.0	750.5	SM	Same except becoming wet at 8.9 feet. PID = ND ppm										
10	7 4 6 5	S-6 16	10.0 12.0	748.5	CL	Medium stiff, brown, lean CLAY, no odor. PID = ND ppm Becoming gray and sticky at 11.0 feet.						100	N	M	M-H	
	1 2 4 8	S-7 12	12.0 14.0	746.5 745.0	CL	PID = ND ppm										
	2 3 4 6	S-8 20	14.0 16.0	744.5	ML	Medium stiff, gray SILT, no odor, moist. PID = ND ppm						100	R	L	N-L	L
15					ML	Becoming wet at 15.5 feet.										
	3 6 4 3	S-9 12	16.0 18.0	742.5	ML	PID = ND ppm										
	2 4 4 4	S-10 17	18.0 20.0	740.5 738.5	ML	Medium stiff, gray SILT, no odor, moist. PID = ND ppm										
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary
Overburden (lin. ft.) 32.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4630M

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4630M
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field T Dilatancy	Toughness	Plasticity	Strength
20	2 5 5 7	S-11 18	20.0 22.0	737.0	SP	Same, except fine sand present at 20.0 feet, wet.											
				736.5	SM	Loose, gray, poorly-graded, silty SAND,	PID = ND ppm										
	2 3 3 5	S-12 18	22.0 24.0		SM	mps: fine sand, no odor, wet.	PID = ND ppm										
				734.5													
	2 4 4 5	S-13 18	24.0 26.0		SM		PID = ND ppm										
25				732.5													
	2 3 4 9	S-14 15	26.0 28.0		SM	Same, except medium dense, medium sand present at 27.5 feet.	PID = ND ppm										
				730.5													
	4 5 7 9	S-15 20	28.0 30.0		SM		PID = ND ppm										
				728.5													
30	3 4 5 8	S-16 20	30.0 32.0		SM		PID = ND ppm										
				727.5													
					SW	Well-graded SAND with trace gravel, wet.	PID = ND ppm		5	40	30	20	5				
				726.5		-Bottom of Exploration at 32.0 feet.-											

Note: Drilled to 12 feet with 12 1/4" HSA. Set 10" steel casing to 12.5 feet. Completed borehole with 4 1/4" HSA to 32.0 feet. Well set at 32' with screen from 22' to 32'.

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4630M2

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 2
Start: March 29, 2004
Finish: March 29, 2004
Driller: J. Huntoon, R. Krauss
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location Meade St. (west of plant).

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing:
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1 1 2 2	ND	S-1 22	0.0 2.0			ML	Soft, yellow brown SILT, mps: 1/3 in., no odor, moist. -GLACIAL TILL-					10	90				
	3 2 2 2	ND	S-2 24	2.0 4.0				Similar to above except grain size.					5	95				
5	3 5 5 8	ND	S-3 17	4.0 6.0				Similar to above.										
	5 8 7 7	ND ND	S-4 12	6.0 8.0		7.0	SM	Similar to above. Water at 7 ft. Soft, yellow brown, silty SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					80	20				
	4 6 8 10	ND	S-5 10	8.0 10.0				Similar to above. Similar to above.										
10	6 4 5 5	ND ND ND	S-6 20	10.0 12.0		10.5	CL	Soft, brown, lean CLAY with sand, mps: 1 mm, no odor, moist. -GLACIAL TILL-					15	85				
						11.0	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL-					10	90				
	5 6 6 8	ND	S-7 14	12.0 14.0		12.0	SC	Soft, gray, clayey SAND, mps: 1 mm, no odor, very moist. -GLACIAL TILL-					70	30				
15	5 8 8 2	ND	S-8 21	14.0 16.0		14.0	CL	Soft, gray, sandy, lean CLAY, mps: 1 mm, no odor, wet. -GLACIAL TILL-					50	50				
	1 1 2 2	ND	S-9 20	16.0 18.0				Similar to above.										
	1 1 3 4	ND ND	S-10 19	18.0 20.0		18.0	SC	Soft, gray, clayey SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL- Similar to above except grain size.					65 70	35 30				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 38.0
Rock Cored (lin. ft.) -
Samples 10S

Boring No. MW-4630M2

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4630M2
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field T Dilatancy	Field T Toughness	Field T Plasticity	Field T Strength
20							SC											
		ND						Soft, gray, clayey SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					65	35				
		ND				24.0	SP-SC	Soft, gray, poorly graded, fine SAND with clay, mps: 1 mm, no odor, wet. -GLACIAL TILL-					90	10				
25																		
		ND						Similar to above.										
		ND				28.0	SP	Soft, gray, poorly graded, fine SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					95	5				
30																		
		ND						Similar to above.										
		ND						Similar to above.										
		ND						Similar to above except grain size.					10	90				
35																		
		ND						Similar to above.										
		ND				37.5	CL	Dense, gray, lean CLAY, mps: 1/2 in., no odor, moist.		10				90				
						38.0		-GLACIAL TILL- -Bottom of Exploration at 38.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4630S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 20, 2003
Finish May 20, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 758.6
Datum HRC Site Specific
Location N 9,413 E 7,056

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 2 3 3	S-1 20	0.0 2.0	758.1	OL/OH	Medium stiff, dark brown, organic TOPSOIL with trace sand and gravel, mps: 1 cm, topsoil odor, moist. PID = ND ppm		5	5	5	5	80	R	L	N	
				756.6	CL	Stiff, yellow-brown, lean CLAY, trace sand and gravel, slight mottling, mps: 1 cm, moist.		5	5		5	85	S	M	M	
	3 4 6 7	S-2 24	2.0 4.0	754.6	CL	PID = ND ppm										
5	3 4 8 10	S-3 24	4.0 6.0	752.6	CL	Same, except becoming brown with more sand and gravel at 4.5 feet. PID = ND ppm		10	10		5	75				
	3 5 7 8	S-4 17	6.0 8.0	752.1	CL	PID = ND ppm										
				750.6	SM	Medium dense, yellow-brown, poorly-graded, silty SAND, mps: fine sand, no odor, moist.					50	50				
	4 8 11 16	S-5 15	8.0 10.0	748.6	SM	Water present at 8.5 feet. PID = ND ppm										
10	7 4 6 5	S-6 16	10.0 12.0	746.6	CL	Stiff, brown, lean CLAY, no odor, moist. Becoming gray and sticky at 11.0 feet. PID = ND ppm						100	N	M-H	M-H	H
						-Bottom of Exploration at 12.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4630S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4631D

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 20, 2003
Finish May 22, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 757.2
Datum Estimated
Location N 9,146 E 7,056

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Steel	S	NA	Rig Make & Model: CME - 750
Inside Diameter (in.)	10"	1 7/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: 4 1/2" HSA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	*SPT	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 2 2 3	S1 22	0.0 2.0	755.2	OL-OH	Soft, dark brown, organic TOPSOIL, moist with roots, topsoil odor, mps: 5.0 mm. PID = ND ppm		5	5	5	5	80	R	L	N	
	3 3 2 3	S2 14	2.0 4.0		CL	Medium stiff, gray-brown mottled, lean CLAY, trace sand and gravel, mps: 5.0 mm, moist, occasional root. PID = ND ppm		5	5		90		S	L-M	M	
5	4 4 5 6	S3 15	4.0 6.0			Yellow-brown gray mottling at 4 feet.										
	2 3 6 8	S4 20	6.0 8.0	749.7		Becoming sandy at 7.0' and wet at 7.5'.										
	6 8 10 12	S5 20	8.0 10.0	748.7	SM	Medium dense, yellow-brown, silty SAND, poorly-graded, wet, no odor, mps: fine sand. PID = ND ppm					50	50				
					ML	Very stiff, gray, SILT, moist-dry, no odor. PID = ND ppm						100	R			
10	4 8 13 9	S6 20	10.0 12.0	747.0		2" layer of silty SAND, moist from 10 to 10.1 feet.										
				745.2	ML	Very stiff, gray, SILT, moist-dry, no odor. PID = ND ppm						100	R	L	L	L
	2 2 2 4	S7 21	12.0 14.0		CL	Soft, gray, lean CLAY, no odor, moist with pink coloration. PID = ND ppm						100	N	M	M-H	H
15	2 2 3 5	S8 16	14.0 16.0	741.2												
	4 3 4 5	S9 24	16.0 18.0		CL	Same as above, medium stiff CLAY with gravel and coarse sand present, mps: 1.5 cm. PID = ND ppm		5	5			90				
	3 4 3 6	S10 24	18.0 20.0	738.2		Becoming silty at 18' and wet at 19'.										
				737.7	SM	Loose, gray, silty SAND, wet, no odor, mps: fine sand. PID = ND ppm					50	50				
20					CL	Lean CLAY PID = ND ppm						100				

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 36
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4631D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4631D
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	*SPT	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	4 9 12 13	S11 24	20.0 22.0	736.7 736.2	SM	Poorly-graded, silty SAND, moist-wet, mps: medium sand.	PID = ND ppm				40	40	20				
					CL	Very stiff, gray, lean CLAY with sand and gravel, dry, no odor, mps: 0.4 in.	PID = ND ppm		10	10			80	N	H	M-H	M
	7 14 30 27	S12 24	22.0 24.0			Becoming hard CLAY at 22.5'.											
25	11 11 22 27	S13 24	24.0 26.0	731.7		Wet at 25.5'											
					SM	Dense, gray, silty SAND, wet, no odor, mps: fine sand.	PID = ND ppm					50	50				
	53 16 15 13	S14 24	26.0 28.0														
	13 30 24 14	S15 20	28.0 30.0	729.2	SM	Same as above except containing medium SAND, wet at 28.0 feet.	PID = ND ppm				50	30	20				
30	5 7 12 15	S19 24	30.0 32.0	727.2	SM	Same as above except well-graded, wet at 30.0 feet.	PID = ND ppm			40	20	20	20				
				726.2	CL	Stiff, gray, lean CLAY, dry, gravel present at 31 ft, mps: 5 mm.	PID = ND ppm		10				90	N	M	M-H	M
	9 6 8 11	S20 24	32.0 34.0														
35	3 5 8 12	S21 24	34.0 36.0	721.2		-Bottom of Exploration at 36 feet.-											

NOTE: 10" Casing set at 12 ft below ground surface..

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4631M

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 27, 2003
Finish May 28, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 757.3
Datum Estimated
Location N 9,132 E 7,057

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Steel	S	NA	Rig Make & Model: CME - 750
Inside Diameter (in.)	10"	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: 4 1/2" HSA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0	2 2 2 3	S1 22	0.0 2.0	755.3	OL-OH	Soft, dark brown, organic TOPSOIL, moist with roots, topsoil odor, mps: 5.0 mm. PID = ND ppm		5	5	5	5	80	R	L	N	
	3 3 2 3	S2 14	2.0 4.0		CL	Medium stiff, gray-brown mottled, lean CLAY, trace sand and gravel, mps: 5.0 mm, moist, occasional root. PID = ND ppm		5	5		90		S	L-M	M	
5	4 4 5 6	S3 15	4.0 6.0			Yellow-brown and gray mottling at 4 feet.										
	2 3 6 8	S4 20	6.0 8.0	749.8		Becoming sandy at 7.0' and wet at 7.5'.										
				748.8	SM	Medium dense, yellow-brown, silty SAND, poorly-graded, wet, no odor, mps: fine sand. PID = ND ppm					50	50				
	6 8 10 12	S5 20	8.0 10.0		ML	Very stiff, gray SILT, moist-dry, no odor. PID = ND ppm						100	R			
10	4 8 13 9	S6 20	10.0 12.0	747.1		2" layer of silty SAND, moist from 10 to 10.1 feet.										
					ML	Very stiff, gray SILT, moist-dry, no odor. PID = ND ppm						100	R	L	L	L
	2 2 2 4	S7 21	12.0 14.0	745.3	CL	Soft, gray, lean CLAY, no odor, moist with pink coloration. PID = ND ppm						100	N	M	M-H	H
15	2 2 3 5	S8 16	14.0 16.0	741.3												
	4 3 4 5	S9 24	16.0 18.0	740.3		Same as above, medium stiff CLAY with gravel and coarse sand present, mps: 1.5 cm. PID = ND ppm		5	5			90				
				739.3	ML	Medium stiff, gray SILT, moist, no odor. PID = ND ppm						100	R	L	N-L	
	4 2 5 5	S2 24	18.0 20.0	737.8	CL	Medium stiff, gray, lean CLAY with trace of sand and gravel, moist, no odor, mps: 1.5 cm, pink alterations. PID = ND ppm		5	5			90				
20				737.3	SM	Soft, gray, clayey silty SAND, moist to wet, no odor, PID = ND ppm		5	20	20	20	35				

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 22.0
Rock Cored (lin. ft.) -
Samples -

Boring No. MW-4631M

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4631M
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	4 9 12 13	S11 24	20.0 22.0		735.3	CL	trace of gravel, mps: 1 cm. PID = ND ppm Very stiff, gray, lean CLAY with sand and gravel, dry, no odor. -End of Exploration at 22 feet.		10	10			80	N	H	M-H	

NOTE: HSA 12 1/4" to 13 below ground surface.
Set 10" casing to 13.5' below ground surface.

HSA 4 1/4" to 16 below ground surface, begin continuous split spoon sampling from 16' to 22'.

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4631S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 21, 2003
Finish May 21, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 757.1
Datum HRC Site Specific
Location N 9,124 E 7,058

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME - 750
Inside Diameter (in.)	4 1/4	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 2 2 3	S1 22	0.0 2.0		OL/OH	Soft, dark brown organic SOIL, moist, roots, topsoil odor, mps: 5 mm. PID = ND ppm		5	5	5	5	80	R	R	N	
	3 3 3 4	S2 12	2.0 4.0	754.6	CL	Medium stiff, yellow-brown and gray mottling, lean CLAY, traces of sand and gravel, moist, no odor, mps: 1 cm. PID = ND ppm		5	5			90	N-S	L	L-M	
5	3 4 6 7	S3 24	4.0 6.0													
	4 5 7 9	S4 19	6.0 8.0	750.1		Becoming more sandy at 6.5 feet.										
					SM	Medium dense, yellow-brown, silty SAND, wet, no odor, mps: fine sand, poorly graded. PID = ND ppm					50	50				
	4 8 7 17	S5 24	8.0 10.0	748.6	ML	Wet at 7'. ~~PID = ND ppm~~ Very stiff, gray SILT, dry to moist, no odor.						100	R	L-M	L	
10		S6	10.0 12.0	746.1		-Bottom of Exploration at 11 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram	Summary
O Open End Rod	Riser Pipe	Overburden (lin. ft.) 11
T Thin Wall Tube	Screen	Rock Cored (lin. ft.)
U Undisturbed Sample	Filter Sand	Samples GW 1
S Split Spoon	Cuttings	**Boring No.** MW-4631S
G Geoprobe	Grout	
	Concrete	
	Bentonite Seal	

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4632S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 29, 2003
Finish May 29, 2003
Driller M. Hefferan
H&A Rep. G. Laird

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	4 1/4"	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Elevation 758.2
Datum HRC Site Specific
Location N 8,244 E 8,006

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				757.2		-CONCRETE- PID = 0 ppm										
	2 3	S-1 4	1.0 3.0		SM	Loose, brown, silty SAND, no odor, dry, mps: 2.5 cm. PID = 0 ppm Little soil encountered, mainly spark plugs and fill.					85	15				
	5 9	S-2 3	2.0 4.0													
	6 3			754.2												
	2 3 4 6	S-3 11	4.0 6.0		ML	Soft, gray, SILT with sand, no odor, moist, mps: 1.27 cm PID = 0.6 ppm - GLACIAL TILL-					15	85				
5				752.2												
	3 2 3 4	S-4 21	6.0 8.0		ML	Fairly stiff, brown and gray mottled SILT, no odor, moist, mps: 1.27 cm. PID = 2.8 ppm -GLACIAL TILL-					10	90				
	3 4 6 8	S-5 19	8.0 10.0			Same as above exept tan.										
				748.2												
10	6 12 16 17	S-6 17	10.0 12.0		SM	Fairly loose, gray, silty SAND, no odor, wet, mps: 1 mm. PID = 0.7 ppm 'GLACIAL TILL'					80	20				
	11 15 12 7	S-7 19	12.0 14.0			Water at 10'.										
				744.2												
	2 3 3 4	S-8 24	14.0 16.0		CL	Soft, gray, lean CLAY, no odor, moist, mps: 1 mm. PID = 0.1 ppm GLACIAL TILL						100				
15				742.2		-Bottom of Exploration at 16 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 16
Rock Cored (lin. ft.)
Samples S 2-3, GW 1

Boring No. MW-4632S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4633S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 22, 2003
Finish May 22, 2003
Driller M. Hefferan
H&A Rep. G. Laird

Elevation 758.2
Datum HRC Site Specific

Location
N 8,274
E 8,066

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-75
Inside Diameter (in.)	4 1/4	2	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	NA	NA NA	0.0 2.0	757.2		-CONCRETE-										
	2 2	S-1 9	1.0 2.0		ML	Stiff, brown, SILT, no odor, moist, mps: 6.3 mm. PID = 0.7 ppm					10	90				
	2 2 2 4	S-2 19	2.0 4.0	754.2		- FILL - Same as above except black coloration at 3.5'.										
	1 2 3 3	S-3 19	4.0 6.0		ML	Stiff, gray SILT, no odor, moist, mps: 4 mm. PID = 0.2 ppm - GLACIAL TILL-					10	90				
5	2 2 2 2	S-4 18	6.0 8.0			Same as above except brown and gray mottling at 6 ft. Same as above except product and faint oil present from 8-9 ft.										
	1 2 3 3	S-5 18	8.0 10.0			Product and oil present from 10-11 ft.										
10	4 6 11 18	S-6 21	10.0 12.0	747.2	SP-SM	Dense, tan, poorly-graded, fine SAND with silt, no odor, wet, mps: 4 mm. PID = ND ppm Water at 11'					90	10				
	6 12 10 6	S-7 19	12.0 14.0	745.2 744.2		- GLACIAL TILL-										
					SP-SM	Same as above with gray coloration and more sand. PID = ND ppm					60	40				
	2 4 2 3	S-8 22	14.0 16.0	742.2	CL	Soft, gray, CLAY, no odor, moist, mps: 1 mm. PID = ND ppm -GLACIAL TILL- -End of Exploration at 16 feet.-						100				
15																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 16
Rock Cored (lin. ft.)
Samples S 1-3, GW 1

Boring No. MW-4633S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4634S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 23, 2003
Finish May 23, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 8,357 E 8,004

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-75
Inside Diameter (in.)	4 1/4	2	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1 2 2	S-1 12	0.0 2.0	757.6		CONCRETE										
					ML	Soft, brown, SILT with sand, moist, no odor, mps: 2.5 cm. PID = 0.9 ppm					20	80				
	3 4 4 3	S-2 10	2.0 4.0	754.3												
	1 2 3 3	S-3 13	4.0 6.0		ML	Stiff, brown and gray mottled SILT, no odor, moist, mps: 1.2 cm. PID = 0.1 ppm -GLACIAL TILL-					10	90				
5	3 2 2 1	S-4 7	6.0 8.0													
	3 3 6 10	S-5 19	8.0 10.0			Same as above except less gray.										
10	6 8 9 11	S-6 20	10.0 12.0	747.3												
				746.3	SM	Soft, tan and gray, fine SAND, no odor, wet, mps: 1 mm. PID = 0.2 ppm Water at 11'.					100					
	3 8 16 21	S-7 16	12.0 14.0	745.8	ML	- GLACIAL TILL-						100				
					SP	Dense, gray, elastic SILT, no odor, moist, mps: < 1 mm. PID = ND ppm GLACIAL TILL					100				
				744.3		Soft, gray, fine SAND, no odor, wet, mps: < 1mm PID = ND ppm										
15	3 3 3 4	S-8 16	14.0 16.0		CL	Dense, gray, CLAY, no odor, moist, mps: < 1 mm. PID = ND ppm -GLACIAL TILL-						100				
				742.3		End of Exploration at 16 feet.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 16
Rock Cored (lin. ft.)
Samples S 1-3, GW 1

Boring No. MW-4634S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4635S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 20, 2003
Finish May 21, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 756.2
Datum HRC Site Specific
Location N 8,424 E 8,000

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME -75
Inside Diameter (in.)	4 1/4	2	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	NA	NA NA	0.0 1.0	755.2		-CONCRETE- PID = NA ppm										
	1 1	S-1 2	1.0 2.0		SM	Loose, brown, SAND, mps: 4 mm, no odor, moist. PID = ND ppm				20	80					
	WOH/ 18"	S-2 11	2.0 4.0	752.2		Same as above,										
5	3 4 7 7	S-3 20	4.0 6.0		ML	Stiff, brown and gray mottled SILT, mps: 3 mm, no odor, moist. PID = 0.2 ppm -GLACIAL TILL-					15	85				
	2 2 2 5	S-4 21	6.0 8.0	748.2												
	3 5 8 11	S-5 24	8.0 10.0	746.2	ML	Same as above with faint odor of oil present in soil. PID = 0.4 ppm					10	90				
10	3 6 11 15	S-6 18	10.0 12.0		SP	Fairly dense, brown, fine SAND, mps: 6 mm, no odor present, wet. Water at 10' Same as above from 12-14'. PID = 0.2 ppm					100					
	5 17 15 13	S-7 11	12.0 14.0	742.2		-GLACIAL TILL-										
15	12 2 3 3	S-8 22	14.0 16.0	740.2	CL	Stiff, brown CLAY, mps: 4 mm, no odor, moist. PID = ND ppm - GLACIAL TILL-						100				
						- End of Exploration at 16 feet.-										

NOTE: WOH - Weight of Hammer.
Refusal at 2.5 ft due to suspected concrete. Borehole moved approximately 2.5 ft east and redrilled.

See VHC-4007 for Shelby tube information.

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 16
Rock Cored (lin. ft.)
Samples S 1-3

Boring No. MW-4635S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4636S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 22, 2003
Finish May 22, 2003
Driller M. Hefferan
H&A Rep. G. Laird

Elevation 758.3
Datum HRC Site Specific

Location
N 8,359
E 8,114

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-75
Inside Diameter (in.)	4 1/4	2	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	JL	140	-	Casing: NA
Hammer Fall (in.)	JL	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	NA	NA NA	0.0 1.0	757.3		CONCRETE										
	2 2	S-1 12	1.0 2.0		ML	Stiff, olive-brown SILT, moist, mps: 6 mm. PID = ND ppm - FILL-					10	90				
	1 1 1 1	S-2 18	2.0 4.0	754.3												
5	2 2 3 5	S-3 20	4.0 6.0		ML	Fairly stiff, olive-brown SILT, moist, mps: 6 mm. PID = ND ppm - GLACIAL TILL-					10	90				
	2 2 3 4	S-4 22	6.0 8.0			Same as above with mps: 0.25 mm..										
	2 2 2 6	S-5 22	8.0 10.0	748.8												
10	5 6 9 12	S-6 21	10.0 12.0		SW-SM	Loose, tan, poorly-graded SAND with silt, wet. PID = ND ppm Water at 9.5'					90	10				
				746.8												
	5 2 3 6	S-7	12.0 14.0		CL	Stiff, gray, lean CLAY, mps: < 0.5 mm. PID = ND ppm						100				
				744.3		- End of Exploration at 14 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.)	14
Rock Cored (lin. ft.)	-
Samples	S 1-3

Boring No. MW-4636S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4637S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 13, 2003
Finish May 13, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 8,008 E 7,817

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**; structure, odor, moisture, optional descriptions, geologic interpretation)	% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				757.8		-CONCRETE-										
	3 4 4	S-1 15	0.5 2.0		ML	Stiff, brown and black SILT with sand, mps: 1.9 cm, no odor, moist. PID = 2.9 ppm					20	80				
				756.3		-FILL-										
	3 5 6 9	S-2 10	2.0 4.0		ML	Soil sample S-1 M37S-051303-0825 collected from 0.5 to 2.0 feet. Becoming stiff, olive-brown SILT, no odor, moist, mps: 8.3 mm. PID = 0.8 ppm					10	90				
						-GLACIAL TILL-										
	3 6 7 7	S-3 24	4.0 6.0			Same except brown and gray mottling. PID = 0.9 ppm										
5																
	2 4 6 6	S-4 23	6.0 8.0			Same except containing clay. PID = 0.8 ppm Soil sample S-2 M37S-051303-0850 collected from 5.0 to 7.0 feet.					10	90				
	2 5 6 9	S-5 18	8.0 10.0	749.3		Soil sample S-3 M37S-051303-0915 collected from 8.0 to 10.0 feet. PID = 0.5 ppm										
					SP	Loose, tan, fine SAND, mps: 1.6 mm, no odor, wet. PID = 0.5 ppm					100					
10	5 6 6 7	S-6 20	10.0 12.0			Water present at 9.0 feet. GW sample 637S-060303-1000 collected. PID = 0.5 ppm										
	4 3 4 3	S-7 21	12.0 14.0	745.3		Same except becoming gray and finer at 11.0 feet. PID = 0.2 ppm					100					
					CL	Soft, gray, lean CLAY, mps: < 1 mm, no odor, wet to moist.						100				
15	1 2 3 3	S-8 24	14.0 16.0	742.3		-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	16.0
Rock Cored (lin. ft.)	-
Samples	S 1-3, GW 1

Boring No. MW-4637S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4638S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 15, 2003
Finish May 15, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 8,105 E 7,827

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				757.3		-CONCRETE-										
	7 8	S-1 10	1.0 2.0		ML	Stiff, black and tan, sandy SILT, mps: 2.5 cm, no odor, moist. PID = ND ppm					30	70				
	5 5 5 5	S-2 5	2.0 4.0	754.3		Soil sample S-1 M38S-051503-1040 collected from 1.0 to 2.0 feet. PID = 22.1 ppm -FILL- Same, except tan.										
5	4 5 7 7	S-3 20	4.0 6.0	752.3	ML	Stiff, brown SILT, mps: 6.3 mm, no odor, moist. PID = 1.1 ppm Soil sample S-2 M38S-051503-1140 collected from 5.0 to 7.0 feet. -GLACIAL TILL-					10	90				
	3 6 7 9	S-4 24	6.0 8.0		MH	Becoming stiff, brown and gray, elastic SILT, mps < 1 mm, no odor, moist. PID = 0.8 ppm -GLACIAL TILL-					5	95				
	2 4 6 10	S-5 24	8.0 10.0	748.3		PID = 0.2 ppm Soil sample S-3 M38S-051503-1125 collected from 9.0 to 11.0 feet.										
10	7 10 10 10	S-6 24	10.0 12.0		SP	Medium dense, tan, fine SAND, mps < 1 mm, no odor, wet. PID = 0.4 ppm Water present at 10.0 feet. GW sample 638S-060303-1150 collected. -GLACIAL TILL-				5	95					
	5 4 4 7	S-7 8	12.0 14.0			PID = 0.1 ppm				5	95					
	3 2 3 4	S-8 21	14.0 16.0	743.8		PID = 0.2 ppm										
15				742.3	CL	Medium stiff, gray, lean CLAY, mps < 1 mm, no odor, moist. -GLACIAL TILL-						100				
						-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 16.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4638S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4639S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Steams Drilling

File No. 49017
Sheet No. 1 of 1
Start May 12, 2003
Finish May 12, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 8,130 E 7,839

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				757.3		CONCRETE-										
	2 3	S-1 12	1.0 2.0		ML	Medium stiff, brown and black SILT with sand, mps; 6.4 mm, no odor, moist. PID = ND ppm Soil sample S-1 M39S-051203-1600 collected from 1.0 to 2.0 feet. PID = 234* ppm					20	80				
	3 3 4 5	S-2 19	2.0 4.0			-FILL- Same except organic odor present. Soil sample S-2 M39S-051203-1650 collected from 3.0 to 5.0 feet. PID = 427 ppm										
	2 3 6 7	S-3 18	4.0 6.0	754.3	ML	Stiff, brown and gray SILT, mps: 6.3 mm, light organic odor, moist.					10	90				
5	4 5 6 7	S-4 19.5	6.0 8.0			-GLACIAL TILL- Soil sample S-3 M39S-051203-1625 collected from 6.0 to 8.0 feet. PID = 386* ppm										
	8 11 12 14	S-5 18	8.0 10.0	750.4	SP	Water present at 7.9 feet. PID = 2.9 ppm Medium dense, tan, fine SAND, mps < 6.3 mm, no odor, wet. -GLACIAL TILL-					100					
10	9 10 10 7	S-6 18	10.0 12.0			GW sample 639S-060403-0900 collected. PID = 2.4 ppm										
				746.3		-Bottom of Exploration at 12.0 feet.-										

NOTE: *PID shut down after approximately 2 seconds of operation.

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4639S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4640D

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No.: 49017
Sheet No.: 1 of 3
Start: April 13, 2004
Finish: April 15, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location AOI-8 (former hard chrome plating line).

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
	1 2 1 3	ND	S-1 18	1.0 3.0		1.0	SP	Soft, brown, well graded, fine SAND, mpa: 1 mm, no odor, moist. -FILL-					100					
	8 19 16 11	ND	S-2 16	3.0 5.0		3.0	SC	Loose, yellow brown and gray, clayey SAND with gravel, mps: 1 1/2 in., no odor, moist. -FILL-	20	20	40			20				
5	6 7 9 9	0.4	S-3 18	5.0 7.0		5.0	ML	Dense, yellow brown and gray, mottled, elastic SILT, mps: 1/2 in., no odor, moist. -GLACIAL TILL-					10	90				
	3 6 5 8	0.1	S-4 20	7.0 9.0				Similar to above except moist.										
10	1 3 12 12	0.1	S-5 16	9.0 11.0		9.0	SM	Soft, yellow brown, silty SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					65 55	35 45				
	7 10 7 5	ND	S-6 20	11.0 13.0				Similalr to above except grain size.										
	4 4 4 5	ND	S-7 18	13.0 15.0		12.5	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL- Similar to above.						100				
15	2 2 2 3	ND	S-8 20	15.0 17.0				Similar to above.										
	2 3 2 4	ND	S-9 21	17.0 19.0				Similar to above except grain size.					10	90				
20	2 3	ND	S-10 24	19.0 21.0		19.0	CL	Soft, gray, lean CLAY with sand, mps: 1/2 in., no odor, moist.					20	80				

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.) 55.0
Rock Cored (lin. ft.) -
Samples 27S

Boring No. MW-4640D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4640D
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plastic	Field Test Stren.
20	5 6						CL	-GLACIAL TILL-										
	4 8 9 17	ND	S-11 16	21.0 23.0		21.0	SP	Soft, light brown, poorly graded, fine SAND, mps: 1/2 in., no odor, wet. -GLACIAL TILL-					95	5				
	7 20 41 32	ND	S-12 20	23.0 25.0		24.0	CL	Similar to above. Soft, gray, sandy, lean CLAY with sand, mps: 1/2 in., no odor, moist.					40	60				
25	7 19 27 32	ND	S-13 19	25.0 27.0		25.0	SC	-GLACIAL TILL- Soft, dark brown and gray, clayey SAND, mps: 1/2 in., no odor, wet. -GLACIAL TILL-			50	25	5	20				
	4 7 21 50	ND	S-14 21	27.0 29.0		27.0	SP	Soft, gray and light brown, poorly graded, fine SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					95	5				
30	14 26 28 31	ND	S-15 24	29.0 31.0				Similar to above except grain size.				5	90	5				
	3 3 17 51	ND	S-16 24	31.0 33.0				Similar to above.										
	14 32 60/4	ND	S-17 20	33.0 35.0				Similar to above.										
35	10 30 14 21	ND	S-18 15	35.0 37.0			SP	Soft, gray and light brown, poorly graded, fine SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-				5	90	5				
	7 19 46 50/5	ND	S-19 23	37.0 39.0				Similar to above except grain size.				15	80	5				
40	12 15 28 36	ND	S-20 24	39.0 41.0				Similar to above.										
	10 26 39 50	ND	S-21 18	41.0 43.0				Similar to above.										
	15 16 22 34	ND ND	S-22 19	43.0 45.0		44.0	SP ML	Soft, gray and light brown, poorly graded, fine SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL- Soft, gray, sandy SILT, mps: 1 mm, no odor, wet.				5	90	5	50	50		
45	5 14 19 23	ND	S-23 18	45.0 47.0				-GLACIAL TILL- Similar to above.										
	9 9 13 18	ND	S-24 20	47.0 49.0		47.0	SP	Soft, gray, poorly graded, fine SAND, mps: 1/4 in., no odor, wet. -GLACIAL TILL-					95	5				
	8	ND	S-25	49.0				Similar to above.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4640D
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
50	2		24	51.0			SP											
	13																	
	33																	
	11	ND	S-26	51.0				Similar to above.										
	12		24	53.0														
	16	ND				52.0	SM	Soft, gray, silty SAND, mps: 1 mm, no odor, wet.					65	35				
	28							-GLACIAL TILL-										
	9		S-27	53.0														
	15		20	55.0														
	25																	
	50/5	ND				54.5	CL	Dense, gray, lean CLAY, mps: 1/3 in., no odor, moist.		5			5	90				
55						55.0		-GLACIAL TILL-										
								-Bottom of Exploration at 55.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4640S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Steams Drilling

File No. 49017
Sheet No. 1 of 1
Start May 27, 2003
Finish May 28, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 7,942 E 7,748

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0						See B-4081 Test Boring Report for details.										
5																
10																
15				743.3												

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 15.0
- Rock Cored (lin. ft.) -
- Samples GW 1

Boring No. MW-4640S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4642S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 15, 2003
Finish May 15, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 758.3
Datum HRC Site Specific
Location N 7,795 E 8,377

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				757.7		-CONCRETE-										
	3 5	S-1 14	1.0 2.0	757.3 756.3	ML	Medium stiff, tan and brown, sandy SILT, mps: 1.3 cm, no odor, moist. PID = 0.7 ppm Soil sample S-1 M42S-051503-1430 collected from 0.7 to 2.0 feet.					40	60				
	3 4 8 9	S-2 12	2.0 4.0	754.3	ML	-FILL- PID = ND ppm Medium stiff, tannish orange SILT, mps: 1.3 cm, no odor, moist. Soil sample S-2 M42S-051503-1455 collected from 3.0 to 5.0 feet.					10	90				
5	4 7 10 12	S-3 22	4.0 6.0	752.3		-FILL- Same except gray. PID = ND ppm					10	90				
	5 7 6 7	S-4 18	6.0 8.0	751.3 750.3	SP	Soil sample S-3 M42S-051503-1455 collected from 6.0 to 8.0 feet. PID = ND ppm Medium dense, tan, fine SAND, mps < 1 mm, no odor, wet. Water present at 7.0 feet.					100					
	4 8 10 11	S-5 17	8.0 10.0	748.3		-GLACIAL TILL- PID = ND ppm										
10	3 8 6 5	S-6 12	10.0 12.0	746.6		PID = ND ppm										
	NA	U-7 24	12.0 14.0	746.3 744.3	CL	3" stiff, gray, lean CLAY lens at 11.75', mps < 1 mm, no odor, moist. -GLACIAL TILL- Shelby tube: VHC-4002, Sample ID: 4002-051503-1630 collected from 12.0 to 14.0 feet.						100				
						-Bottom of Exploration at 14.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 14.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4642S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4643S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 12, 2003
Finish May 12, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 758.3
Datum HRC Site Specific
Location N 7,866 E 8,520

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				757.3		-CONCRETE- PID = NA ppm										
	3 4 5 5	S-1 15	1.0 3.0	756.3	SP	Loose, yellow, poorly-graded, fine SAND, mps: 0.42 mm, no odor, moist. PID = 22 ppm					100					
					CL	Soil sample M43S-051203-1420 collected from 1.0 to 2.0 feet. Medium stiff, yellow-brown with gray mottling, lean CLAY trace sand, trace gravel, mps: 1 cm, moist. Black staining from 2.0 to 2.3 feet. PID = ND ppm										
	3 3 4 4	S-2 23	3.0 5.0													
5	2 3 4 4	S-3 23	5.0 7.0	752.3		PID = ND ppm										
					SP	Loose, yellow-brown SAND with clay, mps: 0.42 mm, no odor, moist. PID = ND ppm					85	15				
	4 8 9 11	S-4 23	7.0 9.0			PID = ND ppm; Soil sample S-2 M43S-051203-1445 collected from 8.0 to 10.0 feet.										
10	4 8 12 11	S-5 17	9.0 11.0	747.3		GW sample 643S-060503-1815 collected. PID = ND ppm										
	4 4	S-6 8	11.0 12.0	746.3	CL	Medium stiff, gray, lean CLAY, trace silt, no odor, moist. PID = ND ppm						100	M	M	H	
						-Bottom of Exploration at 12.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples S 1-2, GW 1

Boring No. MW-4643S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4644S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start May 16, 2003
Finish May 16, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 754.5
Datum HRC Site Specific
Location N 9,756 E 8,126

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test: Dilatancy	Toughness	Plasticity	Strength
0	2 2 4 4	S-1 12	0.0 2.0	753.5	GP	Fine to coarse GRAVEL and coarse sand, moist. PID = ND ppm										
					CL	Medium stiff, yellow-brown, gray mottling, lean CLAY with sand, moist.										
	3 2 3 4	S-2 12	2.0 4.0			Same, except becoming gray at 4.0 feet. PID = ND ppm										
	2 3 4 4	S-3 24	4.0 6.0	749.5		PID = ND ppm										
5					SM	Medium dense, yellow-brown, silty SAND, mps: fine sand, moist.					60	40				
	4 10 17 19	S-4 24	6.0 8.0	747.5	SM	PID = ND ppm										
					SM	Same except becoming gray and wet at 7.0 feet.					60	40				
	2 4 7 7	S-5 15	8.0 10.0			PID = ND ppm										
10	2 6 9 12	S-6 15	10.0 12.0			GW sample 644S-060503-1630 collected. PID = ND ppm										
	2 3 5 8	S-7 24	12.0 14.0	741.5		PID = ND ppm										
				740.5	CL	Stiff, gray, lean CLAY with sand, pink coloration, moist.		5	25			70				
						-Bottom of Exploration at 14.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 14.0
Rock Cored (lin. ft.) -
Samples GW 1

Boring No. MW-4644S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4645S

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 16, 2003
Finish May 16, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 754.8
Datum HRC Site Specific
Location N 9,760 E 8,012

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					GP	HSA to 2.0 feet due to surface conditions. Coarse GRAVEL with some coarse sand. Soil sample S-1 M45S-051603-1430 collected from 0.0 to 2.0 feet. PID = ND ppm	80		20							
				752.8												
	1 1 2 2	S-1 15	2.0 4.0		SP	Loose, brown, poorly-graded SAND with silt, mps: medium sand, no odor, moist. PID = ND ppm				90		10				
5	2 1 2 2	S-2 20	4.0 6.0			PID = ND ppm. Soil sample S-2 M45S-051603-1220 collected from 5.0 to 7.0 feet.										
				749.1	SM	2" Bluish-gray, sandy CLAY lens at 5.5', very strong odor, moist.										
	5 13 16 12	S-3 18	6.0 8.0			Medium dense, gray, well-graded, fine, silty SAND, mps: fine sand, strong odor, moist. PID = ND ppm					60	40				
				746.8												
	2 4 7 7	S-4 24	8.0 10.0	746.3		PID = ND ppm										
				746.0	SC	3" Gray, sandy CLAY lens at 8.5 ft, moist, but becoming wet.										
					SM	Soil sample S-3 M45S-051603-1225 collected from 8.0 to 10.0 feet. Medium dense, gray, silty SAND, mps: fine sand, strong odor, wet.					60	40				
10	2 6 9 12	S-5 15	10.0 12.0			GW sample 645S-060503-1025 collected. PID = ND ppm										
				743.3												
				742.8	CL	Medium stiff, pink and gray, lean CLAY with sand, trace gravel, mps: 6.4 mm, moist. PID = ND ppm		5	20			75				
	2 2	S-6 12	12.0 13.0	741.8		-Bottom of Exploration at 13.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 13.0
Rock Cored (lin. ft.) -
Samples S 1-3, GW 1

Boring No. MW-4645S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. MW-4646D

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 3
Start: March 30, 2004
Finish: March 30, 2004
Driller: J. Huntoon, R. Krauss
H&A Rep.: G. Laird
Elevation Datum Estimated
Location Meade St. (west of plant).

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1 1 2 2	ND	S-1 19	0.0 2.0			ML	Fairly soft, yellow brown SILT, mps: 1/2 in., no odor, moist. -GLACIAL TILL-					10	90				
	2 3 2 2	ND	S-2 22	2.0 4.0				Similar to above except some gray motttling, more moist.										
5	3 4 4 6	ND	S-3 23	4.0 6.0				Similar to above.										
	3 3 3 8	ND	S-4 21	6.0 8.0		6.0	SM	Water at 6 ft. Soft, yellow brown, silty SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					80	20				
	5 13 14 16	ND	S-5 19	8.0 10.0				Similar to above.										
10	3 3 5 5	ND	S-6 23	10.0 12.0		10.0	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL-					10	90				
	4 4 6 5	ND ND	S-7 21	12.0 14.0		13.0	CL	Similar to above. Soft, gray, sandy, lean CLAY, mps: 1 mm, no odor, very moist. -GLACIAL TILL-					10 30	90 70				
15	5 7 4 4	ND	S-8 24	14.0 16.0		14.0	CL	Soft, gray, lean CLAY with sand, mps: 1/4 in., no odor, moist. -GLACIAL TILL-					20	80				
	10 3 3 3	ND ND	S-9 22	16.0 18.0				Similar to above.										
	2 2 3 4		S-10 20	18.0 20.0		17.0	SC	Soft, gray, clayey SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					70	30				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 56.0
Rock Cored (lin. ft.) -
Samples 28S

Boring No. MW-4646D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4646D
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tf Dilatancy	Toughness	Plasticity	Strength
20	2 3 5 5	ND	S-11 6	20.0 22.0		SC	Similar to above except grain size.					80	20				
	3 5 6 5	ND	S-12 0	22.0 24.0	22.0		-NO RECOVERY-										
25	5 5 6 6	ND	S-13 12	24.0 26.0	24.0	CL	Soft, gray, sandy, lean CLAY, mps: 1 mm, no odor, wet. -GLACIAL TILL-					50	50				
	1 1 1 1	ND	S-14 24	26.0 28.0	26.0	SP	Soft, gray and brown, poorly graded, fine SAND, mps: 1/4 in., no odor, wet. -GLACIAL TILL-					100					
	2 1 2 2	ND	S-15 24	28.0 30.0			Similar to above.										
30	2 3 4 4	ND	S-16 24	30.0 32.0			Similar to above.										
	4 7 10 12	ND	S-17 18	32.0 34.0	32.0	SC	Soft, gray, clayey SAND, mps: 1/2 in., no odor, wet. -GLACIAL TILL-			20	20	30	30				
35	8 10 13 13	ND	S-18 24	34.0 36.0			Similar to above.										
	7 10 9 11	ND	S-19 12	36.0 38.0	36.0	SP	Soft, gray and black, poorly graded SAND with gravel, mps: 1 in., no odor, wet. -GLACIAL TILL-	5	45	50							
	8 10 14 17	ND	S-20 11	38.0 40.0	38.0	SP	Soft, gray and brown, poorly graded, fine SAND, mps: 1/4 in., no odor, wet. -GLACIAL TILL-					100					
40	21 30 35 44	ND	S-21 24	40.0 42.0			Similar to above.										
	36 29 23 25	ND	S-22 20	42.0 44.0			Similar to above except grain size.				20	80					
45	18 25 23 27	ND	S-23 24	44.0 46.0	44.0	SW	Soft, gray and brown, well graded, fine SAND, mps: 1/4 in., no odor, wet.			20	20	60					
	15 17 18 27	ND	S-24 24	46.0 48.0	45.5	SC	Soft, gray, clayey SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL- Similar to above.					70	30				
	13 18 20		S-25 24	48.0 50.0													

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4646D
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
	22	ND					SC	Similar to above except grain size.					55	45				
50	4		S-26	50.0														
	6		24	52.0														
	7																	
	7	ND						Similar to above.										
	7		S-27	52.0														
	8		22	54.0														
	10																	
	13	ND						Similar to above except grain size.					70	30				
	15	ND	S-28	54.0		54.0	CL	Dense, gray CLAY, mps: 1/2 in., no odor, moist.		10				90				
	23		8	56.0				-GLACIAL TILL-										
55	43																	
	49																	
		ND				56.0		-Bottom of Exploration at 56.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4646M

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 2
Start: March 30, 2004
Finish: March 30, 2004
Driller: J. Huntoon, R. Krauss
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location Meade St. (west of plant).

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								For details see the "Test Boring Report" for MW-4646D.										
5																		
10								For details see the "Test Boring Report" for MW-4646D.										
15																		
20								For details see the "Test Boring Report" for MW-4646D.										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 27.0
- Rock Cored (lin. ft.) -
- Samples -

Boring No. MW-4646M

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4646M
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20								For details see the "Test Boring Report" for MW-4646D.										
25																		
						27.0		-Bottom of Exploration at 27.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. MW-4646M

HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4646S

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: April 5, 2004
Finish: April 5, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location AOI-48 SE

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
	8 17 13	0.9	S-1 24	0.0 2.0		0.5	ML	Dense, dark brown, SILT, mps: 1/2 in., no odor, moist. -FILL-					10	90				
	5 4 5 5		S-2 0	2.0 4.0		2.0		-NO RECOVERY-										
5	2 3 4 5		S-3 0	4.0 6.0														
	2 3 2 3	3.5	S-4 20	6.0 8.0		6.0	ML	Soft, yellow brown, SILT, mps: 1/4 in., no odor, moist. -GLACIAL TILL-					10	90				
	2 4 4 6	11.2	S-5 24	8.0 10.0														
10	4 6 9 13	232	S-6 18	10.0 12.0		10.0	SM	Water at 10 ft. Soft, brown, silty SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					60	40				
	4 5 6 7	43.4	S-7 24	12.0 14.0		12.0	CL	Soft, gray, lean CLAY, mps: 1/4 in., no odor, moist. -GLACIAL TILL-					10	90				
						14.0		-Bottom of Exploration at 14.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 14.0
Rock Cored (lin. ft.) -
Samples 7S

Boring No. MW-4646S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4647D

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 2
Start: March 29, 2004
Finish: March 29, 2004
Driller: J. Huntoon, R. Krauss
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location Meade St. (west of plant).

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1 2 2 2	ND	S-1 24	0.0 2.0			ML	Dense, yellow brown SILT, mps: 1/4 in, no odor, moist. -GLACIAL TILL-					10	90				
		ND						Similar to above.										
	2 3 3 4	ND	S-2 23	2.0 4.0				Similar to above except more moist.										
5	4 5 6 5	ND	S-3 18	4.0 6.0				Similar to above.										
	8 12 22 29	ND	S-4 24	6.0 8.0		6.5	SM	Soft, yellow brown, silty SAND, mps: 1 mm, no odor, moist. -GLACIAL TILL-					70	30				
	13 10 12 15	ND	S-5 17	8.0 10.0				Similar to above except grain size.					85	15				
10	5 8 14 17	ND	S-6 12	10.0 12.0		10.0	SP	Soft, tan, poorly graded, fine SAND, mps: 1 mm, no odor, moist. -GLACIAL TILL-					95	5				
	5 6 6 10	ND	S-7 11	12.0 14.0				Similar to above.										
15	7 8 8 10	ND	S-8 19	14.0 16.0				Similar to above except more moist approaching 16 ft.										
	5 7 4 4	ND	S-9 24	16.0 18.0				Water at 16 ft.										
						17.5	ML	Soft, gray, sandy SILT, mps: 1 mm, no odor, wet. -GLACIAL TILL-					30	70				
	2 2 1 2	ND	S-10 20	18.0 20.0				Similar to above.										
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 38.0
Rock Cored (lin. ft.) -
Samples 19S

Boring No. MW-4647D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4647D
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	1 3 3 6	ND	S-11 24	20.0 22.0		20.0	SP	Soft, brown, poorly graded, fine SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					95	5				
	4 5 5 5	ND	S-12 24	22.0 24.0				Similar to above.										
25	5 5 6 6	ND	S-13 22	24.0 26.0				Similar to above.										
	2 3 3 5	ND	S-14 24	26.0 28.0				Similar to above except becoming gray. Similar to above.										
	2 3 2 4	ND	S-15 16	28.0 30.0		29.0	SW	Soft, gray and brown, well graded SAND, mps: 1/2 in., no odor, wet.			30	30	40					
30	2 1 1 2	ND	S-16 12	30.0 32.0		30.0	ML	-GLACIAL TILL- Soft, gray, sandy SILT, mps: 1 mm, no odor, wet. -GLACIAL TILL-					50	50				
	2 2 4 4	ND	S-17 10	32.0 34.0		32.0	SW	Soft, gray and brown, well graded SAND, mps: 1/2 in., no odor, wet.			30	30	40					
35	1 3 10 13	ND	S-18 24	34.0 36.0		34.0	SP	Soft, gray, poorly graded SAND, mps: 1/2 in., no odor, wet. -GLACIAL TILL-				45	50	5				
	16 21 33 41	ND	S-19 20	36.0 38.0		35.5	CL	Dense, gray, lean CLAY, mps: 1/2 in., no odor, moist. -GLACIAL TILL- Similar to above.		5	5			90				
						38.0		-Bottom of Exploration at 38.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4647M

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 2
Start: March 29, 2004
Finish: March 29, 2004
Driller: J. Huntoon, R. Krauss
H&A Rep.: G. Laird

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Elevation
Datum Estimated

Location Meade St. (west of plant).

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								For details see "Test Boring Report" for MW-4647D.										
5																		
10																		
15																		
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 21.0
Rock Cored (lin. ft.) -
Samples -

Boring No. MW-4647M

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4647M
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tr Dilatancy	Toughness	Plasticity	Strength
20																		
						21.0		-Bottom of Exploration at 21.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4647S

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: April 5, 2004
Finish: April 5, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location AOI-48 SE

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0			HA-1 24	0.0 2.0			ML	Dense, yellow brown SILT, mps: 1/2 in., no odor, moist. -FILL-					10	90				
		0.1						Similar to above.										
			HA-2 24	2.0 4.0														
		0.1						Similar to above.										
			HA-3 24	4.0 6.0														
5		ND				5.0	SP	Soft, yellow brown, fine SAND, mps: 1 mm, no odor, moist. -GLACIAL TILL-					100					
	3 3 3 1	0.4	S-1 24	6.0 8.0														
	4 7 10 11	0.2	S-2 20	8.0 10.0				Water at 8 ft. Similar to above.										
10	3 4 3 5	0.1	S-3 19	10.0 12.0		10.5	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL-					10	90				
						12.0		-Bottom of Exploration at 12.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) -
Samples 3HA, 3S

Boring No. MW-4647S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4648

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 3
Start: May 3, 2004
Finish: May 6, 2004
Driller: B. Graham, D. Gardenhous
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location AOI-48 NW

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-750
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0	4 4 5 6	ND	S-1 24	0.0 2.0			ML	Soft, dark brown, elastic SILT, mps: 1/2 in., no odor, moist.					10	90				
						1.0	SP	-TOP SOIL- Soft, yellow brown, poorly graded, fine SAND, mps: 1 mm, no odor, moist.					100					
	3 3 2 2	ND	S-2 14	2.0 4.0				-GLACIAL TILL- Similar to above.										
5	2 2 2 2	ND	S-3 18	4.0 6.0				Similar to above.										
	2 2 1 1	ND	S-4 15	6.0 8.0				Similar to above.										
	1 1 1 1	ND	S-5 18	8.0 10.0				Similar to above.										
10	1 2 1 2	ND	S-6 18	10.0 12.0				1 in. brown, lean CLAY seam at 11 ft.										
	2 2 4 6	ND	S-7 17	12.0 14.0			SP	Soft, yellow brown, poorly graded, fine SAND, mps: 1 mm, no odor, moist.										
15	4 8 9 9	ND	S-8 14	14.0 16.0				Similar to above.										
	4 6 7 8	ND	S-9 13	16.0 18.0				Water at 16 ft.										
20	3 4 5 8	ND	S-10 21	18.0 20.0				Similar to above.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 56.0
Rock Cored (lin. ft.) -
Samples -

Boring No. MW-4648

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4648
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	2 3 4 7	ND	S-11 12	20.0 22.0			SP SP	Soft, yellow brown, poorly graded, fine SAND, mps: 1 mm, no odor, wet.										
	1 2 4 8	ND	S-12 10	22.0 24.0				Similar to above except becoming red gray.										
25	2 3 4 8	ND	S-13 10	24.0 26.0				Similar to above.										
	2 8 14 16	ND	S-14 6	26.0 28.0				Similar to above.										
	2 3 4 7		S-15 19	28.0 30.0														
30	2 4 7 8	ND ND	S-16 18	30.0 32.0				1 in. gray, lean CLAY seam at 29.7 ft. Similar to above except grain size.				15	85					
	3 6 7	ND	S-17 1	32.0 34.0				Similar to above.										
	4 5 22 27	ND	S-18 12	34.0 36.0		35.0	GW	Loose, gray, well graded GRAVEL with clay and sand, mps: 1 in., no odor, wet. -GLACIAL TILL-		60	10	10	10	10				
35	8 49 50 46	ND	S-19 19	36.0 38.0		37.0	CL	Dense, gray, lean CLAY, mps: 1 in., no odor, moist. -GLACIAL TILL-		10				90				
	11 19 30 57	ND	S-20 21	38.0 40.0				Similar to above.										
40	31 47 56 59	ND	S-21 22	40.0 42.0				Similar to above.										
	55 135 160 132	ND	S-22 14	42.0 44.0				Similar to above.										
45	20 65 71 145	ND	S-23 22	44.0 46.0				Similar to above.										
	22 53 68 72	ND	S-24 22	46.0 48.0		46.0	ML	Soft, red gray, sandy SILT, mps: 1/4 in., no odor, moist. -GLACIAL TILL-					50	50				
	8 16 18	ND	S-25 24	48.0 50.0		48.8	SM	Soft, red gray, silty SAND, mps: 1 mm, no odor, wet.					65	35				

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4648
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plastic*	Field Test Strenc
50	20						SM	-GLACIAL TILL-										
	5		S-26	50.0														
	9		24	52.0														
	23	ND				51.0	CL	Dense, gray, lean CLAY, mps: 1 in., no odor, moist.		10				90				
	18																	
	2	ND	S-27	52.0		51.8	SM	Soft, red gray, silty SAND, mps: 1 mm, no odor, wet.					65	35				
	4		22	54.0				-GLACIAL TILL-										
	12	ND						Simialr to above except grain size.					55	45				
	18																	
	3		S-28	54.0														
	5		20	56.0														
55	6	ND						Similar to above.										
	10																	
						56.0		-Bottom of Exploration at 56.0 feet.-										

NOTE: Set 10 in. casing from 1 to 37.5 ft. Casing driven approximately 8 in. into CLAY.

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4649S

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: April 9, 2004
Finish: April 9, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location AOI-22 (chip collection area)

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Dilatancy	Toughness	Plasticity	Strength
0								-CONCRETE-										
						0.5	SP	Soft, red brown, poorly graded, fine SAND, mps: 1 mm, no odor, moist.					100					
	1 2 1 5	0.6	S-1 20	1.0 3.0				-FILL- Similar to above.										
	3 5 7 8	0.7	S-2 23	3.0 5.0		3.0	ML	Dense, yellow brown and gray, mottled SILT, mps: 1/4 in., no odor, moist.					10	90				
5								-GLACIAL TILL-										
	4 4 4 5	0.6	S-3 18	5.0 7.0				Similar to above.										
	4 7 7 11	0.8	S-4 22	7.0 9.0				Similar to above.										
						7.8	SP-SM	Soft, light brown, poorly graded, fine SAND with silt, mps: 1 mm, no odor, moist.					90	10				
								-GLACIAL TILL- Similar to above except wet.										
10	6 11 14 19	0.8	S-5 27	9.0 11.0				Water at 10 ft.										
	7 12 16 12	0.6	S-6 17	11.0 13.0				Similar to above except becoming red gray.										
	1 6 11 12	0.4	S-7 20	13.0 15.0				Similar to above.										
15						14.5	CL	Soft, gray, lean CLAY, mps: 1/4 in., no odor, moist.					5	95				
						15.0		-GLACIAL TILL- -Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 7S

Boring No. MW-4649S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4650S

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: April 12, 2004
Finish: April 12, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location AOI-22 (chip collection area)

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
	4 7 10 13	0.3	S-1 20	1.0 3.0		1.0	SP	Soft, yellow brown, poorly graded, fine SAND, mps: 1 mm, no odor, moist. -FILL-					100					
	5 8 18 22	9.2	S-2 22	3.0 5.0				Similar to above.										
						4.5	SM	Gravel, black, silty SAND FILL, mps: 1 in., no odor, moist, wood, present.										
5	11 7 5 6	1.9	S-3 21	5.0 7.0		5.5	ML	-FILL- Dense, brown and gray, mottled SILT, mps: 1/4 in., Petroleum odor, moist.					10	90				
	6 3 5 4	1.3	S-4 20	7.0 9.0				-GLACIAL TILL- Similar to above except faint Petroleum odor.										
10	6 11 16 21	1.1	S-5 20	9.0 11.0		9.0	SP	Soft, yellow brown, poorly graded, fine SAND, mps: 1 mm, no odor, moist. -GLACIAL TILL- Water at 10.5 ft.					95	5				
	8 17 20 9	1.2	S-6 17	11.0 13.0				Similar to above except becoming gray. Similar to above.										
	2 3 5 7	1.2	S-7 21	13.0 15.0		13.3	CL	Soft, gray, lean CLAY, mps: 1/4 in., no odor, moist. -GLACIAL TILL-		5			5	90				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples 7S

Boring No. MW-4650S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4651S

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: April 12, 2004
Finish: April 12, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird
Elevation Datum: Estimated
Location: AOI-22 (chip collection area)

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
	5 3 4		S-1 12	0.5 2.0		0.5	ML	Dense, olive brown and gray, mottled SILT, mps: 1/2 in., slight oil odor, moist.					10	90				
								-FILL-										
	2 3 3 5		S-2 21	2.0 4.0		2.0	ML	Similar to above.					10	90				
								-GLACIAL TILL-										
	5 4 5 7		S-3 22	4.0 6.0														
5																		
	2 3 5 5		S-4 22	6.0 8.0				Similar to above except yellow brown and gray, mottled SILT. Similar to above except no odor.										
	2 2 4 8		S-5 20	8.0 10.0				Similar to above.										
						8.5	SP	Soft, light brown, poorly graded, fine SAND, mps: 1 mm, no odor, moist.					95	5				
								-GLACIAL TILL-										
10	3 5 12 18		S-6 15	10.0 12.0				Water at 11 ft.										
	9 11 8 6		S-7 18	12.0 14.0				Similar to above except gray.										
						13.5	CL	Firm, gray, lean CLAY, mps: 1/3 in., no odor, moist.		5			5	90				
						14.0		-GLACIAL TILL- -Bottom of Exploration at 14.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.)	14.0
Rock Cored (lin. ft.)	-
Samples	-

Boring No. MW-4651S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4661S

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: April 16, 2004
Finish: April 16, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location AOI-8 (former hard chrome plating line).

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
			HA-1 24	0.5 3.0		0.5	SP	Soft, yellow brown, poorly graded, fine SAND, mps: 1 mm, no odor, moist.					100					
								-FILL- (intermittent with dark brown SAND).										
	3 3 3 3	1.8	S-1 20	3.0 5.0				Similar to above.										
						4.0	ML	Soft, dark brown, elastic SILT, mps: 1 mm, no odor, moist.					10	90				
5								-GLACIAL TILL-										
	4 4 4 5	1.0	S-2 16	5.0 7.0		5.0	ML	Dense, yellow brown and gray, mottled, elastic SILT, mps: 1 mm, no odor, moist.					5	95				
								-GLACIAL TILL- Similar to above except becoming yellow brown.										
	2 4 4 7	0.8	S-3 14	7.0 9.0				Similar to above.										
	5 8 15 18	1.1	S-4 20	9.0 11.0														
10						10.0	ML	Water at 10 ft.					40	60				
	4 7 7 6	0.7	S-5 18	11.0 13.0				Soft, yellow brown, sandy SILT, mps: 1 mm, no odor, wet. -GLACIAL TILL- Becoming gray at 11 ft. Similar to above except grain size. Similar to above.					30	70				
	2 3 4 5	0.4	S-6 20	13.0 15.0		13.3	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL-					10	90				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	15.0
Rock Cored (lin. ft.)	-
Samples	-

Boring No. MW-4661S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. MW-4662S

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: April 16, 2004
Finish: April 16, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Elevation
Datum Estimated
Location AOI-8 (former hard chrome plating line).

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0		NA						For details, see the test boring reports for VHC-4010 and GP-4222, (other borings in the immediate vicinity).										
5																		
10	6 10 8 8	0.3	S-1 9	10.0 12.0		10.0	ML	Soft, light brown, sandy SILT, mps: 1 mm, no odor, wet. -GLACIAL TILL-					50	50				
	2 2 2 3	0.3	S-2 20	12.0 14.0		12.5	CL	Similar to above except grain size. Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL-					30 10	70 90				
						14.0		-Bottom of Exploration at 14.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	14.0
Rock Cored (lin. ft.)	-
Samples	-

Boring No. MW-4662S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. MW-4663S

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 1
Start: April 16, 2004
Finish: April 16, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird
Elevation Datum Estimated
Location AOI-8 (former hard chrome plating line).

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
	4 7 4 6	ND	S-1 18	1.0 3.0		1.0	SP	Soft, dark brown, poorly graded, fine SAND, mps: 1 in., no odor, moist. -FILL-					100					
	3 1 2 4	ND	S-2 8	3.0 5.0		3.0	ML	Dense, dark brown, elastic SILT, mps: 1/4 in., no odor, moist. -FILL-						100				
5	4 5 9 8	0.1	S-3 13	5.0 7.0		5.0	ML	Dense, yellow brown and gray, mottled, elastic SILT, mps: 1/4 in., no odor, moist. -GLACIAL TILL-					5	95				
	4 6 8 9		S-4 16	7.0 9.0				Similar to above.										
	6 6 7 12	0.2	S-5 18	9.0 11.0		9.0	ML	Water at 9 ft. Soft, brown, sandy SILT, mps: 1 mm, no odor, wet. -GLACIAL TILL-					40	60				
10	4 8 8 6		S-6 20	11.0 13.0				Similar to above except grain size. Similar to above.					50	50				
	2 2 3 3	ND	S-7 21	13.0 15.0		13.5	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL-					10	90				
15						15.0		-Bottom of Exploration at 15.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 15.0
Rock Cored (lin. ft.) -
Samples -

Boring No. MW-4663S

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. H171

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor NA

File No. 49017
Sheet No. 1 of 1
Start September 30, 2003
Finish September 30, 2003
Driller NA
H&A Rep. C. Dunlap
Elevation -
Datum Estimated
Location N 8,810 E 7,812

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	NA	NA	Rig Make & Model: Hand Auger
Inside Diameter (in.)	NA	NA	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: NA
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		H171 8	0.0 1.0	NO WELL INSTALLED	0.8		CEMENT CORE										
					1.0	SP	Black, fine to coarse, SAND, some silt.			15	25	25	35	H	L	N	N
							END OF EXPLORATION AT 1 FT										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	1
Rock Cored (lin. ft.)	-
Samples	1

Boring No. H171

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. H172

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor NA

File No. 49017
Sheet No. 1 of 1
Start September 30, 2003
Finish September 30, 2003
Driller NA
H&A Rep. C. Dunlap
Elevation -
Datum Estimated
Location N 8,810 E 7,832

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	NA	NA	Rig Make & Model: Hand Auger
Inside Diameter (in.)	NA	NA	NA	Bit Type: Cutting Head
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		H172 4	0.0 1.0	NO WELL INSTALLED	0.8		CONCRETE										
					1.0	SP	Poorly-graded SAND, black.			25	25	30	20				
							END OF EXPLORATION AT 1.0 FT										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 1
- Rock Cored (lin. ft.) -
- Samples 1

Boring No. H172

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. H173

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor NA

File No. 49017
Sheet No. 1 of 1
Start September 30, 2003
Finish September 30, 2003
Driller NA
H&A Rep. C. Dunlap
Elevation -
Datum Estimated
Location N 8,791 E 7,814

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	NA	NA	Rig Make & Model: Hand Auger
Inside Diameter (in.)	NA	NA	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	NA	-	Casing: NA
Hammer Fall (in.)	NA	NA	-	Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		H173 4	0.0 1.0	NO WELL INSTALLED	0.8		CONCRETE										
					1.0	SP	Poorly-graded sand, black.			25	25	30	20				
							END OF EXPLORATION AT 1.0 FT										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	1
Rock Cored (lin. ft.)	-
Samples	1

Boring No. H173

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. H174

Project: Delphi Flint Dort Highway, USA
Client: Delphi Corporation
Contractor: NA

File No. 49017
Sheet No. 1 of 1
Start: September 30, 2003
Finish: September 30, 2003
Driller: NA
H&A Rep.: C. Dunlap
Elevation: -
Datum: Estimated
Location: N 8,820 E 7,814

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	NA	NA	Rig Make & Model: Hand Auger
Inside Diameter (in.)	NA	NA	NA	Bit Type: Cutting Head
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		H174 12	0.0 1.0	NO WELL INSTALLED	0.8		CONCRETE										
					1.0	SP	Poorly-graded SAND, black.			25	25	30	20				
							END OF EXPLORATION AT 1.0 FT										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	1
Rock Cored (lin. ft.)	-
Samples	1

Boring No. H174

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. H175

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor NA

File No. 49017
Sheet No. 1 of 1
Start September 30, 2003
Finish September 30, 2003
Driller NA
H&A Rep. C. Dunlap
Elevation -
Datum Estimated
Location N 8,812 E 7,792

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	NA	NA	Rig Make & Model: Hand Auger
Inside Diameter (in.)	NA	NA	NA	Bit Type: Cutting Head
Hammer Weight (lb.)	NA	NA	-	Drill Mud: None
Hammer Fall (in.)	NA	NA	-	Casing: NA
				Hoist/Hammer: NA NA

Depth (ft.)	PID (ppm)	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		H175 18	0.0 1.5	NO WELL INSTALLED	0.8		CONCRETE										
					1.5	MH	Sandy, elastic silt, olive-gray, fill material, mps 3/16" and dry.			5	10	15	60	S	L	M	
							END OF EXPLORATION AT 1.5 FT										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
Overburden (lin. ft.) 1.5
Rock Cored (lin. ft.) -
Samples 1

Boring No. H175

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. PZ-4001

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 13, 2003
Finish May 13, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation 757.2
Datum Estimated
Location N 10,049 E 7,469

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	PID	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	4 5 5 6	S-1 16	0.0 2.0	755.2	ML	Stiff, brown and black interbedded SILT with SAND, mps < 1 mm, no odor, moist. -FILL-	PID = ND ppm										
	4 4 6 11	S-2 0	2.0 4.0	753.2		No recovery from 2-4 ft.											
5	3 5 7 11	S-3 20	4.0 6.0	751.2	ML	Stiff, brown and gray mottled, sandy SILT, mps: 1.3 cm, no odor, moist. -GLACIAL TILL-	PID = ND ppm					40	60				
	3 5 6 5	S-4 19	6.0 8.0		SP	Medium dense, tan, fine SAND, mps < 1mm, no odor, moist. -GLACIAL TILL- Water present at 7.5 feet.	PID = ND ppm					100					
	3 4 4 4	S-5 18	8.0 10.0			Same except black staining and organic odor at 8.5 feet. Sand becomes gray in color at approximately 10.0 feet.	PID = ND ppm										
10	2 2 2 3	S-6 23	10.0 12.0		SP	Grayish tan, fine SAND, mps < 1 mm, organic odor, moist. -GLACIAL TILL-	PID = ND ppm					100					
	4 4 3 4	S-7 12	12.0 14.0				PID = ND ppm										
15	2 1 1 2	S-8 21	14.0 16.0			Same except wet at 15.5 feet.	PID = ND ppm										
	1 1 1 2	S-9 15	16.0 18.0				PID = ND ppm										
20	2/24	S-10 24	18.0 20.0	737.2			PID = ND ppm										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 38.5
Rock Cored (lin. ft.) -
Samples S 1

Boring No. PZ-4001

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. PZ-4001
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)		Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
20	2/24	S-11 6	20.0 22.0		SP	Very loose grayish tan, fine SAND, mps < 1 mm, organic odor, moist. -GLACIAL TILL-	PID = ND ppm					100					
	2 5 5 6	S-12 24	22.0 24.0				PID = ND ppm										
	3 3 4 6	S-13 24	24.0 26.0				PID = ND ppm										
25				731.2		Augered from 26.0 to 30.0 feet. No sample obtained.	PID = NA ppm										
				727.2													
30	34 31 18 10	S-14 20	30.0 32.0	726.2	SP	Dense, grayish tan, fine SAND, mps < 1 mm, organic odor, moist. -GLACIAL TILL-	PID = ND ppm					100					
				725.7	GP	Dense, poorly-graded GRAVEL with coarse sand, no odor, wet, mps: 2.5 cm.	PID = ND ppm		50	50							
	34 26 28 45	S-15 24	32.0 34.0		SP SP	Dense. brown and gray, coarse SAND, mps: 1.2 cm, no odor, wet. Becoming gray and brown, medium-grained SAND at 31.5 ft, no odor, moist.	PID = ND ppm			80 10	20 80	10					
			34.0 35.0	723.2		No sample taken from 34.0 to 35.0 feet.	PID = NA ppm										
35	3 36 75	S-16 17	35.0 36.5	722.2	ML	Hard, gray SILT, mps: 6.3 mm, no odor, moist.	PID = ND ppm			5	5	5	85				
						Same as above except gravel present. -GLACIAL TILL-	PID = NA ppm		5	5	5	5	80				
	16 20 30 37	S-17 24	36.5 38.5	718.7		-Bottom of Exploration at 38.5 feet.-											

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. PZ-4002

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 28, 2002
Finish May 28, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation 756.2
Datum HRC Site Specific
Location N 9,963 E 7,051

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head; Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	4 4 3 3	S-1 16	0.0 2.0	754.2	OL/OH	Medium stiff, dark brown, organic SOIL, sand present, mps: medium sand, organic odor, moist. PID = ND ppm				10	10	80	R	N	N	
	1 2 2 3	S-2 20	2.0 4.0	752.7		PID = ND ppm										
				752.2	CL	Stiff, red-yellow and gray mottled, lean CLAY, no odor, moist.						100	N	M	M	
5	2 5 8 8	S-3 20	4.0 6.0	750.2	CL	PID = ND ppm										
	4 4 4 5	S-4 24	6.0 8.0	749.2	CL	Same except containing more silt and sand. PID = ND ppm										
				748.2	SP	Loose, light brown, poorly-graded SAND, mps: medium sand, no odor, moist.				70	25	5				
	2 2 3 4	S-5 14	8.0 10.0	746.2	SP	PID = ND ppm										
10	1 2 3 3	S-6 20	10.0 12.0		SP	Same as above. PID = ND ppm										
	1 2 3 3	S-7 20	12.0 14.0	742.2	SP	Same, except becoming tannish gray at 12.0 feet and becoming coarser at 13.5 feet. PID = ND ppm				70	25	5				
15	1 1 1 1	S-8 20	14.0 16.0	740.2	SW	Very loose, brown, well-graded SAND, mps: coarse sand, no odor, wet. PID = ND ppm			10	35	25	25	5			
	1/24	S-9 20	16.0 18.0	738.2	SW	PID = ND ppm										
20	1/24	S-10 24	18.0 20.0	736.2	SW	Driller noted sand is very loose, but not heaving. PID = ND ppm										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 38.0
Rock Cored (lin. ft.) -
Samples S 1

Boring No. PZ-4002

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Toughness: L-Low, M-Medium, H-High; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. PZ-4002
File No. 49017
Sheet No. 2 of 1

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	1 1 1 1	S-11 20	20.0 22.0	734.2	SW	Same as above. PID = ND ppm										
	1 2 6 6	S-12 12	22.0 24.0	732.7	SW	PID = ND ppm										
				732.2	ML	Medium stiff, gray, sandy SILT, mps < fine sand, no odor, wet. Poor recovery: Stratum change at approximately 25.5 feet. PID = ND ppm					10	90	R	L-M	N-L	
25	1 2 3 4	S-13 6	24.0 26.0	730.7												
				730.2	SM	Medium dense, gray, silty SAND, no odor, wet.			10	35	35	20				
	1 4 7 7	S-14 20	26.0 28.0	728.2	SM	PID = ND ppm										
	1 2 4 17	S-15 12	28.0 30.0	726.2		Same, except becoming very silty at 29.0 feet. PID = ND ppm					50	50				
30	7 17 31 39	S-16 6	30.0 32.0	724.2		Gravel fragments present at 30.0 feet, mps: 2.5 cm, wet. PID = ND ppm										
	3 16 15 15	S-17 12	32.0 34.0	723.2	SM	Dense, gray, silty SAND, wet. PID = ND ppm			10	10	30	50				
				722.2	GW	Dense, gray GRAVEL with sand, mps: 3 cm, no odor, wet. PID = ND ppm	20	50	30							
	75/3	S-18 3	34.0 35.0													
35	16 29 30 40	S-19 24	35.0 37.0	720.7	CL	Hard, gray, lean CLAY with sand and gravel, mps: 1 cm, no odor, dry.		10	10			80	N	H	M-H	
	15 32	S-20 12	37.0 38.0	719.2		Note: set 1.0" piezometer at 37.0 feet. Screened at 27.0 to 37.0 feet. PID = ND ppm										
				718.2		Bottom of Exploration at 38'.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. PZ-4002

HALEY & ALDRICH

TEST BORING REPORT

Boring No. PZ-4119D

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 3
Start March 18, 2004
Finish March 18, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. G. Laird
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME -1050
Inside Diameter (in.)	4 1/2 12"	2	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	140	140	-	Casing: AUGER
Hammer Fall (in.)	30	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	NA NA	ND	NA NA	0.0 2.0			SP	Soft, dark brown, silty SAND and gravel fill (SP) with wood chips, mps = 1 in., no odor, moist next to railroad tracks. -FILL-										
	4 5 7 7	ND	S1 21	2.0 4.0		2.0	ML	Dense, brown and gray mottled SILT (ML), mps = 1/2 in., no odor, moist. -GLACIAL TILL-		5			5	90				
	5 6 6 5	ND	S2 24	4.0 6.0				Similar to above.										
5	14 16 13 13	NA	S3 0	6.0 8.0		5.5 6.0	SP	Soft, yellow-brown, poorly-graded, fine SAND (SP), mps = 1 mm, no odor, wet. Water at 5.5 ft. -GLACIAL TILL- No recovery from 6-8 ft.					100					
	9 11 3 3	ND	S4 8	8.0 10.0		8.0	ML	Soft, gray, sandy SILT (ML), mps = 1 mm, no odor, wet. -GLACIAL TILL-					50	50				
10	2 2 3 3	ND ND	S5 24	10.0 12.0		10.0 11.0	MH CL	Soft, gray, elastic SILT (MH), mps = 1 mm, no odor, wet. -GLACIAL TILL- Soft, gray, lean CLAY (CL), mps = 1 mm, no odor, moist. -GLACIAL TILL-						100 100				
	2 2		S6 12	12.0 13.0														
	2 3 3 2		S7 20	13.0 15.0				Similar to above.										
15	2 1 2 4		S8 21	15.0 17.0				Similar to above.										
	1 2 5 5		S9 18	17.0 19.0		17.0	ML	Soft, gray, SILT with sand (ML), mps = 1 mm, no odor, wet. -GLACIAL TILL-					25	75				
20	2 2		S10 18	19.0 21.0		19.0	ML	Soft, gray, sandy SILT (ML), mps = 1 mm, no odor, wet. -GLACIAL TILL-					50	50				

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 63.0
Rock Cored (lin. ft.) -
Samples 31S

Boring No. PZ-4119D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. PZ-4119D
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	3 7						ML											
	4 5 8 10	ND	S11 17	21.0 23.0		21.0	CL	Dense, gray, lean CLAY (CL), mps = 1 in., no odor, moist. -GLACIAL TILL- Similar to above, except with trace fine gravel and some wet seams.						100				
	7 18 21 27		S12 21	23.0 25.0														
25	25 29 15 10		S13 18	25.0 27.0		25.5	SW	Soft, gray, well-graded SAND (SW), mps = 3/4 in., no odor, wet. - GLACIAL TILL-		5	5	10	80					
	5 7 8 10		S14 19	27.0 29.0				Similar to above.										
	7 9 9 12		S15 12	29.0 31.0		29.0	SW	Soft, gray and black, well-graded SAND with gravel (SW), mps = 1 in., no odor, wet. - GLACIAL TILL-	5	5	10	20	60					
30	15 12 10 10		S16 12	31.0 33.0														
	0 0 11 15		S17 16	33.0 35.0		33.0	SP	Soft, gray, poorly-graded, fine SAND (SP), mps =1/2 in., no odor, wet. -GLACIAL TILL-	5	10	20	40	25					
35	0 13 21 23		S18 29	35.0 37.0														
	5 5 9 11		S19 12	37.0 39.0														
	13 15 16 18		S20 12	39.0 41.0														
40	7 12 22 20		S21 6	41.0 43.0														
	13 18 17 17		S22 12	43.0 45.0														
45	11 12 18 21		S23 17	45.0 47.0														
	12 13 16 19		S24 15	47.0 49.0		47.0	GW	Soft, gray and black, well-graded GRAVEL with sand (GW), mps = 1.25 in., no odor, wet. - GLACIAL TILL- Similar to above, mps: 1/8 in.				5	95					
	21		S25	49.0				Similar to above, mps: 1/2 in.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. PZ-4119D
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
50	11 17 18		14	51.0			GW	Similar to above.										
	16 17 24 19		S26 7	51.0 53.0		51.0		Soft, gray, poorly-graded, fine SAND (SP), mps = 1/2 in., no odor, wet. -GLACIAL TILL- Similar to above.	30	30	20	20						
	15 22 26 23		S27 12	53.0 55.0														
55	13 17 19 27		S28 20	55.0 57.0				Similar to above.										
	12 16 19 12		S29 14	57.0 59.0				Similar to above.										
60	17 27 50/50		S30 6	59.0 61.0														
	39 100/5		S31 18	61.0 63.0		61.0	CL	Dense, gray, lean CLAY (CL), mps = 1/4 in., no odor, moist. -GLACIAL TILL-		5	5			90				
						63.0		-Bottom of Exploration at 63.0 feet.- NOTE: Double cased from 0-12.5 FT.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

HALEY & ALDRICH

Boring No. PZ-4607D

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 3
Start March 18, 2004
Finish March 22, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. G. Laird
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2.0	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	140	140	-	Casing: AUGER
Hammer Fall (in.)	50	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	9 7 4 4	ND ND	S1 8	0.0 2.0		0.3	CL	-ASPHALT- Soft, brown-gray, sandy, lean CLAY (CL), mps = 0.5 in., no odor, moist. -FILL-					50	50				
	9 5 5 6	ND	S2 12	2.0 4.0		2.0	ML	Dense, olive-brown and gray mottled SILT (ML), mps = 1 mm, no odor, moist. -GLACIAL TILL-					10	90				
5	4 5 8 9	ND	S3 18	4.0 6.0				Similar to above with gray and brown mottling.										
	5 7 7 5	ND	S4 24	6.0 8.0				Similar to above except less gray.										
	3 6 7 6	ND ND	S5 24	8.0 10.0				Similar to above except brown, trace of gravel. Water at 9 ft.										
10	5 8 10 15	ND ND	S6 24	10.0 12.0				Similar to above.										
						11.0	SP	Loose, yellow-brown, poorly-graded, fine SAND (SP), mps= 1 mm, no odor, wet.					95	5				
	9 14 12 10	ND	S7 24	12.0 14.0		12.0	SP	-GLACIAL TILL- Loose, gray, silty SAND (SP), mps = 1 mm, no odor, moist. -GLACIAL TILL-					70	30				
15	2 2 2 2	ND	S8 20	14.0 16.0		14.0	CL	Soft, gray, sandy lean CLAY (CL), mps = 1 mm, no odor, moist. -GLACIAL TILL- Similar to above.					30	70				
	2 3 4 3		S9 12	16.0 18.0														
	1 1 2 2	ND	S10 19	18.0 20.0		18.0	CL	Soft, gray, CLAY (CL), mps = 1 mm, no odor, moist. -GLACIAL TILL- Similar to above.					10	90				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 54.0
Rock Cored (lin. ft.) -
Samples 27S

Boring No. PZ-4607D

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. PZ-4607D
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
20	2 2 2 4		S11 18	20.0 22.0			CL											
	2 1 2 3	ND	S12 19	22.0 24.0		22.0	SP	Loose, light brown, poorly-graded SAND (SP) with silt, mps = < 1 mm, no odor, wet. -GLACIAL TILL-					90	10				
25	15 25 27 32	ND	S13 12	24.0 26.0		24.0	CL	Dense, gray, sandy lean CLAY (CL), mps = 0.5 in., no odor, moist. -GLACIAL TILL- Similar to above.		10			20	70				
	12 21 16 17		S14 17	26.0 28.0														
	6 2 3 3	NA	S15 0	28.0 30.0		28.0		No Recovery from 28-30 ft.										
30	3 7 13 16	ND	S16 17	30.0 32.0		30.0	SP	Loose, gray-brown, poorly-graded, fine SAND, mps = 1 mm, no odor, wet. -GLACIAL TILL-					95	5				
	5 14 15 17	ND	S17 22	32.0 34.0				Similar to above.										
35	8 16 10 15	ND	S18 24	34.0 36.0				Similar to above.										
	11 17 22 25	ND	S19 20	36.0 38.0				Similar to above.										
	16 27 50/5	ND	S20 24	38.0 40.0				Similar to above.										
40	15 17 17 29	ND	S21 24	40.0 42.0				Loose, gray-brown, poorly-graded, fine SAND, mps = 1 mm, no odor, wet.										
	18 20 37 37	ND	S22 24	42.0 44.0				Similar to above.										
45	13 15 24 29	ND	S23 24	44.0 46.0				Similar to above.										
	5 2 20 10	ND	S24 24	46.0 48.0				Similar to above.										
	8 9 9	ND	S25 20	48.0 50.0				Similar to above.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. PZ-4607D
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
50	17																	
	12	ND	S26	50.0		50.0	CL	Fairly dense, gray, sandy lean CLAY (CL), mps = 1 in., no odor, moist.										
	13		12	52.0														
	13							-GLACIAL TILL-										
	19																	
	7		S27	52.0														
	10		12	54.0														
	14	ND				53.0	CL	Dense, gray, lean CLAY (CL), mps = 0.5 in., no odor, moist.										
	45							-GLACIAL TILL-										
						54.0		-Bottom of Exploration at 54.0 feet.-										

NOTE: Double cased to 19 ft. Water present at 9 ft.

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. PZ-4607D

TEST BORING REPORT

Boring No. VHC-4004

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 16, 2003
Finish May 16, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation
Datum HRC Site Specific
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	U	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	3.0	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	-	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			See MW-4417 Test Boring Report for geologic information.										
5																	
	NA	U-1 22	6.0 8.0				Shelby tube: VHC-4004, Sample ID: 4004-051603-1615 collected from 6.0 to 8.0 feet.										
10																	
	NA	U-2 15	12.0 14.0				Shelby tube: VHC-4004, Sample ID: 4004-051603-1635 collected from 12.0 to 14.0 feet.										
15																	
	NA	U-3 24	16.5 18.5				Shelby tube: VHC-4004, Sample ID: 4004-051603-1700 collected from 16.5 to 18.5 feet.										
							-Bottom of Exploration at 18.5 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 18.5
Rock Cored (lin. ft.) -
Samples S 1-3

Boring No. VHC-4004

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. VHC-4005

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 19, 2003
Finish May 19, 2003
Driller B. Graham
H&A Rep. J. LeGolvan
Elevation 759.8
Datum HRC Site Specific
Location N 9,188 E 7,397

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	4 4 4 3	S-1 16	0.0 2.0	NO WELL INSTALLED	758.8	ML	Medium stiff, dark brown SILT with sand, mps > 4.0 mm, moist. PID = ND ppm					15	85			L	N
						ML	Medium stiff, yellow-brown, sandy SILT, mps: 5 mm, moist.					20	80	S	L	L	N
	4 2 3 4	S-2 18	2.0 4.0				PID = ND ppm										
	3 4 5 7	S-3 20	4.0 6.0		754.8		PID = ND ppm										
5					753.8	ML	Stiff, light brown, sandy SILT, mps: 10 mm, moist.				5	10	85				
	3 5 7 13	S-4 22	6.0 8.0		752.3	SP-SM	Medium dense, yellow-brown, poorly-graded SAND with silt, mps: 2 mm, wet. PID = ND ppm				5	80	15				
	3 5 7 13	S-5 24	8.0 10.0		751.8 750.3	CL	Stiff, yellow-brown, lean CLAY with sand, mps: 1mm, moist. PID = ND ppm						100	L	M	H	H
10					749.8	CL	Becoming stiff, red-gray lean CLAY, mps: 5 mm, moist.										
	NA	U-1 24	10.0 12.0		747.8		Shelby tube: VHC-4005, Sample ID: V05A-051903-1530 collected from 10.0 to 12.0 feet. Bottom of the tube containing gray SILT with sand.										
							-Bottom of Exploration at 12.0 feet.-										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 10.0
Rock Cored (lin. ft.) -
Samples S 1

Boring No. VHC-4005

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. VHC-4006

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Steams Drilling

File No. 49017
Sheet No. 1 of 1
Start May 15, 2003
Finish May 15, 2003
Driller B. Graham
H&A Rep. J. Davis
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NA	S	NA	Rig Make & Model: CME-750
Inside Diameter (in.)	NA	1 7/8	NA	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	NA	140	-	Casing: NA
Hammer Fall (in.)	NA	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 2 2 3	S-1 16	0.0 2.0	NO WELL INSTALLED	OL/OH	Soft, dark brown, organic SOIL, some fine sand, roots, mps: fine sand, moist. Organic topsoil odor.				15	85					
	2 3 3 3	S-2 18	2.0 4.0		CL	Medium stiff, yellow-brown, lean CLAY with silt, trace sand, moist. Very sticky when rolled.			5		5	90	N-S	M	L-M	
5	2 2 3 4	S-3 19	4.0 6.0													
	1 2 4 7	S-4 18	6.0 8.0													
	5 10 11 13	S-5 17	8.0 10.0		SP-SM	Soft, dark brown, fine SAND with silt, some medium sand, mps: fine sand, moist.				20	60	20				
10	4 10 10 15	S-6 20	10.0 12.0													
	1 2 3 4	S-7	12.0 14.0		CL	Medium stiff, gray, lean CLAY, trace sand, moist. Sticky, no odor, pink coloration on sand grains.			5			95	N	M	H	
15	NA	U-8 24	14.0 16.0			Shelby tube: VHC-4006, Sample ID: 4006-051503-1900 collected from 14.0 to 16.0 feet.										
						-Bottom of Exploration at 16.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	
O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram: Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

Summary	
Overburden (lin. ft.)	16.0
Rock Cored (lin. ft.)	-
Samples	

Boring No. VHC-4006

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

HALEY & ALDRICH

Boring No. VHC-4007

Project Delphi Flint Dort Highway, USA
Client Delphi Corporation
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 1
Start May 22, 2003
Finish May 22, 2003
Driller M. Hefferan
H&A Rep. G. Laird
Elevation
Datum HRC Site Specific
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	U	NA	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	3.0	NA	Bit Type: Cutting Head
Hammer Weight (lb.)	NA	140	-	Drill Mud: None
Hammer Fall (in.)	NA	-	-	Casing: NA
				Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)		Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			See MW-4635S Test Boring Report for details.										
5																	
	NA	U-1 19	6.0 8.0				Shelby tube: VHC-4007, Sample ID: V07A-052203-0915 collected from 6.0 to 8.0 feet.										
10																	
	NA	U-2 22	11.0 13.0				Shelby tube: VHC-4007, Sample ID: V07B-052203-0930 collected from 11.0 to 13.0 feet. -Bottom of Exploration at 13.0 feet.-										

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification
- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (lin. ft.) 13.0
- Rock Cored (lin. ft.) -
- Samples U-1, U-2

Boring No. VHC-4007

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. VHC-4008

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 3
Start March 19, 2004
Finish March 19, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. G. Laird
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2.0	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: AUGER
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 2 3 9	ND	S1 20	0.0 2.0	NO WELL INSTALLED		ML	Soft, brown, SILT with sand (ML), mps = 0.25 in., no odor, moist. -FILL-					20	80				
	7 3 2 3	ND ND	S2 20	2.0 4.0		3.0	ML	Ash and coal like material from 2-3 ft. Soft, yellow-brown SILT (ML), mps = 0.5 in., no odor, moist. -GLACIAL TILL-					10	90				
5	3 4 8 8	ND	S3 23	4.0 6.0				Similar to above except mottled brown and gray.										
	4 5 6 10	ND	S4 24	6.0 8.0				Similar to above.										
	5 5 6 6	ND	S5 24	8.0 10.0				Similar to above except less gray mottling.										
10	3 4 4 5	ND ND	S6 24	10.0 12.0		11.0	SP	Similar to above. Soft, yellow-brown, poorly-graded, fine SAND (SP), mps = 1 mm, no odor, wet. -GLACIAL TILL-					95	5				
	6 8 9 11	ND	S7 14	12.0 14.0		12.0	SM	Wet at 11 ft. Soft, light brown, silty SAND (SM), mps = 1 mm, no odor, wet. -GLACIAL TILL-					80	20				
	5 4 3 3	ND	S8 17	14.0 16.0				Similar to above.										
15	2 2 3 3	ND	S9 12	16.0 18.0		15.0	CL	Soft, gray, lean CLAY (CL), mps = 1 mm, no odor, moist. -GLACIAL TILL- Similar to above except more clay.					10	90				
	2 2 3 2	ND	S10 20	18.0 20.0				Similar to above except more sand.					10	90				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 65.0
Rock Cored (lin. ft.) -
Samples 33S

Boring No. VHC-4008

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. VHC-4008
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	1 2 3 2		S11 12	20.0 22.0			CL											
	2 2 6 6	ND	S12 18	22.0 24.0		22.0	CL	Soft, gray, sandy, lean CLAY (CL), mps = 0.25 in., no odor, moist. -GLACIAL TILL- Similar to above.		2	3	5	20	70				
	9 16 17 21	ND	S13 18	24.0 26.0														
25	50/5"	ND	S14 17	26.0 28.0		25.0	SM	Soft, gray, silty SAND (SM), mps = 1 mm, no odor, wet. -GLACIAL TILL- Similar to above.					60	40				
	32 48 41 52	ND ND	S15 20	28.0 30.0		28.0	SC	Soft, gray, clayey SAND (SC) with gravel, mps = 1 in., no odor, moist. - GLACIAL TILL-		20	5	5	30	40				
30	18 32 50/5"		S16 8	30.0 32.0		29.5	SP	Soft, gray, poorly-graded, medium SAND (SP), mps = 1/2 in., no odor, wet. -GLACIAL TILL-		10	40	90						
	33 19 16 15		S17 12	32.0 34.0				Similar to above.										
35	10 3 18 20		S18 12	34.0 36.0				Similar to above.										
	13 18 17 17	ND	S19 12	36.0 38.0		36.0	SW	Soft, black and gray, well-graded SAND with gravel (SW), mps = 3/5 in., no odor, wet. -GLACIAL TILL-		30	50	15	5					
	16 16 14 18		S20 15	38.0 40.0				Similar to above.										
40	14 12 11 14	ND	S21 13	40.0 42.0		40.0	SW	Soft, black and gray, well-graded SAND (SW), mps = 1 in., no odor, wet. -GLACIAL TILL-		10	30	30	30					
	15 21 4 13	ND	S22 11	42.0 44.0		42.0	SP	Soft, gray, poorly-graded, fine SAND (SP), mps = 1 mm, no odor, wet. -GLACIAL TILL-					100					
45	30 10 14 14	ND	S23 22	44.0 46.0		44.0	SW	Soft, gray and black, well-graded SAND (SW), mps = 1 in., no odor, wet. -GLACIAL TILL-		10	30	30	30					
	17 13 15 15		S24 20	46.0 48.0				Similar to above.										
	11 9 2		S25 16	48.0 50.0				Similar to above.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. VHC-4008
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
	6						SW											
50	12		S26	50.0				Similar to above.										
	13		10	52.0														
	27																	
	9																	
	8		S27	52.0														
	12		16	54.0														
	13							Similar to above except coaser grain size.										
	16																	
	14		S28	54.0														
	15		19	56.0														
55	11							Similar to above.										
	13																	
	9		S29	56.0														
	12		20	58.0														
	19	ND						Similar to above.			30	30	40					
	17																	
	21		S30	58.0				Similar to above; grain sizes.										
	11		21	60.0														
	12							Similar to above.										
	18																	
60	19		S31	60.0				Similar to above; grain sizes.										
	4		20	62.0														
	14																	
	19	ND						Similar to above.										
	25	ND	S32	62.0		62.0	SP						20	80				
	50/5"		18	64.0														
								Similar to above.										
								Soft, gray, poorly-graded SAND (SP), mps = 1 mm, no odor, wet.										
								-GLACIAL TILL-										
	75	ND	S33	64.0		64.0	CL	Dense, gray CLAY (CL), mps = 1/4 in., no odor, moist.					10	90				
	100/5"		10	65.0														
65						65.0		-GLACIAL TILL-										
								-Bottom of Exploration at 65.0 feet.-										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. VHC-4009

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 3
Start: April 8, 2004
Finish: April 8, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	-	Bit Type: Cutting Head
Hammer Weight (lb.)	-	140	-	Drill Mud: None
Hammer Fall (in.)	-	30	-	Casing: Auger
				Hoist/Hammer: Winch Automatic Hammer

Elevation
Datum Estimated
Location South of AOI-9

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
	2 2 2 2	0.9	S-1 24	1.0 3.0		1.0	SP	Soft, very dark brown, poorly graded, fine SAND, mps: 1/2 in., no odor, moist. -FILL- (Foundry Sand)					100					
	2 7 14 5	0.8	S-2 19	3.0 5.0		4.0	ML	Similar to above. Dense dark brown SILT, mps: 1 in., no odor, moist. -FILL-					10	90				
5	2 3 6 7	2.6	S-3 22	5.0 7.0		6.0	ML	Dense, brown and gray mottled SILT, mps: 1/4 in., no odor, moist. -GLACIAL TILL-					10	90				
	3 4 8 8	8.1	S-4 20	7.0 9.0				Similar to above except becoming yellow brown.										
10	5 5 7 9	11.5	S-5 17	9.0 11.0		9.0	ML	Water at 9 ft. Soft, yellow brown, poorly graded SILT with sand, mps: 1 mm, no odor, wet. -GLACIAL TILL-					90	10				
	2 3 3 3	6.9	S-6 20	11.0 13.0		11.0	CL	Soft, gray, lean CLAY with sand, mps: 1 mm, no odor, moist. -GLACIAL TILL-					20	80				
	1 2 2 2	2.3	S-7 21	13.0 15.0		13.0	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL-					5	95				
15	1 2 2 2	0.7	S-8 21	15.0 17.0				Similar to above except becoming less moist.										
	1 1 2 2	0.7	S-9 20	17.0 19.0		17.0	CL	Soft, gray, sandy, lean CLAY, mps: 1/2 in., no odor, moist. -GLACIAL TILL-					30	70				
20	5 7		S-10 20	19.0 21.0		19.0	CL	Soft, gray, lean CLAY, mps: 1/2 in., no odor, moist.		10				90				

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 61.0
Rock Cored (lin. ft.) -
Samples -

Boring No. VHC-4009

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. VHC-4009
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	6 8	0.7					CL	-GLACIAL TILL- 20.5 to 20.75 ft: Medium SAND seam.										
	3 5 11 13	0.9	S-11 20	21.0 23.0														
						22.5	SM	Soft, red gray, silty SAND, mps: 1 mm, no odor, wet.					60	40				
	2 5 6 3	0.9	S-12 22	23.0 25.0				-GLACIAL TILL- Similar to above except grain size. Similar to above except grain size.					85 65	15 35				
25	9 12 18 21	1.3	S-13 24	25.0 27.0				Similar to above except grain size.					85	15				
	4 15 25 26	0.9	S-14 20	27.0 29.0		27.5	SW	Soft, loose, gray and brown, well graded SAND with gravel, mps: 1 in., no odor, wet. -GLACIAL TILL-		15	60	15	10					
	5 10 16 17		S-15 18	29.0 31.0				Similar to above.										
30	6 16 24 24	0.5	S-16 14	31.0 33.0				Similar to above.										
	4 16 17 17	0.5	S-17 16	33.0 35.0				Similar to above.										
35	6 15 17 20		S-18 20	35.0 37.0				Similar to above.										
	7 12 13 16		S-19 13	37.0 39.0				Similar to above.										
40	11 12 18 18		S-20 18	39.0 41.0			SW	Soft, loose, gray and brown, well graded SAND with gravel, mps: 1 in., no odor, wet. -GLACIAL TILL-		15	60	15	10					
	10 11 19 21		S-21 14	41.0 43.0				Similar to above.										
	9 15 19 22	0.5	S-22 14	43.0 45.0				Similar to above.										
45	6 14 19 19	0.1	S-23 19	45.0 47.0				Similar to above.										
	11 15 22 25	ND	S-24 18	47.0 49.0				Similar to above.										
	11	ND	S-25	49.0				Similar to above except grain size.	15	15	60	5	5					

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. VHC-4009
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
50	9 14 20		20	51.0			SW											
	14 15 17 22	ND	S-26 20	51.0 53.0			SW	Soft, loose, gray and brown, well graded SAND with gravel, mps: 1 in., no odor, wet.		15	60	15	10					
	6 9 16 17	ND	S-27 10	53.0 55.0				Similar to above.										
55	7 13 20 24	ND	S-28 11	55.0 57.0				Similar to above.										
	12 12 20 23	ND	S-29 14	57.0 59.0				Similar to above.										
	15 12 15 13	ND	S-30 14	59.0 61.0				Similar to above.										
60						60.5	CL	Dense, gray, lean CLAY, mps: 1/4 in., no odor, moist.					10	90				
						61.0		-GLACIAL TILL-										

-Bottom of Exploration at 61.0 feet.-

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. VHC-4009

HALEY & ALDRICH

TEST BORING REPORT

Boring No. VHC-4010

Project: Delphi Flint Dort Highway, USA
Client: Delphi
Contractor: Stearns Drilling

File No.: 49017
Sheet No.: 1 of 3
Start: April 6, 2004
Finish: April 6, 2004
Driller: M. Hefferan, R. Dutney
H&A Rep.: G. Laird
Elevation
Datum Estimated
Location AOI-8 / AOI 39

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-LC-60
Inside Diameter (in.)	4 1/4	2.0	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: Auger
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-CONCRETE-										
	6 11 12 13	0.3	S-1 24	1.0 3.0	NO WELL INSTALLED	1.0	ML	Dense, dark brown SILT, mps: 1 in., no odor, moist. -FILL-					10	90				
	10		S-2 4	3.0 5.0				Similar to above.										
		ND				3.5		-CONCRETE-										
						4.1	ML	Dense, dark brown SILT, mps: 1/2 in., organic odor, moist. -FILL-					10	90				
5	3 4 3 5	85.4	S-3 18	5.0 7.0				Similar to above.										
	2 3 4 4	191	S-4 17	7.0 9.0		7.0	ML	Dense, olive brown and gray mottled SILT, mps: 1/4 in., organic odor, moist. -GLACIAL TILL-					10	90				
10	3 5 8 8	20.8	S-5 20	9.0 11.0		9.0	SM	Water at 9 ft. Soft, yellow brown, silty SAND, mps: 1 mm, slight organic odor, wet. -GLACIAL TILL-					60	40				
	2 4 8 8	0.6	S-6 20	11.0 13.0		11.0	CL	Soft, gray, lean CLAY with sand, mps: 1 mm, no odor, moist. -GLACIAL TILL-					20	80				
	3 3 3 4	0.5	S-7 20	13.0 15.0				Similar to above.										
						13.5	CL	Soft, gray, lean CLAY, mps: 1 mm, no odor, moist. -GLACIAL TILL-					5	95				
15	2 3 3 3	1.1	S-8 19	15.0 17.0				Similar to above.										
	2 3 4 5	0.2	S-9 22	17.0 19.0				Similar to above.										
	3 5		S-10 18	19.0 21.0		19.0	CL SP	Soft, gray, lean CLAY with sand, mps: 1 mm, no oodr, moist.					20 100	80				
20																		

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 59.0
Rock Cored (lin. ft.) -
Samples -

Boring No. VHC-4010

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. VHC-4010
File No. 49017
Sheet No. 2 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	6 8	ND				19.5	CL	-GLACIAL TILL- Soft, gray, fine SAND, mps: 1 mm, no odor, wet.					20	80				
	3 4		S-11 24	21.0 23.0		20.0		-GLACIAL TILL- Soft, gray, lean CLAY with sand, mps: 1 mm, no oodr, moist.										
	7 11	ND				22.0	SP	-GLACIAL TILL- Soft, gray, poorly graded SAND with clay, mps: 1 mm, no odor, wet.					90	10				
	3 8 15 19		S-12 20	23.0 25.0				-GLACIAL TILL-										
25	3 7	ND	S-13 19	25.0 27.0				Similar to above.										
	26 30	ND				26.0	SW	Soft, gray and black, well graded SAND, mps: 1/2 in., no odor, wet.				50	50					
	5 19 32 39	ND	S-14 21	27.0 29.0				-GLACIAL TILL- Similar to above.										
30	8 25 46 51	ND	S-15 24	29.0 31.0				Similar to above except grain size.				10	90					
	8 21 50 62	ND	S-16 24	31.0 33.0				Similar to above.										
	4 6 24 41	ND	S-17 24	33.0 35.0				Soft, gray and black, well graded SAND, mps: 1/2 in., no odor, wet. -GLACIAL TILL-										
35	3 9 12 15	ND	S-18 24	35.0 37.0				Similar to above.										
	9 29 57 61	ND	S-19 24	37.0 39.0				Similar to above.										
40	9 14 20 24	ND	S-20 20	39.0 41.0				Similar to above.										
	8 13 20 25	ND	S-21 24	41.0 43.0				Similar to above except grain size.				20	80					
	6 10 15 22	ND	S-22 24	43.0 45.0				Similar to above.										
						44.0	CL	Soft, gray, sandy, lean CLAY, mps: 1 mm, no oodr, wet. -GLACIAL TILL-					50	50				
45	6 8 17 20	ND	S-23 22	45.0 47.0				Similar to above.										
	7 13 16 21	ND	S-24 24	47.0 49.0		47.0	SP	Soft, gray, poorly graded, fine SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-					95	5				
	8	ND	S-25	49.0				Similar to above.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. VHC-4010
File No. 49017
Sheet No. 3 of 3

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plastic'	Field Test Streng.
50	13 23 24		24	51.0			SP											
	13 14 18 30	ND ND	S-26 24	51.0 53.0			SP	Soft, gray, poorly graded, fine SAND, mps: 1 mm, no odor, wet. -GLACIAL TILL-										
						52.5	CL	Soft, gray, sandy, lean CLAY, mps: 1 mm, no odor, wet. -GLACIAL TILL-					50	50				
	9 13 24 31	 ND	S-27 24	53.0 55.0				Similar to above.										
55	10 34 57 61	 ND	S-28 12	55.0 57.0				Similar to above.										
	21 33 43 47	ND	S-19 0	57.0 59.0		57.0	CL	Dense, gray, lean CLAY, mps: 1/2 in., no odor, moist. -GLACIAL TILL-					10	90				
						59.0		-Bottom of Exploration at 59.0 feet.- NOTE: 57-59 ft. no recovery with 2 in. spoon; collected sample with 3 in. split spoon.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. VHC-4011

Project Delphi Flint Dort Highway, USA
Client Delphi
Contractor Stearns Drilling

File No. 49017
Sheet No. 1 of 2
Start March 17, 2004
Finish March 17, 2004
Driller J. Huntoon, R. Krauss
H&A Rep. G. Laird
Elevation
Datum Estimated
Location

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	-	Rig Make & Model: CME-1050
Inside Diameter (in.)	4 1/4	2.0	-	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb.)	-	140	-	Casing: AUGER
Hammer Fall (in.)	-	30	-	Hoist/Hammer: Winch Automatic Hammer

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0								-ASPHALT-										
	3 2 2	ND	S1 15	0.3 2.3	NO WELL INSTALLED	0.3	ML	Stiff, mottled dark brown and yellow-brown SILT with gravel (ML), mps = 0.75 in., no odor, moist. -GLACIAL TILL-		10			5	85				
	2		S2	2.0														
	2 3 2	ND	16	4.0		2.5	ML	Stiff, dark brown SILT (ML), mps = 1 mm, no odor, moist. -GLACIAL TILL-					10	90				
5	1 2 2 2		S3 16	4.0 6.0														
	1 2 3 3	ND	S4 17	6.0 8.0				Similar to above. Water at 7 ft.										
						7.0	SP	Soft, light brown, poorly-graded, fine SAND (SP), mps = 1 mm, no odor, wet. -GLACIAL TILL-					100					
	4 5 7 6	ND	S5 18	8.0 10.0				Similar to above (SP); turning gray at 9 ft.										
10	3 4 7 8	ND	S6 20	10.0 12.0		10.0	ML	Soft, gray, sandy SILT (ML), mps = 1 mm, no odor, moist. -GLACIAL TILL-					50	50				
	2 2 3 4	ND	S7 22	12.0 14.0		12.0	CL	Soft, gray, lean CLAY (CL), mps = 1 mm, no odor, moist. -GLACIAL TILL- Similar to above.										
15	4 4 3 3		S8 1	14.0 16.0														
	2 1 1 3		S9 18	16.0 18.0				Wet at 16.5-17.5 ft.										
	2 3 6 8	ND	S10 20	18.0 20.0		18.0	CL	Similar to above with more gravel.		15				85				
20																		

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification	Well Diagram	Summary
O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon G Geoprobe	Riser Pipe Screen Filter Sand Cuttings Grout Concrete Bentonite Seal	Overburden (lin. ft.) 32.0 Rock Cored (lin. ft.) - Samples 16S **Boring No. VHC-4011**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. VHC-4011
File No. 49017
Sheet No. 2 of 2

Depth (ft.)	SPT*	PID*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plastic	Field Test Strength
20	8 16 20 17	ND	S11 0	20.0 22.0		20.0		No recovery from 20-22 ft.										
	6 5 2 2	ND ND	S12 18	22.0 24.0		22.0	CL	Dense, gray, lean CLAY (CL), mps = 1 mm, no odor, moist. -GLACIAL TILL-					10	90				
						23.0	SP	Soft, gray-brown, poorly-graded, fine SAND (SP), mps = 1 mm, no odor, wet. -GLACIAL TILL-					100					
25	2 3 5 7		S13 24	24.0 26.0				Similar to above.										
	4 16 21 20	ND	S14 20	26.0 28.0		26.0	SP	Soft, gray, poorly-graded fine SAND with silt (SP), mps = 1 mm, no odor, wet. -GLACIAL TILL-					90	10				
	3 5 5 8	ND	S15 20	28.0 30.0		29.0	CL	Dense, gray, lean CLAY (CL), mps = 1 mm, no odor, moist. -GLACIAL TILL-						100				
30	3 7 7 6		S16 12	30.0 32.0				Similar to above.										
						32.0		-Bottom of Exploration at 32.0 feet.- NOTE: Backfill with bentonite slurry (quick-grout slurry). Tremied.										

*SPT = Sampler blows per 6 in. **Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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